



COUNTY OF YOLO

Board of Supervisors

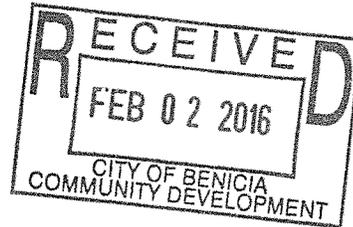
District 1, Oscar Villegas
District 2, Don Saylor
District 3, Matt Rexroad
District 4, Jim Provenza
District 5, Duane Chamberlain

625 Court Street, Room 204 • Woodland, CA 95695
(530) 666-8195 • FAX (530) 666-8193
www.yolocounty.org

County Administrator, Patrick S. Blacklock
Deputy Clerk of the Board, Julie Dachtler

February 1, 2016

City of Benicia
250 East L Street
Benicia, CA 94510



Dear Mayor Patterson and Members of the City Council,

Thank you for providing the County of Yolo with copies of the Revised and Final Environmental Impact Reports (“EIR”) for the project at the Valero Oil Refinery that would result in the daily delivery of 70,000 barrels of oil by rail through Yolo County on its way to Benicia. We appreciate your staff’s diligence in analyzing the up-stream effects of the project in response to Yolo County’s July 15, 2014 comments, among others.

Although the City’s revised analysis correctly acknowledges that the project will have significant impacts to communities along the Union-Pacific rail line, the County is concerned that these significant impacts are not sufficiently mitigated. Indeed, the City eschews its responsibility to consider possible mitigation measures on the incorrect premise that any such efforts would be preempted by federal law. As more fully discussed in the letter submitted by the Sacramento Area Council of Governments (SACOG), the City has an obligation to require the implementation of feasible mitigation measures as a condition of a project’s approval. See *City of San Diego v. Cal. State Univ.*, 61 Cal. 4th 945, 957 (2015); *Town of Atherton v. California High-Speed Rail Auth.*, 228 Cal. App. 4th 314, 331 (2014) (“Case law demonstrates that the ICCTA does not preempt all state and local regulations. The circuits appear generally, for example, to find preemption of environmental regulations, or similar exercises of police powers relating to public health or safety, only when the state regulations are either discriminatory or unduly burdensome.”) (internal quotations omitted).

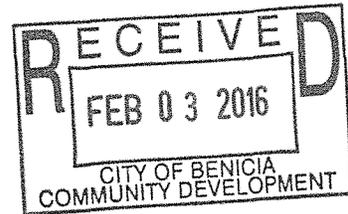
In light of the significant impacts identified in the Revised Draft EIR, we ask that the City of Benicia reconsider its position on preemption and not approve the project until the impacts are mitigated. SACOG’s October 30, 2015 letter provides mitigation measures that are both feasible and necessary to lessen the impact on our local communities. Without these mitigation measures in place, the project should not be approved.

Sincerely,

Jim Provenza
Chair, Yolo County Board of Supervisors

COMMUNITY DEVELOPMENT AND SUSTAINABILITY DEPARTMENT

23 Russell Boulevard, Suite 2 – Davis, California 95616
530/757-5610 – FAX: 530/757-5660 – TDD: 530/757-5666



February 3, 2016

Via Certified Mail and Email

Amy Million, Principal Planner
City of Benicia
Community Development Department
250 East L Street
Benicia, California 94510

Re: Valero Benicia Crude by Rail Project Final Environmental Impact Report

Dear Ms. Million:

The City of Davis (“Davis”) submits the following comments on the Final Environmental Impact Report (FEIR) for the Valero Benicia Crude by Rail Project.

As the City of Benicia (“Benicia”) is aware, the City of Davis has a deep and immediate interest in the safety of rail shipments. The Valero Project proposes daily shipments of 70,000 barrels of crude oil to the Valero Benicia Refinery (RDEIR at 2-3.) in two daily 50-car trains. These trains will travel from Roseville to Benicia on the UPRR main railroad track which runs through the city of Davis, immediately adjacent to the Davis downtown area and to residential areas. The rail line also runs immediately adjacent to the University of California Davis campus.

Davis has previously submitted two letters to Benicia stating its concerns; the first letter, dated September 8, 2014, commented on the Draft EIR and the second letter, dated October 30, 2015, commented on the Revised Draft EIR. In addition, Davis has joined in the letters sent to Benicia by the Sacramento Area Council of Governments (SACOG).

Davis requests that Benicia reject the adequacy of the Final EIR (FEIR), decline to certify the FEIR, and send it back to staff to fully analyze mitigation measures for safety, as set forth in Davis’ and SACOG’s earlier letters and then to impose the measures suggested by SACOG and Davis, as well as any additional measures that are feasible. Finally, if, after the EIR is revised and recirculated, Benicia decides then to move forward with approval of this Project, the City should consider and adopt the feasible mitigation measures that will protect the safety and welfare of our communities. As we have seen occur in other communities, a derailment and the potential for fire, explosion, and train upset is real and should not be ignored. It is the obligation of public agencies to safeguard all their communities to the best of their abilities.

The history of our comments and the Project responses is laid out in SACOG’s letter on the Final EIR, which Davis joins in with SACOG as if set forth here in full.

CITY OF DAVIS

Davis submits that the Final EIR is legally inadequate. Benicia, as the lead agency, is required to “review, evaluate, and prepare written response to comments on environmental issues received on an EIR.” (CEQA Guidelines, §15088.) Disposition of significant environmental issues raised should be described. When a lead agency disagrees with a comment, the response must address comment in detail. The lead agency must provide a good-faith, reasoned analysis; conclusory statements without facts are not adequate. The FEIR fails to meet this standard.

By way of example, Davis, along with SACOG provided significant analysis, including that of the California Attorney General, asserting that Benicia was not pre-empted by federal law from mitigating impacts of this Project and that Benicia has the legal authority to mitigate the adverse impacts of this Project. The FEIR fails to provide any new information or additional information on this issue. The FEIR responses to Davis’ and SACOG’s comments are not legally adequate and provide no substantial evidence to support why no measures to mitigate are feasible.

Similarly, the risk analysis in the Revised DEIR relies on national derailment rates correlated to track class, method of operation, and traffic density. However, as noted by SACOG and Davis, the analysis does not consider the location of classes of track more prone to derailment, including their proximity to highly populated areas, schools, hospitals, dangerous facilities, or sensitive lands or habitat. To this point, Davis is located on a curve in the railroad tracks. Both freight trains and passenger trains share the tracks. Oftentimes, freight trains, such as the proposed oil trains, traverse the City and the Davis Train Station when passenger trains are in the station. Accidents and derailments often occur at curves such as the one in Davis. The RDEIR forecasts potentially catastrophic events while noting that nearly one-quarter of our region’s population lives within one-half mile of the rail line that will be used for the crude oil shipments. The analysis in the FEIR needs to address the particular and known hazards on the tracks in Davis, including but not limited to the curve, safety measures and adequate emergency response preparedness. The FEIR does not address the safety issues and mitigation for these important safety impacts. The FEIR fails to provide any additional analysis and does not respond to our comments.

Benicia and Valero have the authority and ability to adopt measures that will be effective. The City of Davis again urges Benicia, for the safety of all the residents of this region, to reject the Final EIR as inadequate under CEQA and to analyze and adopt the feasible mitigation measures that are available in order to reduce the significant adverse impacts posed by this Project.

Respectfully,



Mike Webb, Assistant City Manager

City of Davis
Department of Community Development and Sustainability
23 Russell Boulevard, Suite 2
Davis, CA 95616

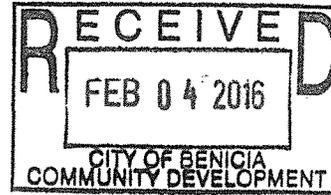
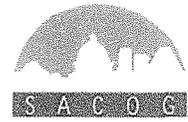
Phone: 530-747-5881
Fax: 530-757-5660
mwebb@cityofdavis.org

cc: Davis City Council
Harriet Steiner, Davis City Attorney
Kirk Trost, SACOG
Patrick Blacklock, Yolo County Administrator
Congressman John Garamendi

Sacramento Area
Council of
Governments

1415 L Street,
Suite 300
Sacramento, CA
95814

tel: 916.321.9000
fax: 916.321.9551
tdd: 916.321.9550
www.sacog.org



February 4, 2016

Via Certified Mail and Email

Amy Million, Principal Planner
City of Benicia
Community Development Department
250 East L Street
Benicia, California 94510

Re: Valero Benicia Crude by Rail Project Final Environmental Impact Report

Dear Ms. Million:

On behalf of its 22 city and 6 county member jurisdictions, the Sacramento Area Council of Governments (SACOG) submits the following comments on the Final Environmental Impact Report (FEIR) for the Valero Benicia Crude by Rail Project, which proposes daily shipments of 70,000 barrels of crude oil to the Valero Benicia Refinery.¹

To date, SACOG has submitted two letters expressing concerns regarding this project. In August 2014, we submitted a comment letter in response to the original DEIR for the Project. As our Board of Directors made clear at that time, SACOG's interest is to ensure that all appropriate measures, based upon a full investigation of the risks, are taken to protect the safety of our residents and their communities, businesses, and property throughout the region. As a consequence, we expressed grave concern that the DEIR concluded that crude oil shipments by rail pose no "significant hazard" to our communities, and we urged the City of Benicia to revise the DEIR to fully inform decision makers and the public of the potential risks of the Project. We also urged the City to "address adequate mitigation measures to ensure the safety of our communities."

In August 2015, the DEIR was revised, conceding that rail shipments of crude oil through our region pose a substantial risk and that the shipments will result in crude oil spills, fires, and explosions. However, the Revised DEIR adopted not a single mitigation measure to address the very significant impacts of the Project.

¹ SACOG submits this letter as a joint powers agency, exercising the common powers of its members pursuant to a joint powers agreement. However, this letter is not an exhaustive treatment of the FEIR's compliance with the California Environmental Quality Act or of the concerns of all of its members, some of whom may provide separate comments.

Auburn
Citrus Heights
Colfax
Davis
El Dorado County
Elk Grove
Folsom
Galt
Isteton
Lincoln
Live Oak
Loomis
Marysville
Placer County
Placerville
Rancho Cordova
Rocklin
Roseville
Sacramento
Sacramento County
Sutter County
West Sacramento
Wheatland
Winters
Woodland
Yolo County
Yuba City
Yuba County

In response to the Revised DEIR, in October 2015, we submitted a second comment letter citing the mandate in the California Environmental Quality Act (CEQA) to describe all mitigation measures that could, if implemented, minimize significant environmental effects. (CEQA Guidelines, §§15126(c), 15126.1(a).) We urged the City to adopt all feasible mitigation measures that will protect our communities before the catastrophic events forecast by the RDEIR occur. We noted that *nearly one quarter* of our region's population lives within one-half mile of the crude oil shipments.

As we noted in our letter, we appreciate that the City finally acknowledges the substantial risk to our region resulting from the crude oil shipments. However, the FEIR still fails to adopt a single mitigation measure to address the impacts of the Project and the FEIR fails to adequately respond to our letters.

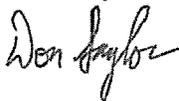
CEQA requires a lead agency to review, evaluate, and prepare written responses to comments on environmental issues received on an EIR. (CEQA Guidelines, §15088.) The final EIR should describe the disposition of significant environmental issues raised by comments. When a lead agency disagrees with a comment, the response must address the comment in detail. The lead agency must provide a good-faith, reasoned analysis; conclusory statements without facts are not adequate. The FEIR fails to meet this standard. The following are just some of the inadequacies and misstatements in the Responses to our comment letters.

- The Responses inaccurately state that “many” of the recommendations in SACOG’s comment letters were included in U.S. Department of Transportation regulations issued in May 2015. The regulations address operational rules relating to speed, braking systems, and routing, and address safety improvements in tank car design standards, a sampling and classification program, and notification. However, the regulations do not address the majority of the recommendations in our comment letters.
- While the Responses assert that the DEIR and the Revised DEIR evaluated all feasible mitigation measures to reduce potential significant impacts to a less-than-significant level, there is no evidence in either document of such analysis or evaluation. Rather, the environmental documents, largely in reliance on the applicant’s and rail carrier’s assertions, simply conclude that any measures that would mitigate the significant impacts of crude oil shipments through our region would be preempted. Anticipating this assertion, SACOG submitted substantial analyses, including one by the Attorney General of the State of California, rebutting these assertions in the Revised DEIR and establishing the lead agency’s authority to impose appropriate measures under these circumstances. The FEIR provides no additional or new information, and essentially is a non-response to SACOG. The FEIR provides no substantial evidence to support the assertion that measures to mitigate these impacts are not feasible.

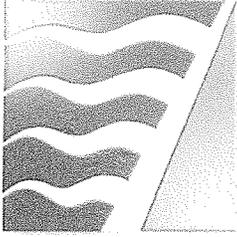
- The risk analysis in the Revised DEIR relies on national derailment rates correlated to track class, method of operation, and traffic density. As we have noted, however, the analysis does not consider the location of classes of track more prone to derailment, including their proximity to highly populated areas, schools, hospitals, dangerous facilities, or sensitive lands or habitat. The FEIR fails to provide any additional analysis and does not respond to this comment.
- SACOG commented in its first letter that the DEIR describes what purport to be elements of the Project intended to reduce, avoid, or mitigate the potential environmental impacts of the Project—e.g., a “commitment” to use CPC-1232 tank cars and follow Union Pacific Railroad’s “General Railroad Safety” measures—but fails to present them as mitigation measures in response to the identification of significant environmental effects. In response, the FEIR states that the City does not rely on the choice of tank cars or the implementation of any specific Union Pacific Railroad measures to reduce the significance of potential Project impacts below established thresholds. This response typifies a fundamental flaw in the FEIR: the City presumes that it can adopt no mitigation measures based on the broadest possible interpretation of federal preemption and thus it never analyzes or evaluates any of the multitude of potential measures and whether they are specifically preempted. The approach is flawed. It has failed to identify for the public all potential mitigation measures, how each measure could mitigate the significant impacts of the Project, and how each measure is, or is not, preempted. Moreover, by assuming the use of CPC-1232 tank cars and Union Pacific’s “General Railroad Safety” measures, the FEIR misrepresents the impacts of the Project and fails to secure appropriate mitigation monitoring under CEQA.
- The FEIR misleadingly suggests that the North Dakota Industrial Commission’s approval of Order No. 25417 responds to SACOG’s comment on the need for mitigation measures to stabilize crude oil products by stripping them of the most volatile elements, including flammable natural gas liquids, prior to transport. In fact, the North Dakota Industrial Commission Order only requires “conditioning,” a process to separate production fluids into gas and liquid, including temperature and pressure parameters, to make sure the light hydrocarbons are taken out before the oil is shipped. Stabilization is a more rigorous process that removes more of the dissolved explosive gases from the crude oil.

For the foregoing reasons, we urge the City to provide full and adequate responses to our comment letters but, more importantly, we urge the City to fully evaluate all measures to mitigate the significant environmental impacts that this Project will inevitably have on our communities and our residents.

Sincerely,

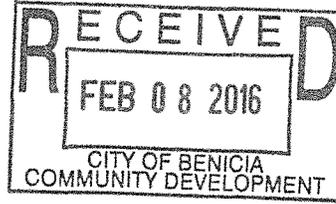


Don Saylor
SACOG Immediate Past Chair



**BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT**

February 8, 2016



Ms. Amy Million
City of Benicia
Community Development Department
250 East L. Street
Benicia, CA 94510

RE: Valero Benicia Crude-by Rail Project Final Environmental Impact Report (FEIR)

ALAMEDA COUNTY
Tom Bates
Margaret Fujioka
Scott Haggerty
Nate Miley

Dear Ms. Million:

CONTRA COSTA COUNTY
John Gioia
David Hudson
(Secretary)
Karen Mitchoff
Mark Ross

Several Air Pollution Control and Air Quality Management Districts (Air Districts) submitted a coordinated comment letter to the City of Benicia (City) on October 26, 2015 regarding the air quality evaluation for the affected "uprail" air basins identified in the Valero Benicia Crude-by Rail Project (Project) Revised Environmental Impact Report (RDEIR). The RDEIR concludes that the Project, if approved, will result in a substantial increase in ozone precursors and toxic air contaminants (TACs) in numerous air basins.

MARIN COUNTY
Katie Rice

NAPA COUNTY
Brad Wagenknecht

The Air Districts recommended that the City evaluate a potential mitigation measure requiring the Project to implement an offsite mitigation program to lessen the significant air quality impacts identified within each Air District. The Air Districts offered to assist the City and Project proponents in implementing this mitigation measure. The recommended mitigation measure would not place any burden on Union Pacific Railroad (UPRR) by requiring cleaner locomotives to be used for the Project, and therefore would not conflict with the federal preemption.

SAN FRANCISCO COUNTY
John Avalos
Edwin M. Lee
Eric Mar
(Chair)

SAN MATEO COUNTY
David J. Canepa
Carole Groom
Warren Slocum

SANTA CLARA COUNTY
Cindy Chavez
Liz Kniss
(Vice-Chair)
Jan Pepper
Rod G. Sinks

The City did not evaluate the feasibility of the recommended mitigation measure in the Draft Environmental Impact Report (DEIR) or FEIR, and did not provide an adequate response as required by the California Environmental Quality Act (CEQA). Pursuant to CEQA Guideline Section 15088 (a) "The Lead Agency shall evaluate comments on environmental issues received from persons who reviewed the draft EIR and shall prepare a written response, and (c) The written response shall describe the disposition of significant environmental issues raised (e.g., revisions to the proposed project to mitigate anticipated impacts or objections). In particular, the major environmental issues raised when the Lead Agency's position is at variance with recommendations and objections raised in the comments must be addressed in detail giving reasons why specific comments and suggestions were not accepted. There must be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information will not suffice."

SOLANO COUNTY
James Spering
Osby Davis

SONOMA COUNTY
Teresa Barrett
Shirlee Zane

Jack P. Broadbent
EXECUTIVE OFFICER/APCO

February 8, 2016

A similar mitigation measure to the one recommended by the Air Districts for this Project was recently included in a DEIR and FEIR for a crude by rail project in San Luis Obispo County, which states:

Prior to issuance of the Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan. The plan shall investigate methods for reducing the locomotive emissions through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if the mainline rail emissions of ROG+NOx with the above mitigations still exceed the applicable Air District thresholds, the Applicant shall secure emission reductions in ROG + NOx emissions or contribute to new or existing programs within each applicable Air District, similar to the emission reduction program utilized by the SLOCAPCD, to ensure that the main line rail ROG + NOx emissions do not exceed the Air District thresholds for the life of the project. The Applicant shall provide documentation from each Air District to the San Luis Obispo County Planning and Building Department that emissions reductions have been secured for the life of the project prior to issuance of the Notice to Proceed.

Bay Area Air District staff maintains that the offsite mitigation measure is feasible for this Project to implement and therefore recommends that the City require the Project proponents to mitigate the air quality impacts associated with this Project within each air basin to the maximum extent feasible. Bay Area Air District staff is prepared to work with the City of Benicia to develop and implement a successful offsite mitigation program to lessen the air quality impacts of this project.

In addition, Bay Area Air District staff commented on the proposed Project on September 14, 2014 and October 28, 2015. Air District staff identified a number of issues related to the cumulative air quality impact analysis and the health risk analysis in the DEIR and the RDEIR.

After review of the FEIR, Bay Area Air District staff remain concerned that the cumulative air quality impact and health risk analysis provided in the FEIR do not accurately characterize the potential air pollution emissions or health impacts associated with this Project. The analysis relies in part on an outdated health risk assessment from the 2002 Valero Improvement Project DEIR, underestimates the number of remaining ship calls to the refinery, uses unreasonable locomotive fuel efficiency estimates, omits some sources of emissions, and does not evaluate the potential health impacts from PM2.5 emissions.

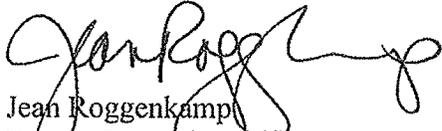
In our comment letters, Bay Area Air District staff requested that the City provide additional analysis in the FEIR to make up for these deficiencies (and others) so that the Project's air quality impacts would be more accurately characterized. The City did not attempt to revise or expand on the Project's cumulative air quality and health risk analyses. Instead, the City claims that the cumulative analysis and health risk assessment reflects the "most recent data available." Air District staff respectively disagrees with this opinion.

Ms. Million
Page 3

February 8, 2016

If you have any questions, please contact Andrea Gordon, Senior Environmental Planner with the Bay Area Air Quality Management District at (415) 749-4940.

Sincerely,



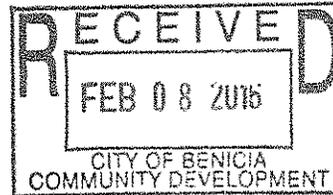
Jean Roggenkamp
Deputy Executive Officer

cc: BAAQMD Director James Spring

February 8, 2015

Via email to

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



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

Dear Ms. Million,

On behalf of the undersigned groups, we submit the following comments on the City of Benicia's Final Environmental Impact Report (Final EIR) for the Valero Benicia Crude-by-Rail Project (the Project). The City released a Draft EIR for public comment in June 2014. After receiving numerous comments pointing out the deficiencies in the Draft EIR, the City recirculated the Revised Draft EIR in August 2015. The City published a Final EIR, which includes responses to comments, on January 5, 2016.

As described below, the EIR does not meet the requirements of the California Environmental Quality Act (CEQA) because it fails to properly analyze, disclose, and mitigate the Project's significant environmental impacts. Furthermore, the Final EIR fails to adequately respond to our prior comments submitted on October 30, 2015 and in the fall of 2014. We highlight the major deficiencies in the Final EIR below. We have also reviewed the staff report for the Planning Commission hearing on the Project and include our response to staff's recommendations in this letter.

Air Quality. In our prior comments, we explained that there is evidence that the Project will increase emissions from the refinery, either because it will increase total throughput or because it will increase the proportion of dirty crudes being refined. The Project also could cause additional transportation-related emissions. In the Final EIR, the City steadfastly maintains that there will be no increase in emissions, but its explanations do not hold water, given that the Project will add an entirely new method for importing crude oil.

First, the City fails to disclose and analyze the Project's effect on the throughput of the refinery, hindering the public's ability to evaluate whether the Project will increase refinery emissions. Indeed, evidence shows that the refinery is not currently operating at its maximum capacity. See Ex. A, Socio-economic Analysis of Proposed Regulation 12, Rule 15 (showing that Valero's recent effective throughput was 114,443 barrels per day);

NATURAL RESOURCES DEFENSE COUNCIL

111 SUTTER STREET | SAN FRANCISCO, CA | 94104 | T 415.875.6100 | F 415.875.6161 | NRDC.ORG

Ex. B (Valero website claiming total throughput capacity of 170,000 barrels per day); DEIR at 3-2 (“The Refinery’s crude oil processing rate is limited to an annual average of 165,000 barrels per day (daily maximum of 180,000 barrels per day).”). The City’s responses to comments assert that any oil imported by rail would be offset by equal decreases in oil imported by ship. But the City does not explain why that is the case, except to say that it is a “project objective.” Final EIR at 3.5-57. Nor does the City make that tradeoff a binding requirement of approval. Accordingly, the City’s description of the Project as “changing” the shipment method of 70,000 barrels per day of oil is inaccurate and misleading. The also City states that if Valero desired to increase the amount of crude oil delivered to the refinery, it could do so now by increasing the amount delivered by ship. Final EIR 3.5-58. Even if true, that is irrelevant to whether *this Project* will cause an increase in refinery emissions. If so, that increase must be disclosed and analyzed under CEQA.

Second, there is no doubt that changes in crude slate can affect emissions, even if there are no changes to the process equipment. Yet the City continues to withhold critical information about the type of crudes the Project will import, incorrectly claiming that the information is confidential business information. To the contrary, the particular crudes proposed to be imported should be made public, and the EIR should evaluate possible changes in air quality based on those changes. The City also continues to claim that blending the crudes into a “narrow” range of weight and sulfur content will avoid any negative air quality effects. Final EIR at 3.5-58. But the EIR fails to explain why the blended range is “narrow”—indeed, the stated range from 20° to 36° API gravity, and from 0.4% to 1.9% sulfur content. Draft EIR at 3-13 (stating range); Draft EIR at 3-7 (showing that the range accounts for nearly all types of crude oil, from light sweet to heavy sour). Furthermore, although the EIR states that the crude imported by rail will be stored in the same tanks currently used to store oil, it fails to analyze whether the different types of crudes imported by rail (e.g., those with higher psi) could safely be stored in those tanks.

Third, the EIR claims there will be reductions in transportation-related air pollution based on reduced ship traffic. But as explained above, there is no requirement that ship traffic actually decrease. It could remain the same if throughput increases. And even if throughput remains the same, the Project’s crude could replace crude currently imported by pipeline. The Final EIR brushes aside this possibility, stating that Valero does not “anticipate” changes in amount of crude received by pipeline as a result of this Project. Final EIR at 3.5-57. However, as we explained in previous comments, it is clear that pipeline sources are diminishing. Finally, even if there were a proportionate decrease in ship traffic, the EIR fails to explain whether the resulting additional capacity at the port will be used by ships for other purposes. For example, will the additional port capacity be used to export refined products internationally? If so, then the supposed “decrease” in ships from the Project is illusory. The EIR must disclose any proposed or expected use of port capacity freed up by this Project.

Environmental Justice. There is ample evidence that the Project would disproportionately affect low-income communities and communities of color. Yet in the response to comments, the City claims that it need not include an environmental justice analysis at all. Final EIR at 3.5-59. To the contrary, state law requires this analysis. *See* Ex. C, Kamala D. Harris, Attorney General, *Environmental Justice at the Local and Regional Level, Legal Background*, May 2012. This analysis should be added to the EIR.

Hazards. The City fails entirely to respond to our comments explaining that federal law does not preempt regulation of Valero, which is not a rail carrier. The City continues to claim that any and all mitigation for this Project is preempted (except for the condition that Valero use CPC-1232 tank cars—the City does not explain this inconsistency). To the contrary, there are many legally feasible mitigation measures that the City could impose on Valero. Most notably, the city could require Valero to pay emissions offset credits or reduce the capacity of unloading operations, which, in and of themselves have serious air quality and hazards impacts. Neither of those actions has the effect of managing rail operations as defined under federal law because Valero is not a rail carrier. Nor do they “indirectly” regulate rail, as the City claims; neither of those mitigation measures would prevent Valero from receiving common carrier services more generally.

Water Quality. In our comments on the Revised Draft EIR, we pointed out that the Project would have significant impacts on water bodies during routine operations. In response, the City claims these impacts were analyzed, but points to a section of the Draft EIR that says nothing about these impacts. Final EIR at 3.5-61. The City’s analysis of the Project’s impacts to water during routine operations remains insufficient. And as explained above, there are many mitigation measures that can be imposed on Valero, such as emissions offsets, oil spill planning requirements, and financial contributions to water protection programs.

The City also asserts that it was not required to consider the potential impact of climate change-induced sea level rise on the Project, citing to *Ballona Wetlands Land Trust v. City of Los Angeles*, 201 Cal. App. 4th 455 (2011). However, the California Supreme Court recently upheld the validity of Guidelines section 15126.2(a), which requires an EIR to “evaluate any potentially significant impacts of locating development in other areas susceptible to hazardous conditions (e.g., floodplains, coastlines, wildfire risk areas)” to the extent that it involves an analysis of “a project’s potentially significant *exacerbating* effects on existing environmental hazards.” *California Bldg. Industry Assn. v. Bay Area Air Quality Mgmt. Dist.*, 62 Cal.4th 369, 388-89 (2015). As the California Supreme Court found, the *Ballona* court did not consider these requirements (*id.* at 392), and thus it provides no authority for the City’s failure to analyze such impacts here.

Biological Resources. The City’s responses to our comments on biological impacts are similarly inadequate. Again, the City claims to have analyzed the impacts on

biological resources during routine operations, *see* Final EIR at 3.5-63, but that analysis, which is merely snippets pulled together from various sections, is inadequate under CEQA.

Additional Impacts Not Analyzed. We recently learned that the City is considering an application for the development of a 527-acre property between East Second Street and Lake Herman Road, commonly known as the Seeno Property. See Ex. D, April 20, 2015 Letter from SCO Planning & Engineering; Ex. E, September 3, 2015 email attaching conceptual land use diagram. The proposal includes industrial, commercial, and residential land uses—all adjacent to the refinery and the Project. Given that the City has known about this proposal since at least the spring of 2015, analysis of how the Project may affect any sensitive uses, especially residential uses, and whether any of the Project's impacts will be cumulatively significant in light of the proposed new development, should have been included in the EIR.

Staff report. On January 28, 2016, the City released a staff report recommending that the Planning Commission certify the EIR and approve the use permit for the Project. As we explained above, the EIR fails as an informational document. At the very least, the City must revise the EIR and recirculate it for public comment. However, despite its faults, the EIR does disclose that this Project will have numerous significant and unavoidable environmental impacts, including serious safety and air quality impacts. On that basis alone, the City should deny the permit for this Project.

The staff report claims that the Interstate Commerce Commission Termination Act (ICCTA) preempts the City from mitigating effects in any way tangentially related to rail, even if the mitigation is imposed on Valero. It also claims that the City has no discretion to deny the use permit for the Project based on health and safety risks posed by rail operations.

However, the law is clear that ICCTA preemption applies only to rail carriers. ICCTA's plain language states that federal jurisdiction over rail transportation is limited to "transportation *by rail carriers*." 49 U.S.C. § 10501(b)(1) (emphasis added). "Rail carrier" is defined as a person providing "common carrier railroad transportation for compensation." *Id.* § 10102(5). A long line of Surface Transportation Board orders and judicial decisions have found that "to be subject to the Board's jurisdiction and qualify for Federal preemption under section 10501(b), the activities at issue must be transportation, *and that transportation must be performed by, or under the auspices of, a 'rail carrier.'*" *Town of Babylon and Pinelawn Cemetery – Pet. for Decl. Order*, 2008 WL 275697, at *3 (S.T.B. 2008) (emphasis added); *see also, e.g., Grafton and Upton R.R. Co. v. Town of Milford*, 417 F. Supp. 2d 171, 176 (D. Mass. 2006) ("As this Court reads the relevant statutory language, Congress intended the transportation and related activities undertaken by rail carriers to benefit from federal preemption but did not mean such preemption to extend to activity related to rail transportation undertaken by non-rail

carriers.”); *Hi Tech Trans, L.L.C. v. New Jersey*, 382 F.3d 295, 308-309 (3d Cir. 2004) (waste transloading rail facility operated by a non-rail carrier did not constitute rail transportation and was not governed by ICCTA); *New York & Atlantic Ry. Co.*, 635 F.3d 66, 73 (2nd Cir. 2011) (waste transfer rail facility operated by a non-rail carrier did not constitute rail transportation and was not governed by ICCTA); *Florida E. Coast Ry. Co. v. City of W. Palm Beach*, 266 F.3d 1324, 1332-1336 (11th Cir. 2001) (rail construction materials distribution center operated by a non-rail carrier did not constitute rail transportation and was not governed by ICCTA); *Girard v. Youngstown Belt Rwy.*, 134 Ohio St.3d 79, 90 (Sup. Ct. Ohio 2012) (“the mere fact” that materials are delivered to a facility by rail does not make their receipt “railway transportation” protected from local regulation); *Babylon*, 2008 WL 4377804 (transloading of construction and demolition debris by non-rail-carrier tenant of railway property did not constitute rail transportation and was not governed by the ICCTA); *Milford, Mass.—Petition for Declaratory Order*, STB Finance Docket No. 34444, 2004 WL 1802301 (Aug. 11, 2004) (despite contractual agreement with a rail carrier, the transloading of steel by a non-rail carrier in a manner that was not being offered as part of common-carrier services for the public did not constitute rail transportation and was not governed by ICCTA).

In contrast, the cases the City cites in the staff report involve the regulation of *rail carriers*. *Burlington N. Santa Fe R.R.*, 209 Cal. App. 4th 1513, 1528 (2012) (overturning conviction of Burlington Northern Santa Fe Railroad for blocking public grade crossing); *Town of Atherton v. California High-Speed Rail Auth.*, 228 Cal. App. 4th 314, 330 (2014) (referring to “any form of state or local permitting or preclearance that, by its nature, could be used to deny a *railroad* the ability to conduct some part of its operations or to proceed with activities that the [STB] has authorized”) (emphasis added).

In sum, no law prohibits the City from denying a use permit for this Project. The denial of a use permit for a refinery project proposed by a non-rail carrier simply does not trigger federal preemption. And even if the City were correct that it could not deny the permit on the basis of any impacts related to rail, there are significant impacts having nothing to do with rail that have not been mitigated and are, on their own, enough to warrant denial. Most notably, the Project will cause significant air quality impacts due to changes in refinery emissions, as explained above.

Benicia Municipal Code 17.104.060, prohibits the City from approving a project that will be detrimental “to the public health, safety, or welfare of persons residing or working” near the project, “to properties or improvements in the vicinity,” or “to the general welfare of the city.” For all the reasons stated above and in our prior comments, the Project will harm Benicians, other communities throughout the state, and our climate. The City should decline to certify the EIR and deny the permit for this Project.

Sincerely,

Jackie Prange, Staff Attorney
Natural Resources Defense Council

Roger Lin, Staff Attorney
Communities for a Better Environment

George Torgun, Managing Attorney
San Francisco Baykeeper

Shaye Wolf, Ph.D.,
Climate Science Director
Center for Biological Diversity

Elly Benson, Associate Attorney
Sierra Club

Janet Johnson
Richmond Progressive Alliance

Ethan Buckner
ForestEthics

David McCoard
Sierra Club SF Bay Chapter

Colin Miller
Bay Localize

Denny Larson
Community Science Institute

Katherine Black
Benicians for a Safe and Healthy
Community

Nancy Rieser
Crockett-Rodeo United to Defend the
Environment

Tamhas Griffith
Martinez Environmental Group

Tamhas Griffith
Bay Area Refinery Corridor Coalition

Steve Nadel
Sunflower Alliance

Kalli Graham
Pittsburg Defense Council

Richard Gray
350 Bay Area and 350 Marin

Bradley Angel
Greenaction for Health and Environmental
Justice

Christine Coody
Rodeo Citizens Association

Sandy Saeturn
Asian Pacific Environmental Network

EXHIBIT A

PLANNING FOR SUSTAINABLE PROSPERITY

SOCIO-ECONOMIC ANALYSIS OF PROPOSED REGULATION 12, RULE 15: PETROLEUM REFINING EMISSIONS TRACKING AND REGULATION 12, RULE 16: PETROLEUM REFINING EMISSIONS LIMITS AND RISK THRESHOLDS

Prepared for:

**Bay Area Air Quality
Management District**

Prepared by:



APPLIED DEVELOPMENT ECONOMICS, INC.

255 Ygnacio Valley Road, #200 ■ Walnut Creek, CA 94596 ■ 925.934.8712

99 Pacific Street, #200-J, Monterey, CA 93940 ■ 831.324.4896

2320 Broadway, Sacramento, CA 95818 ■ 916.454.1537

www.adeusa.com



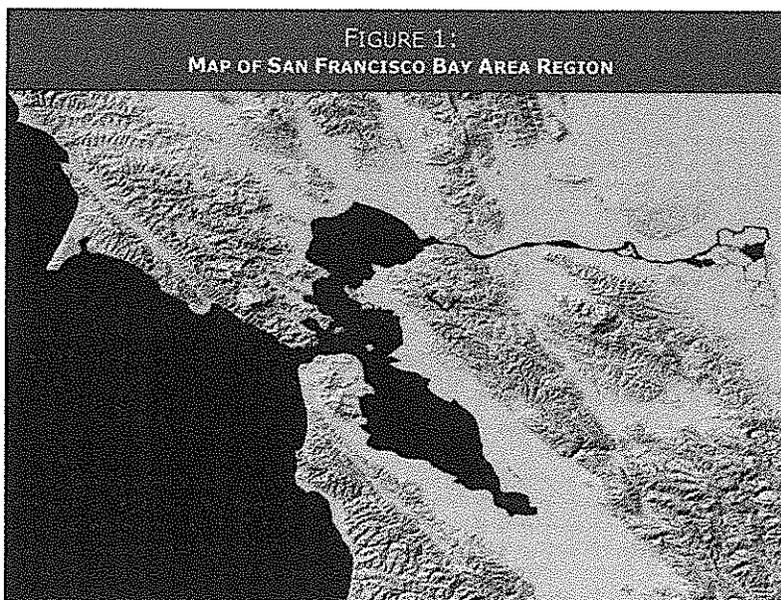
TABLE OF CONTENTS

1.	Introduction	1
2.	Background of BAAQMD's Rule 12-15 and Rule 12-16	2
3.	Methodology	7
4.	Regional Demographic and Economic Trends	8
5.	Socioeconomic Impact Analysis	12
6.	Appendix A: List of EDD-LMID Bay Area "Refineries"	14

1. INTRODUCTION

The Bay Area Air Quality Management District ("BAAQMD" or the "Air District") seeks to adopt Regulation 12, Rule 15 ("Petroleum Refining Emissions Tracking" or "Regulation 12-15") and Regulation 12, Rule 16 ("Petroleum Refining Emission Limits and Risk Thresholds" or "Regulation 12-16"). The purpose of Regulation 12-15 is to track air emissions and crude oil quality characteristics from petroleum refineries over time, to complete health risk assessments (HRAs) for each Bay Area petroleum refinery, and to establish monitoring systems to provide detailed air quality data along refinery boundaries and in nearby communities. The purpose of Regulation 12-16 is to establish action levels for public notification and risk reduction based on the results of the HRAs required in Regulation 12-15, and also to require demonstrations of local compliance with national ambient air quality standards (NAAQS) for SO₂ and PM_{2.5}, which are the criteria pollutants with the greatest potential for local health impacts. After this introduction, this report discusses in greater detail the elements of Regulation 12-15 and Regulation 12-16 with cost impacts to Bay Area refineries (Section Two). A complete discussion of all of the elements of these rules is included in the Final Staff Report. After the discussion of cost impacts, the report describes the socioeconomic impact analysis methodology and data sources (Section Three). The report describes population and economic trends in the nine-county San Francisco Bay Area (Section Four), which serves as a backdrop against which the Air District is contemplating adopting Regulations 12-15 and 12-16. Finally, the socioeconomic impacts stemming from the proposed regulations are discussed in Section Five.

The report is prepared pursuant to Section 40728.5 of the California Health and Safety Code, which requires an assessment of socioeconomic impacts of proposed air quality rules. The findings in this report can assist Air District staff in understanding the socioeconomic impacts of the proposed requirements, and can assist staff in preparing a refined version of the rule. Figure 1 is a map of the nine-county region that comprises the San Francisco Bay Area Air Basin.



2. BACKGROUND OF BAAQMD'S RULE 12-15 AND RULE 12-16

In general, the Air District regulates stationary sources of air pollution, which includes certain petroleum refineries that would be subject to proposed Regulation 12, Rule 15 ("Regulation 12-15") and Regulation 12, Rule 16 ("Regulation 12-16"). Bay Area refineries are currently subject to over 20 separate air quality rules, many of which focus on specific equipment in place at refineries, as well as different kinds of pollutants emitted by refineries.

In an effort to further improve air quality, the Air District seeks to adopt Regulation 12, Rule 15 and Regulation 12, Rule 16. The purpose of Regulation 12-15 is to track air emissions and crude oil quality characteristics from petroleum refineries over time, to complete health risk assessments (HRAs) for petroleum refineries, and to establish monitoring systems to provide detailed air quality data along refinery boundaries and in nearby communities. The purpose of Regulation 12-16 is to establish action levels for public notification and risk reduction based on the results of the HRAs required in Regulation 12-15, and also to require demonstrations of local compliance with national ambient air quality standards (NAAQS) for SO₂ and PM_{2.5}, which are the criteria pollutants with the greatest potential for local health impacts. The rule covers three classes of regulated air pollutants, including "criteria pollutants", "toxic air contaminants" (TACs), and greenhouse gases (GHGs).¹

The Air District proposed the new rules in light of changes with regard to "crude oil slates" at the five petroleum refineries in the Bay Area. Crude oil slates refers to the characteristics of crude oil such as sulfur content and other things. Some types of crude oil require more energy to refine, which could lead to higher emissions. Other types of crude oil may contain higher levels of contaminants which, if not removed, may find their way into the emissions stream. Some crude oils tend to be more corrosive which, if not properly regulated, could result in an increase in accidents.

Proposed Regulation 12, Rule 15 includes the following steps that will result in costs to the affected petroleum refineries:

- Report on-going **annual emissions inventories** of all regulated air pollutants based on upgraded methods, including emissions from cargo carriers
- Establish a **Petroleum Refinery Emissions Profile (PREP)**, and require that on-going inventories include comparisons with the PREP
- Report on-going **crude oil quality characteristics** with annual emissions inventories (e.g., sulfur, nitrogen content, API gravity, Total Acid Number)

¹Criteria pollutants are air pollutants for which there are ambient air quality standards that set levels of concentrations of pollutants designed to be protective of public health. Examples of criteria pollutants include ozone and particulate matter in the air. TACs refer to up to 200 air pollutant compounds that may have health impacts in terms of exposure though there are not yet any air quality standards. GHG refers to air pollutant compounds that affect global warming and climate change.

- Update refinery-wide **Health Risk Assessments (HRA)** with enhanced emissions inventories and revised OEHHA HRA guidelines
- **Enhance fence line systems and establish community air quality monitoring systems**

Proposed Regulation 12, Rule 16 includes the following steps that will result in costs to the affected petroleum refineries:

- Comply with public notification requirements and risk reduction requirements based on refinery-specific health risk established by HRA required by Regulation 12-15;
- Comply with NAAQS compliance demonstration for SO₂ and PM_{2.5}.

The analysis of the socioeconomic impacts of new Regulations 12-15 and 12-16 in Section Five are based on the costs in Tables 1 and 2. The basis for these costs is provided after the tables.

Table 1 - Regulation 12, Rule 15 Costs		
Section	Requirement	Cost (per refinery)
12-15-401	Annual Petroleum Refinery Emissions Inventory (beginning with year 2015 data)	\$90,000 / year
	Monthly Crude Slate Report (beginning with year 2015 data)	
12-15-402	Petroleum Refinery Emissions Profile Report (one-time submittal)	
12-15-413	Provide Monthly Crude Slate Reports for 2012, 2013 & 2014 (one-time submittal)	
12-15-405	HRA Modeling Protocol and HRA (one-time submittals)	\$250,000 (one-time)
12-15-407	Fenceline and Community Air Monitoring Plans (one time submittal)	\$250,000 (one-time)
12-15-412	Provide available energy utilization data	Not significant
12-15-501	Community Air Monitoring System (construction and operation)	\$6,000,000 (one-time construction)
12-15-502	Fenceline Air Monitoring System (construction and operation)	\$125,000 / year (maintenance & operation)

12-15-401, 402, 413

These sections require one-time submittals related to the refinery inventory and crude slate, as well as ongoing (monthly crude slate reports and annual inventories) are assumed to constitute one-half of a full-time employee (FTE) with a resulting annualized cost of \$90,000 at each of the Bay Area refineries.

12-15-405

This section requires a one-time protocol submittal for the required Health Risk Assessment (HRA) and submittal of the HRA itself. These documents are expected to be prepared by an environmental consulting firm at a cost of no more than \$250,000 at each of the Bay Area refineries. Air District staff

has contracted this type of work in the past and are familiar with the resource requirements and cost of this type of project. Although there is a provision for a refinery to be required to submit additional updated HRAs in the future, no additional cost is attributed to this provision because it is not clear that this provision will ever be used.

12-15-407

The one-time fenceline and community monitoring plans are expected to be prepared by an environmental consulting firm at a cost of no more than \$250,000 at each of the Bay Area refineries. Air District staff is familiar with the required elements of type of document and the resources required to complete them.

12-15-412

The energy utilization data required to be provided by each refinery is data that has already been prepared for the refineries' own use. Therefore, no significant cost is associated with the submittal of this data.

12-15-501 and 502

The draft Air Monitoring Guidelines prepared as a companion document to Rule 12-15 suggest that 2 permanent fenceline monitors (upwind and downwind of the refinery) and 1 to 3 permanent community monitors (depending on meteorological conditions and the location of receptors) will be required. In addition, temporary monitors will probably be necessary to establish pollutant gradients to allow siting of community monitors. Total capital cost, including site development, infrastructure development (electricity and communications) and construction is not expected to exceed \$6,000,000 per refinery. Assuming \$25,000 per year for maintenance and operation at each monitor, and 5 monitors per refinery, the total annual cost is not expected to exceed \$125,000 per year per refinery. Air District staff have designed, constructed and operated similar monitoring facilities and are familiar with these costs.

Section	Requirement	Cost (per refinery)
12-16-301 and 302	Risk Reduction Audit and Plan (one-time submittal)	\$250,000 (one-time)
12-16-303	Implementation of Risk Reduction Plan.	\$600,000 (one-time) for diesel particulate filter installation on all permitted engines
12-16-304, 305.1 and 406	<u>SO₂ and PM_{2.5} NAAQS compliance through air modeling or air monitoring with no capital costs.</u>	\$250,000 (one-time for preliminary work leading to compliance through Sections 12-16-305.2 and 408)
12-16-304, 305.2 and 408	<u>SO₂ and PM_{2.5} NAAQS compliance through emission reductions (construction and operation of a wet gas scrubber system)</u>	Chevron, Shell, Tesoro, Valero: \$8,200,000 / year each (annualized); Phillips 66: \$3,000,000 / year (annualized)

12-16-301 and 302

These sections establish three increasing health effect thresholds ("notification risk", "significant risk" and "unreasonable risk"). Previous HRAs at the three refineries found that they were all below the "notification risk" threshold. However, the HRA methodology has been revised and the Air District has estimated, based on the new guidelines and the current refinery inventory data, that new HRAs required by Regulation 12-16 will place all five Bay Area refineries in the "significant risk" category, such that each refinery would perform the specified public notification of a significant risk finding, and also prepare a Risk Reduction Audit and Plan (RRAP). Air District staff estimate that public notification and preparation of a RRAP will cost no more than \$250,000 at each of the Bay Area refineries, if performed by an environmental consultant. The Air District regularly performs public notifications related to facility risk and is able to estimate these costs. The Air District also has engaged environmental consulting firms to perform work similar to an HRA and is able to estimate these costs.

12-16-303

After a refinery has prepared a Risk Reduction Audit and Plan (RRAP), it must implement the elements of the RRAP. The RRAP itself will indicate the specific sources and operations within the refinery that contribute most to the refinery health impact on the public, and will allow the refinery operator to choose the most cost-effective approach to risk reduction.

For the purposes of estimating a cost of compliance for this report, it will be assumed that each refinery will be able to reduce significantly the health risk from all stationary sources at the refinery by installing particulate control filters ("diesel particulate filters" or "DPFs") on all diesel engines onsite. DPFs are used here as the example risk reduction measure because: 1) refineries use many diesel engines, 2) most of these are older, uncontrolled engines with high emission rates, 3) the health impact of diesel particulate is very high relative to other toxic compounds, and 4) CARB has established that retrofits of DPFs are generally successful at achieving particulate emission reductions of 85% or more and maximum cost of \$55 per horsepower for a DPF retrofit, with no significant increase in operations or maintenance costs (from the CARB staff report for the 2011 Stationary Diesel Engine ATCM).

To estimate the highest expected cost of DPF implementation, the horsepower of all the permitted diesel engines at Chevron refinery (from 2014 Title V permit), the refinery with the highest crude oil processing rate, was summed and CARB's retrofit cost estimate of \$55 per horsepower was applied:

Total diesel horsepower: 10,914 HP at 22 diesel engines

Total estimated cost: (10,914 HP)(\$55/HP) = \$600,000

12-16-304, 305.1 and 406

Section 304 requires a demonstration of local compliance with SO₂ and PM_{2.5} NAAQS through air modeling or air monitoring (Section 406). To provide a conservative cost estimate, it will be assumed that neither modeling nor monitoring demonstrate compliance and that emission reductions (Section 407) will be required. However, \$250,000 of preliminary work is estimated to occur to inform the finding that emission reductions will be required.

12-16-304, 305.2 and 408

When compliance with the SO₂ and PM_{2.5} NAAQS cannot be established through the air modeling or monitoring in Section 406, emission reductions of these pollutants will be required. For 3 refineries (Chevron, Shell, Tesoro), compliance cost is based on the installation of a wet scrubber system with an annualized cost of \$8.2 million on FCCU exhausts to address both SO₂ and PM_{2.5} emissions. Valero Refinery has already installed a wet scrubbing system on their combined FCCU and Fluid Coker exhaust stack that has resulted in significant reductions of SO₂ and PM_{2.5}. Valero therefore does not have the compliance option of installing a wet scrubber. But given that it has already achieved significant SO₂ and PM_{2.5} emission reductions, the further cost of control is expected to be bounded by the same wet scrubber cost applied to the other refineries. Phillips 66 does not operate an FCCU and therefore does not have a single very large source of PM_{2.5} emissions. To significantly reduce SO₂ emissions, Phillips 66 could install a hydrotreating system to reduce the sulfur content of the refinery fuel gas that is burned throughout the refinery. District staff have estimated such a system to have an annualized cost of \$3 million.

All costs are summarized in Table 7 of Section 5, with costs shown above as occurring one-time converted to annualized costs by applying a capital recovery factor of 0.14 to the one-time cost, as discussed in Table 7.

3. METHODOLOGY

Applied Development Economics (ADE) began this analysis by preparing a statistical description of the industry groups of which the affected sources are a part, analyzing data on the number of establishments, jobs, and payroll. We also estimated sales generated by impacted industries, as well as net profits for each affected industry.

This report relies heavily on the most current data available from a variety of sources, particularly the State of California's Employment Development Department (EDD) Labor Market Information Division. In addition, this report relies on data from the State of California's Energy Commission (CEC), particularly with respect to measuring throughput capacity of the five refineries subject to these new regulations. From the CEC, we also obtained information on retail and wholesale prices of gasoline and other refinery products, as well as industry-specific profitability ratios.

With the above information, ADE was able to estimate net after tax profit ratios for sources affected by the proposed new regulations. ADE calculated ratios of profit per dollar of revenue for affected industries. The result of the socioeconomic analysis shows what proportion of profits the compliance costs represent. Based on assumed thresholds of significance, ADE discusses in the report whether the affected sources are likely to reduce jobs as a means of recouping the cost of compliance or as a result of reducing business operations. To the extent that such job losses appear likely, the indirect multiplier effects of the jobs losses are estimated using a regional IMPLAN input-output model. In some instances, particularly where consumers are the ultimately end-users of goods and services provided by the affected sources, we also analyzed whether costs could be passed to households in the region.

When analyzing the socioeconomic impacts of proposed new rules and amendments, ADE attempts to work closely within the parameters of accepted methodologies discussed in a 1995 California Air Resources Board (ARB) report called "Development of a Methodology to Assess the Economic Impact Required by SB513/AB969" (by Peter Berck, PhD, UC Berkeley Department of Agricultural and Resources Economics, Contract No. 93-314, August, 1995). The author of this report reviewed a methodology to assess the impact that California Environmental Protection Agency proposed regulations would have on the ability of California businesses to compete. The ARB has incorporated the methodologies described in this report in its own assessment of socioeconomic impacts of rules generated by the ARB. One methodology relates to determining a level above or below which a rule and its associated costs is deemed to have significant impacts. When analyzing the degree to which its rules are significant or insignificant, the ARB employs a threshold of significance that ADE follows. Berck reviewed the threshold in his analysis and wrote, "The Air Resources Board's (ARB) use of a 10 percent change in [Return on Equity] ROE (i.e. a change in ROE from 10 percent to a ROE of 9 percent) as a threshold for a finding of no significant, adverse impact on either competitiveness or jobs seems reasonable or even conservative."

4. REGIONAL DEMOGRAPHIC AND ECONOMIC TRENDS

This section of the report tracks economic and demographic contexts within which the Air District is contemplating new Regulations 12-15 and 12-16. Table 3 tracks population growth in the nine-county San Francisco Bay Area between 2003 and 2013, including data for the year 2008. Between 2003 and 2008, the region grew by approximately 1 percent a year. Between 2008 and 2013, the region grew annually at a much slower rate of 0.1 percent per year. Overall, there are 7,420,453 people in the region. At 1,868,558, Santa Clara County has the most people, while Napa has the least, at 139,255.

**TABLE 3:
REGIONAL DEMOGRAPHIC TRENDS: 2003-2013
POPULATION GROWTH: SAN FRANCISCO BAY AREA**

	Population			Annual Percent Change		
	2003	2008	2013	03 - 08	08 - 13	03 - 13
California	36,199,342	38,292,687	38,340,074	1.1%	0.0%	0.6%
Bay Area	7,025,575	7,375,678	7,420,453	1.0%	0.1%	0.5%
Alameda County	1,495,162	1,556,657	1,573,254	0.8%	0.2%	0.5%
Contra Costa County	1,005,590	1,060,435	1,087,008	1.1%	0.5%	0.8%
Marin County	250,793	258,618	255,846	0.6%	-0.2%	0.2%
Napa County	131,228	137,571	139,255	0.9%	0.2%	0.6%
San Francisco County	795,042	845,559	836,620	1.2%	-0.2%	0.5%
San Mateo County	717,921	745,858	745,193	0.8%	0.0%	0.4%
Santa Clara County	1,739,939	1,857,621	1,868,558	1.3%	0.1%	0.7%
Solano County	416,379	426,729	424,233	0.5%	-0.1%	0.2%
Sonoma County	473,521	486,630	490,486	0.5%	0.2%	0.4%

Source: Applied Development Economics, based on total population estimates from The California Department of Finance (E-5 Report)

Data in Table 4 describe the larger economic context within which officials are contemplating new Regulations 12-15 and 12-16. Businesses in the region employ over three million workers, or 3,376,819. The number of private and public sector jobs in the region grew annually by 0.5 percent between 2008 and 2013, after having grown somewhat slightly also between 2003 and 2008 by 0.8 percent a year. Of the 3,376,819 workers, 422,634, or 12.5 percent, are in the public sector, meaning 87.5 percent of all employment is in the private sector. In the state, almost 15 percent of all jobs are in the public sector, with 85 percent in the private sector. Relative to the state as a whole, manufacturing, professional/technical services, and education/health service sectors comprise a greater proportion of the regional employment base. In the region, these sectors comprise 9 percent (manufacturing), 11 percent (professional/technical services), and 15 percent (private education/health services) respectively of total employment. In the state, these sectors comprise 8 percent (manufacturing), 7 percent (professional/technical services), and 14.6 percent (private

education/health services) of the statewide job base. In other words, as a percent of total workforce, the region employs more people in sectors with occupations that presumptively require more skills and are higher-paying. Conversely, typically lower-paying sectors such as agriculture and retail represent a higher share of the overall statewide employment base relative to the Bay Area. In the state, 2.7 percent of all jobs are in agriculture, whereas in the region, the figure is 0.4 percent. Almost 10.5 percent of all jobs in the state are in retail, while in the region, 9.8 percent of all jobs are in retail.

**TABLE 4
SAN FRANCISCO BAY AREA EMPLOYMENT TRENDS BY SECTOR: 2003-2013**

	Private and Public Sector Employment Trends			Employment Distribution		Ann. Percentage Chg: Bay Area	
	2003	2008	2013	Bay Area '13	State '13	03-08	08-13
Private and Public Sectors	3,158,570	3,285,661	3,376,819			0.8%	0.5%
Private Sector Only	2,713,025	2,837,090	2,954,185	87.5%	85.2%	0.9%	0.8%
11 Agriculture, Forestry, Fishing & Hunting	17,710	18,726	13,315	0.4%	2.7%	1.1%	-6.6%
21 Mining	1,744	982	1,876	0.1%	0.2%	-10.9%	13.8%
22 Utilities	4,639	5,497	5,591	0.2%	0.4%	3.5%	0.3%
23 Construction	177,987	178,171	151,847	4.5%	4.1%	0.0%	-3.1%
31-33 Manufacturing	361,948	343,551	308,961	9.1%	8.1%	-1.0%	-2.1%
42 Wholesale Trade	123,213	116,685	121,274	3.6%	4.5%	-1.1%	0.8%
44-45 Retail Trade	335,893	333,952	329,247	9.8%	10.4%	-0.1%	-0.3%
48-49 Transportation and Warehousing	51,995	54,050	68,846	2.0%	2.8%	0.8%	5.0%
51 Information	117,546	114,889	136,214	4.0%	2.9%	-0.5%	3.5%
52 Finance and Insurance	150,174	136,632	118,304	3.5%	3.4%	-1.9%	-2.8%
53 Real Estate and Rental and Leasing	61,693	58,089	55,222	1.6%	1.7%	-1.2%	-1.0%
54 Professional and Technical Services	277,412	344,560	378,755	11.2%	7.4%	4.4%	1.9%
55 Management of Companies and Enterprises	67,779	60,845	69,367	2.1%	1.4%	-2.1%	2.7%
56 Administrative and Waste Services	177,198	185,013	192,231	5.7%	6.4%	0.9%	0.8%
61 Educational Services	63,905	76,185	88,322	2.6%	2.0%	3.6%	3.0%
62 Health Care and Social Assistance	283,259	305,784	417,312	12.4%	12.6%	1.5%	6.4%
71 Arts, Entertainment, and Recreation	48,740	51,438	57,255	1.7%	1.7%	1.1%	2.2%
72 Accommodation and Food Services	252,693	283,578	314,978	9.3%	9.1%	2.3%	2.1%
81 Other Services, Ex. Public Admin	137,155	156,925	114,764	3.4%	3.1%	2.7%	-6.1%
99 UNCLASSIFIED ESTABLISHMENTS	342	11,538	10,504	0.3%	0.4%	102.1%	-1.9%
Public Sector Only (Federal, State and Local)	445,545	448,571	422,634	12.5%	14.8%	0.1%	-1.2%
Public Sector (excluding public educ.)	299,104	302,052	281,196	8.3%	8.2%	0.2%	-1.4%
6111 Public Education: Elementary and Secondary	112,275	105,053	104,467	3.1%	4.7%	-1.3%	-0.1%
6112 Public Education: Junior College	9,850	16,629	11,910	0.4%	0.6%	11.0%	-6.5%
6113 Public Education: Colleges and Universities	24,316	24,837	25,024	0.7%	1.2%	0.4%	0.2%
611z Public Education: Other			37	0.0%	0.0%		

Source: Applied Development Economics, based on California EDD LMID

Table 4 also shows the precipitous decline in employment in industries most-affected by the downturn in the economy that began in late 2007, namely housing. Construction employment declined by 3.1 percent per year between 2008 and 2013, with finance and insurance dropping by 2.8 percent per year, and real estate dropping by 1.0 percent. On a positive note, employment in health care increased annually by 6.4 percent annually between 2008 and 2013, and transportation-warehousing increased annually by five percent.

Proposed Regulations 12-15 and 12-16 affect one particular industry in the Bay Area, namely refineries. While the California EDD LMID reports that there are 23 refineries in the nine-county region, more than likely, this state agency applied a broader definition for refinery operations in the region. Appendix A identifies a number of "refineries" included in the EDD LMID's database; as this shows, many are not full scale refineries but rather are engaged in a variety of petroleum-related operations. Nonetheless, Table 5 shows refinery trends *per* the EDD-LMID. What is striking about Table 5 is the high average pay workers garner in this industry.

**TABLE 5
SF BAY AREA EDD-LMID REFINERY TRENDS, 1999-2009**

	2003	2008	2013	03-08 CAGR	08-13 CAGR
Establishments	35	23	23	-8.05%	0.00%
Employment	6,738	7,816	5,323	3.01%	-7.39%
Payroll	\$768,112,469	\$1,326,728,738	\$986,117,494	11.55%	-5.76%
Average Pay	\$114,006	\$169,756	\$185,250	8.29%	1.76%

Source: Applied Development Economics, Inc., based on California EDD LMID

Table 6 identifies the businesses in the Bay Area that are full-scale refineries. The list comes from the CEC, which also included each refinery's throughput capacity. Of the five operating refineries in the region, Chevron is the largest, with the capacity to refine 245,271 42-gallon barrels of crude oil per day. At 78,400, Phillips 66 has the lowest throughput capacity.

**TABLE 6
BAY AREA REFINERIES (CALIFORNIA ENERGY COMMISSION) AND CRUDE OIL CAPACITY**

Refinery	Barrels Per Day
Chevron U.S.A. Inc., Richmond Refinery	245,271
Tesoro Refining & Marketing Company, Golden Eagle (Avon/Rodeo) Refinery	166,000
Shell Oil Products US, Martinez Refinery	156,400
Valero Benicia Refinery	132,000
Phillips 66, Rodeo San Francisco Refinery	78,400

Source: Applied Development Economics, Inc., based on California Energy Commission

5. SOCIOECONOMIC IMPACT ANALYSIS

This section of the report analyzes socioeconomic impacts stemming from new Regulations 12-15 and 12-16. If the proposed new regulations are adopted, the District estimates that the five impacted refineries would incur total annualized costs ranging from \$4.3 million to \$9.5 million for ten years, the period over which costs associated with capital equipment would be amortized. After the amortization period, ongoing costs of \$215,000 per year per refinery would continue for additional inventories, reports and operation and maintenance of air monitoring systems.

The five affected sources' combined throughput capacity is approximately 674,582 42-gallon barrels per day, which takes into consideration periods when refineries may be off-line. While the affected sources refine 674,582 barrels of crude oil per day, they generate an estimated 693,044 gallons of refined products a day. Assuming a 87 percent utilization rate, and further estimating the price of refined product at \$120 per barrel², we estimate the affected refineries generate \$30.3 billion in revenues a year, from which is generated \$2.1 billion in after-tax net profits. When comparing these figures with the annualized costs stemming from the proposed new regulations, we obtain cost-to-net profit ratio ranging from 1.5 percent to 2.7 percent. **As a result, impacts are less than significant.** Moreover, because this establishment is not a small business, small businesses are not disproportionately impacted by the proposed regulations.

² \$119.80 per barrel of gasoline =
 $((436,600 * \$124.26)_{\text{GASOLINE}} + (124,748 * \$112.35)_{\text{JET FUEL}} + (131,748 * \$112.35)_{\text{KEROSENE, OTHERS}}) / (693,044)_{\text{TOTAL REFINED PRODUCTS}}$

TABLE 7
SOCIOECONOMIC IMPACT ANALYSIS: PROPOSED NEW RULES REGULATION 12, RULE 15 & REGULATION 12, RULE 16

	All Sources	Chevron	Tesoro	Shell	Valero	Phillips 66
Effective Barrels of Crude Per Day	674,582	212,648	143,921	135,598	114,443	67,972
Estimated Revenues	\$30.3 billion	\$9.6 billion	\$6.5 billion	\$6.1 billion	\$5.1 billion	\$3.1 billion
Estimated Net Profits	\$2.1 billion	\$653 million	\$442 million	\$416 million	\$351 million	\$208 million
Annual Costs for Regulations 12-15, 12-16 with one-time costs annualized by applying a capital recovery factor (CRF) factor of 0.14. This CRF is derived using BAAQMD's cost-effectiveness methodology in the BACT-TBACT Workbook and assuming an interest rate of 6% and "project horizon" of 10 years.						
Reg 12-15-401, 402, 413, 405: Inventories and Crude Reports (Initial & Annual)	\$450,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000
Reg 12-15-405: HRA Protocol and HRA Preparation (annualized)	\$175,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000
Reg 12-15-407: Fenceline and Community Air Monitoring Plans (annualized)	\$175,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000
Reg 12-15-501 & 502: Fenceline & Community Monitoring Construction (annualized)	\$4,200,000	\$840,000	\$840,000	\$840,000	\$840,000	\$840,000
Reg 12-15-501 & 502: Fenceline & Community Monitoring, Operation & Maintenance	\$625,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000
Reg 12-16-301 and 302: Risk Reduction Audit and Plan Preparation (annualized)	\$175,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000
Reg 12-16-303: Implementation of Risk Reduction Plan (annualized)	\$420,000	\$84,000	\$84,000	\$84,000	\$84,000	\$84,000
Reg 12-16-304, 305.1, 406: Preliminary Modeling or Monitoring (annualized)	\$175,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000
Reg 12-16-304, 305.2, 407: SO ₂ and PM _{2.5} emission reductions (annualized)	\$35,800,000	\$8,200,000	\$8,200,000	\$8,200,000	\$8,200,000	\$3,000,000
Total Annualized Costs	\$42,195,000	\$9,479,000	\$9,479,000	\$9,479,000	\$9,479,000	\$4,279,000
Cost to Net Profits	2.0%	1.5%	2.1%	2.3%	2.7%	2.1%
Significant?	No, in all cases	No, in all cases	No, in all cases	No, in all cases	No, in all cases	No, in all cases

6. APPENDIX A: LIST OF EDD-LMID BAY AREA "REFINERIES"

County	Name of Establishments	City	Number of Workers
Alameda	DASSEL'S PETROLEUM INC	FREMONT	1-4 employees
Alameda	RCA OIL RECOVERY	NEWARK	1-4 employees
Contra Costa	BAY AREA DIABLO PETROLEUM CO	CONCORD	1-4 employees
Contra Costa	CHEVRON CORP	RICHMOND	1-4 employees
Contra Costa	CHEVRON CORP	PACHECO	20-49 employees
Contra Costa	CHEVRON CORPORATION	SAN RAMON	5,000-9,999
Contra Costa	PHILLIPS 66 RODEO REFINERY	RODEO	500-999 employees
Contra Costa	GENERAL PETROLEUM	RICHMOND	10-19 employees
Contra Costa	GOLDEN GATE PETROLEUM	RICHMOND	1-4 employees
Contra Costa	GOLDEN GATE PETROLEUM	RICHMOND	1-4 employees
Contra Costa	GOLDEN GATE PETROLEUM	CONCORD	1-4 employees
Contra Costa	NU STAR	MARTINEZ	20-49 employees
Contra Costa	PITCOCK PETROLEUM INC	PLEASANT HILL	10-19 employees
Contra Costa	SHELL MARTINEZ REFINERY	MARTINEZ	500-999 employees
Contra Costa	TESORO GOLDEN EAGLE REFINERY	PACHECO	500-999 employees
Contra Costa	UOP	DANVILLE	1-4 employees
Marin	GRAND PETROLEUM	SAN RAFAEL	1-4 employees
Marin	GREENLINE INDUSTRIES LLC	LARKSPUR	20-49 employees
San Francisco	DOUBLE AA CORP	SAN FRANCISCO	1-4 employees
San Francisco	R B PETROLEUM SVC	SAN FRANCISCO	5-9 employees
San Francisco	SEAYU ENTERPRISES INC	SAN FRANCISCO	5-9 employees
San Mateo	DOUBLE AA CORP	SOUTH SAN FRANCISCO	5-9 employees
San Mateo	SABEK INC	SOUTH SAN FRANCISCO	5-9 employees
San Mateo	SEAPORT REFINING & ENVRNMNTL	REDWOOD CITY	5-9 employees
Santa Clara	COAST OIL CO LLC	SAN JOSE	20-49 employees
Santa Clara	SHELL OIL PRODUCTS US	SAN JOSE	1-4 employees
Solano	BAY AREA DIABLO PETROLEUM CO	BENICIA	1-4 employees
Solano	CAT TECH INC	DIXON	1-4 employees
Solano	DANVILLE PETROLEUM	VALLEJO	5-9 employees
Solano	GOLDEN GATE PETROLEUM	BENICIA	1-4 employees
Solano	RUBICON OIL	BENICIA	1-4 employees
Solano	TIMEC CO INC	VALLEJO	20-49 employees
Solano	VALERO BENICIA REFINERY	BENICIA	250-499 employees
Solano	VALERO REFINING CO	BENICIA	1-4 employees
Solano	VALERO REFINING CO	BENICIA	1-4 employees
Sonoma	BAY AREA DIABLO PETROLEUM CO	CLOVERDALE	1-4 employees
Sonoma	ROYAL PETROLEUM CO INC	PETALUMA	5-9 employees

Source: ADE, Inc., based on California EDD LMID "Employers By Industry" Database

EXHIBIT B



Home | Contact Us | News Room |

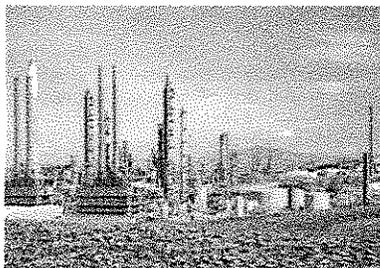
OUR BUSINESS | PRODUCTS | COMMUNITY | ENVIRONMENT & SAFETY

INVESTOR RELATIONS | STORES | BUSINESS PARTNERS | CAREERS @ VALERO

Valero > Our Business > Our Locations > Refineries > Benicia

Benicia

View other refineries...



Overview

Valero acquired the Benicia Refinery in 2000. Built as a grass-roots project in 1968, this plant has undergone significant modifications and upgrades to become what it is today one of the most complex refineries in the United States. Approximately 70 percent of the refinery's product slate is CARB gasoline, California's clean-burning fuel. The refinery also has significant asphalt production capabilities and produces 35 percent of the asphalt supply in northern California. Currently, the refinery processes domestic crude from the San Joaquin Valley in California and the Alaska North Slope, along with foreign sour crudes.

- Commissioned in 1968, with significant upgrades since that time
- Acquired from ExxonMobil in 2000
- Total feedstock throughput capacity of 170,000 barrels per day
- Products including propane, butane, CARB gasoline, ultra-low-sulfur diesel (ULSD), jet fuel, fuel oil, residual oil and asphalt
- Produces 10 percent of the clean-burning California Air Resources Board (CARB) gasoline used in California and 25 percent of the CARB used in the San Francisco Bay Area
- Located on 800 acres on the Carquinez Strait, a tributary of San Francisco Bay
- Strategic position allowing refinery to receive feedstocks by both ship and pipeline
- Products shipped via pipeline, truck, rail, barge and ship
- Employs approximately 480 personnel

Work at this location.

Contact Us

Benicia Refinery
3400 East 2nd Street
Benicia, California 94510-1097

(707) 745-7011

Community Relations

(210) 345-2000

Awards & Honors

- Re-approved as a Cal/OSHA Voluntary Protection Program Star Site in 2014, the agency's highest plant safety designation
- Received three American Fuel & Petrochemical Manufacturers (AFPM) safety awards for 2014, including:
 - Meritorious Safety Performance Award – 0.0 Total Recordable Incidence Rate (TRIR)
 - Award for Safety Achievement – 1 million-plus employee hours without a lost employee workday case involving days away from work (2,583,278)
 - Award for Safety Achievement – 1+ years without a lost workday case involving days away from work (2 years)
- Recognized as a multiple-time winner of the United Way of the Bay Area's Spirit of the Bay Award, the organization's top honor
- Past winner of the Benicia Chamber of Commerce Business of the Year award



Community Activities

- Employees pledged more than \$482,000 to the United Way of the Bay Area for 2015, with company match projected to bring total donations to approximately \$723,000
- Nominated 20 organizations to receive \$345,000 in donations from the Valero Texas Open Benefit for Children in 2014. Recipients included:
 - Bay Area Crisis Nursery
 - Benicia Community Action Council
 - Benicia Education Foundation
 - Boys & Girls Club of El Sobrante
 - Camp Taylor
 - Child Haven
 - Childrens Music and Arts Foundation

- o Childrens Nurturing Project
- o Continentals of Omega Boys & Girls Club
- o Court Appointed Special Advocates CASA
- o Cystic Fibrosis Foundation-NorCal Chapter
- o East Bay College Fund
- o Harbor House
- o Horseplay Therapeutic Riding Center
- o Junior Achievement of Northern California
- o Loma Vista Farm
- o Matt Garcia Foundation
- o Royal Family Kids Camps inc.
- o Take Wings
- o Vacaville Neighborhood Boys & Girls Club
- Employees logged 1,924 volunteer hours for a variety of projects in 2014.
- Current and past activities include:
 - o Collaborating with United Way of the Bay Area to launch the 2-1-1 phone number in Solano County
 - o Supported the Food Bank of Contra Costa and Solano Counties through a variety of events including the Motorcycle Food Run and the Stuff the Truck Campaign
 - o Organizing and staffing the Tutoring Program at Benicia schools
 - o Participating in blood drives benefiting the Blood Centers of the Pacific
 - o "Adopting" families during the holiday, providing them with clothing, shoes, toys, household appliances, furniture, beddings, bikes, strollers, food and gas certificates and holiday trees and ornaments

EXHIBIT C



Environmental Justice at the Local and Regional Level
Legal Background

Cities, counties, and other local governmental entities have an important role to play in ensuring environmental justice for all of California's residents. Under state law:

“[E]nvironmental justice” means the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.

(Gov. Code, § 65040.12, subd. (e).) Fairness in this context means that the *benefits* of a healthy environment should be available to everyone, and the *burdens* of pollution should not be focused on sensitive populations or on communities that already are experiencing its adverse effects.

Many local governments recognize the advantages of environmental justice; these include healthier children, fewer school days lost to illness and asthma, a more productive workforce, and a cleaner and more sustainable environment. Environmental justice cannot be achieved, however, simply by adopting generalized policies and goals. Instead, environmental justice requires an ongoing commitment to identifying existing and potential problems, and to finding and applying solutions, both in approving specific projects and planning for future development.

There are a number of state laws and programs relating to environmental justice. This document explains two sources of environmental justice-related responsibilities for local governments, which are contained in the Government Code and in the California Environmental Quality Act (CEQA).

Government Code

Government Code section 11135, subdivision (a) provides in relevant part:

No person in the State of California shall, on the basis of race, national origin, ethnic group identification, religion, age, sex, sexual orientation, color, or disability, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency, is funded directly by the state, or receives any financial assistance from the state....

While this provision does not include the words “environmental justice,” in certain circumstances, it can require local agencies to undertake the same consideration of fairness in the distribution of environmental benefits and burdens discussed above. Where, for example, a general plan update is funded by or receives financial assistance from the state or a state agency, the local government should take special care to ensure that the plan's goals, objectives, policies and implementation measures (a) foster equal access to a clean environment and public health benefits (such as parks, sidewalks, and public transportation); and (b) do not result in

concentration of polluting activities near communities that fall into the categories defined in Government Code section 11135.¹ In addition, in formulating its public outreach for the general plan update, the local agency should evaluate whether regulations governing equal “opportunity to participate” and requiring “alternative communication services” (e.g., translations) apply. (See Cal. Code Regs., tit. 22, §§ 98101, 98211.)

Government Code section 11136 provides for an administrative hearing by a state agency to decide whether a violation of Government Code section 11135 has occurred. If the state agency determines that the local government has violated the statute, it is required to take action to “curtail” state funding in whole or in part to the local agency. (Gov. Code, § 11137.) In addition, a civil action may be brought in state court to enforce section 11135. (Gov. Code, § 11139.)

California Environmental Quality Act (CEQA)

Under CEQA, “public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects ...” (Pub. Res. Code, § 21002.) CEQA does not use the term “environmental justice.” Rather, CEQA centers on whether a project may have a significant effect on the physical environment. Under CEQA, human beings are an integral part of the “environment.” An agency is required to find that a “project may have a ‘significant effect on the environment’” if, among other things, “[t]he environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly[.]” (Pub. Res. Code, § 21083, subd. (b)(3); see also CEQA Guidelines,² § 15126.2 [noting that a project may cause a significant effect by bringing people to hazards].) As set out below, by following well-established CEQA principles, local governments can help achieve environmental justice.

CEQA’s Purposes

The importance of a healthy environment for all of California’s residents is reflected in CEQA’s purposes. In passing CEQA, the Legislature determined:

- “The maintenance of a quality environment for the people of this state now and in the future is a matter of statewide concern.” (Pub. Res. Code, § 21000, subd. (a).)
- We must “identify any critical thresholds for the health and safety of the people of the state and take all coordinated actions necessary to prevent such thresholds from being reached.” (*Id.* at subd. (d).)

¹ To support a finding that such concentration will not occur, the local government likely will need to identify candidate communities and assess their current burdens.

² The CEQA Guidelines (Cal. Code Regs., tit. 14, §§ 15000, et seq.) are available at <http://ceres.ca.gov/ceqa/>.

- “[M]ajor consideration [must be] given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian.” (*Id.* at subd. (g).)
- We must “[t]ake all action necessary to provide the people of this state with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from excessive noise.” (Pub. Res. Code, § 21001, subd. (b).)

Specific provisions of CEQA and its Guidelines require that local lead agencies consider how the environmental and public health burdens of a project might specially affect certain communities. Several examples follow.

Environmental Setting and Cumulative Impacts

There are a number of different types of projects that have the potential to cause physical impacts to low-income communities and communities of color. One example is a project that will emit pollution. Where a project will cause pollution, the relevant question under CEQA is whether the environmental effect of the pollution is significant. In making this determination, two long-standing CEQA considerations that may relate to environmental justice are relevant – setting and cumulative impacts.

It is well established that “[t]he significance of an activity depends upon the setting.” (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 718 [citing CEQA Guidelines, § 15064, subd. (b)]; see also *id.* at 721; CEQA Guidelines, § 15300.2, subd. (a) [noting that availability of listed CEQA exceptions “are qualified by consideration of where the project is to be located – a project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant.”]) For example, a proposed project’s particulate emissions might not be significant if the project will be located in a sparsely populated area, but may be significant if the project will be located in the air shed of a community whose residents may be particularly sensitive to this type of pollution, or already are experiencing higher-than-average asthma rates. A lead agency therefore should take special care to determine whether the project will expose “sensitive receptors” to pollution (see, e.g., CEQA Guidelines, App. G); if it will, the impacts of that pollution are more likely to be significant.³

In addition, CEQA requires a lead agency to consider whether a project’s effects, while they might appear limited on their own, are “cumulatively considerable” and therefore significant. (Pub. Res. Code, § 21083, subd. (b)(3).) “[C]umulatively considerable” means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.” (*Id.*) This requires a local lead agency to determine whether pollution from a

³ “[A] number of studies have reported increased sensitivity to pollution, for communities with low income levels, low education levels, and other biological and social factors. This combination of multiple pollutants and increased sensitivity in these communities can result in a higher cumulative pollution impact.” Office of Environmental Health Hazard Assessment, *Cumulative Impacts: Building a Scientific Foundation* (Dec. 2010), Exec. Summary, p. ix, available at <http://oehha.ca.gov/ej/cipal23110.html>.

proposed project will have significant effects on any nearby communities, when considered together with any pollution burdens those communities already are bearing, or may bear from probable future projects. Accordingly, the fact that an area already is polluted makes it *more likely* that any additional, unmitigated pollution will be significant. Where there already is a high pollution burden on a community, the “relevant question” is “whether any additional amount” of pollution “should be considered significant in light of the serious nature” of the existing problem. (*Hanford, supra*, 221 Cal.App.3d at 661; see also *Los Angeles Unified School Dist. v. City of Los Angeles* (1997) 58 Cal.App.4th 1019, 1025 [holding that “the relevant issue ... is not the relative amount of traffic noise resulting from the project when compared to existing traffic noise, but whether any additional amount of traffic noise should be considered significant in light of the serious nature of the traffic noise problem already existing around the schools.”])

The Role of Social and Economic Impacts Under CEQA

Although CEQA focuses on impacts to the physical environment, economic and social effects may be relevant in determining significance under CEQA in two ways. (See CEQA Guidelines, §§ 15064, subd. (e), 15131.) First, as the CEQA Guidelines note, social or economic impacts may lead to physical changes to the environment that are significant. (*Id.* at §§ 15064, subd. (e), 15131, subd. (a).) To illustrate, if a proposed development project may cause economic harm to a community’s existing businesses, and if that could in turn “result in business closures and physical deterioration” of that community, then the agency “should consider these problems to the extent that potential is demonstrated to be an indirect environmental effect of the proposed project.” (See *Citizens for Quality Growth v. City of Mt. Shasta* (1988) 198 Cal.App.3d 433, 446.)

Second, the economic and social effects of a physical change to the environment may be considered in determining whether that physical change is significant. (*Id.* at §§ 15064, subd. (e), 15131, subd. (b).) The CEQA Guidelines illustrate: “For example, if the construction of a new freeway or rail line divides an existing community, the construction would be the physical change, but the social effect on the community would be the basis for determining that the effect would be significant.” (*Id.* at § 15131, subd. (b); see also *id.* at § 15382 [“A social or economic change related to a physical change may be considered in determining whether the physical change is significant.”])

Alternatives and Mitigation

CEQA’s “substantive mandate” prohibits agencies from approving projects with significant environmental effects if there are feasible alternatives or mitigation measures that would substantially lessen or avoid those effects. (*Mountain Lion Foundation v. Fish and Game Commission* (1997) 16 Cal.4th 105, 134.) Where a local agency has determined that a project may cause significant impacts to a particular community or sensitive subgroup, the alternative and mitigation analyses should address ways to reduce or eliminate the project’s impacts to that community or subgroup. (See CEQA Guidelines, § 15041, subd. (a) [noting need for “nexus” between required changes and project’s impacts].)

Depending on the circumstances of the project, the local agency may be required to consider alternative project locations (see *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 404) or alternative project designs (see *Citizens of Goleta*

Valley v. Board of Supervisors (1988) 197 Cal.App.3d 1167, 1183) that could reduce or eliminate the effects of the project on the affected community.

The lead agency should discuss and develop mitigation in a process that is accessible to the public and the affected community. “Fundamentally, the development of mitigation measures, as envisioned by CEQA, is not meant to be a bilateral negotiation between a project proponent and the lead agency after project approval; but rather, an open process that also involves other interested agencies and the public.” (*Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 93.) Further, “[m]itigation measures must be fully enforceable through permit conditions, agreements, or other legally binding instruments.” (CEQA Guidelines, § 15126.4, subd. (a)(2).)

As part of the enforcement process, “[i]n order to ensure that the mitigation measures and project revisions identified in the EIR or negative declaration are implemented,” the local agency must also adopt a program for mitigation monitoring or reporting. (CEQA Guidelines, § 15097, subd. (a).) “The purpose of these [monitoring and reporting] requirements is to ensure that feasible mitigation measures will actually be implemented as a condition of development, and not merely adopted and then neglected or disregarded.” (*Federation of Hillside and Canyon Assns. v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1261.) Where a local agency adopts a monitoring or reporting program related to the mitigation of impacts to a particular community or sensitive subgroup, its monitoring and reporting necessarily should focus on data from that community or subgroup.

Transparency in Statements of Overriding Consideration

Under CEQA, a local government is charged with the important task of “determining whether and how a project should be approved,” and must exercise its own best judgment to “balance a variety of public objectives, including economic, environmental, and social factors and in particular the goal of providing a decent home and satisfying living environment for every Californian.” (CEQA Guidelines, § 15021, subd. (d).) A local agency has discretion to approve a project even where, after application of all feasible mitigation, the project will have unavoidable adverse environmental impacts. (*Id.* at § 15093.) When the agency does so, however, it must be clear and transparent about the balance it has struck.

To satisfy CEQA’s public information and informed decision making purposes, in making a statement of overriding considerations, the agency should clearly state not only the “specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits” that, in its view, warrant approval of the project, but also the project’s “unavoidable adverse environmental effects[.]” (*Id.* at subd. (a).) If, for example, the benefits of the project will be enjoyed widely, but the environmental burdens of a project will be felt particularly by the neighboring communities, this should be set out plainly in the statement of overriding considerations.

* * * *

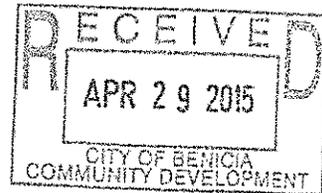
The Attorney General's Office appreciates the leadership role that local governments have played, and will continue to play, in ensuring that environmental justice is achieved for all of California's residents. Additional information about environmental justice may be found on the Attorney General's website at <http://oag.ca.gov/environment>.

EXHIBIT D

WEST COAST HOME BUILDERS, INC.
4021 Port Chicago Highway, Concord, California 94520
Telephone: (925) 671-7711 Fax (925) 687-3366

April 27, 2015

Ms. Amy Million
City of Benicia
Community Development Department
250 East L Street
Benicia, California 94510

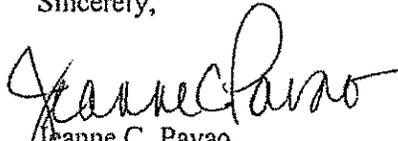


RE: Benicia Business Park Property

Dear Ms. Million:

On behalf of our Company ("Optionor") this letter confirms Robert Schwartz of Featherstone Enterprises, LLC dba Schwartz Land Development Company ("Optionee") has our consent and authority to process a General Plan Amendment application for the above-referenced property.

Sincerely,


Jeanne C. Pavao
Senior Vice President
and General Counsel



140 Litton Drive
Suite 240
Grass Valley, CA 95945
Tel: 530.272.5841
Fax: 530.272.5880
Gen'l Email: info@scopeinc.net
Truckee: 530.582.4043

April 20, 2015

Via UPS Overnight Saver

Amy E. Million
Community Development Department
City of Benicia
250 East L Street
Benicia, CA 94510

Re: *General Plan Amendment Request – Seeno Property*
SCO Job No. 201424

Dear Amy,

Schwartz Land Development Company is requesting to initiate a General Plan Amendment (GPA) for consideration of a Mixed-Use Development project on approximately 527 acres of land located between East 2nd Street and Lake Herman Road, commonly known as the Seeno Property. The land use zoning categories proposed are as follows:

- IL (Limited Industrial) along East 2nd Street;
- IL (Modified Limited Industrial w/ targeted uses) along Industrial Way and within the mid portion of the site;
- CG (General Commercial) at the corner of Lake Herman Road and East 2nd Street;
- RS/RM/RH (residential) - Pockets of residential land uses accessible from Lake Herman Road, ranging from single family to high density multi-family zoning classifications;
- OS (Open Space) to provide significant physical and psychological buffer zones between land use clusters, and to protect natural drainages, steep slopes and environmentally sensitive areas.

The amount of acreage for each land use has not yet been confirmed or proposed. The land use ratio needs to provide economic and fiscal benefits to the City, enhance the economic climate of Benicia Business Park, reduce the potential for conflicting land uses, provide a competitive edge to allow the City to attract high wage industry and jobs and provide a diversified land use mix that encourages private investment. In an effort to determine the type of development concepts

Date: April 17, 2015
To: Amy Million
Re: *General Plan Amendment Request – Seeno Property*

that might address these various interests, we have prepared a “Project Justification Report” (see attached) that outlines what we believe to be prudent market projections and techniques that have been employed in other jurisdictions to accommodate the emerging lifestyles sought by knowledge-based and high wage employees and employers. Using this report, along with this GPA application, we respectfully ask the City to coordinate with Chabin Concepts to provide an economic analysis that tiers off the Benicia Industrial Park Market Study to assess opportunities a mixed-use development approach might provide to the city while still providing economic opportunity for private investment. From that assessment we hope to develop a Specific Plan that incorporates a successful land use mix that reflects the common interests outlined above.

We understand that an economic analysis is typically prepared later in the planning review process after a specific land use map and application have been filed. However, given this sites history, the City’s interest in economic development, and the unique opportunity of a large acreage single ownership parcel within the City’s urban planning boundary, we believe this approach offers the most productive path forward.

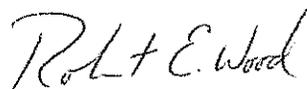
Thank you for your consideration of our request to initiate a General Plan Amendment. Please provide us with the initial application processing fees and a list of additional items that will be needed.

Sincerely,

SCO Planning & Engineering, Inc.



Dale T. Creighton, AICP
Principal



Robert E. Wood, AICP
Senior Planner

Attachments *(as stated herein)*



250 East L Street • Benicia, CA 94510 • (707) 746-4280 • Fax (707) 747-1637

Community Development Department
Planning Division

Staff Use
30-Day Review:

PLANNING APPLICATION FORM

** Applications are only accepted between the hours of 8:30 - 9:30 a.m. and 1:00 - 2:00 p.m. To schedule an appointment outside of these hours, please call 707-746-4280.

1. Type of Application. Check all applicable items below.

- Use Permit (circle: PC, Staff, Day Care, Temp)
Design Review (circle: PC, HPRC, Staff, Minor)
Variance (circle: PC, SFR)
Planned Development
General Plan amendment
Zoning Text amendment
Zone Change/Overlay District
Extension of Approval
Revision to approved project
Other
Check here if project is located within 100 feet of the shoreline...
Check here if there will be any sale/service of alcoholic beverages...

2. Property Information.

Address/location East 2nd Street and Lake Herman Road, commonly known as "The Seeno Property"
APN(s) 080-010-030, 181-260-060, 080-030-060, -070, -140, -160 Parcel area (sq. ft. or ac) ~ 527 acres

3. Project Description. Describe the type of development, use being proposed, exterior alterations, need for variance, etc. Attach additional sheets if necessary.

Mixed-Use development consisting of limited industrial, general commercial and residential land uses (see Project Justification)

4. Contact Information. Check the [] to indicate the primary contact.

Property Owner
Name West Coast Home Builders, Inc. Organization
Mailing address
Phone Fax E-mail

Applicant, if different from owner
Name Robert K. Schwartz Organization Schwartz Land Development Company
Mailing address 114 Raven Hill Road, Orinda, CA 94563
Phone (925) 258-4277 Phone (2) (510) 409-7277
E-mail schwartzltd@yahoo.com Fax (925) 258-5277

Architect/Engineer/Contractor
License # License Type (Arch, Eng, Contr, etc.) Land Planner
Business SCO Planning & Engineering, Inc. Individual's Name Robert E. Wood
Mailing address 140 Litton Drive, Suite 240, Grass Valley, CA 95945
Phone (530) 272-5841 Fax (530) 272-5880 E-mail rob@scopeinc.net

5. Signatures. Applicant and Property Owner must sign on reverse side.

For Staff Use: Appl. #(s) Date Filed
Date Entered Entered By Receipt # Total Fees Paid \$
Fee Breakdown
GP designation Current zoning Historical Dist./designation

5. Signatures. Applicant and Property Owner must sign on page 2. The signature of the architect and/or engineer is also required if drawings are submitted by professional architects and/or engineers.

Signatures of Applicant and Property Owner. Both signature lines must be signed, even if the applicant and property owner are the same.

Applicant

As part of this application the applicant hereby agrees to defend, indemnify and hold harmless the City of Benicia, its Council, boards and commissions, officers, employees, volunteers and agents from any claim, action, or proceeding against the City of Benicia, its Council, boards and commissions, officers, employees, volunteers and agents, to attack, set aside, void or annul an approval of the application or related decision, including environmental documents, or to challenge a denial of the application or related decisions. The applicant's duty to defend, indemnify and hold harmless shall be subject to the City's promptly notifying the applicant of said claim, action or proceeding and the City's cooperation in the applicant's defense of said claims, actions or proceedings. The City of Benicia shall have the right to appear and defend its interests in any action through the City Attorney or outside counsel. The applicant shall not be required to reimburse the City for attorney's fees incurred by the City Attorney or its outside counsel if the City chooses to appear and defend itself in the litigation.

By signing below, I hereby certify that the application I am submitting, including all additional required information, is complete and accurate to the best of my knowledge. I understand that any misstatement or omission of the requested information or of any information subsequently requested may be grounds for rejecting the application, deeming the application incomplete, denying the application, suspending or revoking a permit issued on the basis of these or subsequent representations, or for the seeking of such other and further relief as may seem proper by the City of Benicia.

Applicant: Robert J. Fox; Schwartz Land Development Date: April 20, 2015

Property owner

By signing below, I hereby certify under penalty of perjury, that I am the owner of record of the property described herein and that I consent to the action requested herein. All other owners, lenders or other affected parties on the title to the property have been notified of the filing of this application. Further, I hereby authorize City of Benicia employees and officers to enter upon the subject property, as necessary to inspect the premises and process this application.

In order to facilitate the public review process, the City requires that property owners agree to allow any plans or drawings submitted as part of the application to be copied for members of the public. Property owner(s) hereby agree to allow the City to copy the plans or drawings for the limited purpose of facilitating the public review process.

Property owner: _____ Date: _____

Architect/Engineer

In order to facilitate the public review process, the City requires that architects and engineers agree to allow any plans or drawings submitted as part of the application to be copied for members of the public. Architect/Engineer hereby agree to allow the City to copy the plans or drawings for the limited purpose of facilitating the public review process.

Architect: _____ Date: _____

Engineer: T. P. L. E. Wood Date: 4/20/15

NOTE: In addition to City and other government agency requirements, many development areas, particularly residential areas, are regulated by private agreements and/or private easements. Applicants should check project property descriptions, including title reports, to determine if such private contractual agreements ("CC&Rs") or easement descriptions impact the project proposal.

The City's issuance of a building or development permit does not indicate conformance to these private agreements.

DESIGNATION OF A REPRESENTATIVE FORM

Applicants or property owners who desire to authorize a representative or representatives to act on their behalf in conjunction with this application shall provide the following information:

Name of authorized representative(s): Robert E. Wood, AICP

Address of representative(s): 140 Litton Drive, Suite 240, Grass Valley, CA 95945

Phone number of representative(s): (530) 272-5841

The above named representative(s) is authorized as follows:

File any and all papers in conjunction with the application including the signing of the application. RL (initial)

Speak on behalf of, or representing, the [choose owner and/or applicant and fill in blank] Robert K. Schwartz/Owner at any staff meeting and/or public hearing. RS (initial)

Sign any and all papers on my behalf, with the exception of the application form. RS (initial)

This authorization is valid until revoked in writing and filed with the Community Development Department.

Robert K. Schwartz for Schwartz Canal Development April 20, 2015
Owner/ Applicant (specify) Date



**Community Development Department
Planning Division**

PROJECT SUMMARY SHEET

1. Property Information.

Address(es)/location East 2nd Street and Lake Herman Road APN(s) See Below
 Current use(s) Open Space; APN's: 181-260-060; 080-010-030; 080-030-060, -070, -100, -140, -160
 Property area (sq ft or ac) 527 Acres # of structures 1 # of dwelling units 0
 Zoning IL and CG Gen. Plan Limited Industrial and General Commercial
 Historic Cons. Dist. _____ Historic designation _____

Setbacks and lot coverage

	Required	Existing	Proposed (if different from existing)
Front (ft)	_____	_____	_____
Side 1 (ft)	_____	_____	_____
Side 2 (ft)	_____	_____	_____
Rear (ft)	_____	_____	_____
Lot coverage, total of all structures (%)	_____	_____	_____

Adjacent properties and uses

North <u>Undeveloped</u>	Zoning <u>OS</u>	Gen. Plan <u>Open Space</u>
East <u>Highway 680</u>	Zoning <u>N/A</u>	Gen. Plan <u>N/A</u>
South <u>Benicia Industrial Park (BIP)</u>	Zoning <u>IL</u>	Gen. Plan <u>Limited Industrial</u>
West <u>BIP & Residential Subdivision</u>	Zoning <u>IL, RS, OS</u>	Gen. Plan <u>Ltd. Ind., Res., Open Space</u>

Sitework

Trees over 12" in diameter,
as measured 4 feet above grade Existing _____ To be removed _____
 Estimated volume of cut and fill (cubic yds) Cut _____ Fill _____
 Import/Export Balance (check one) Net import Net export Balance
 Utilities affected _____

2. Primary/Affected Building Information.

	Maximum	Existing	Proposed (if different from existing)
Total building floor area (sq ft)	_____	_____	_____
Floor-to-Area Ratio (FAR) (ratio)	_____	_____	_____
Building Footprint (sq ft)	_____	_____	_____
Height			
Wall	_____	_____	_____
Peak of roof	_____	_____	_____

3. Uses of the Property.

Building Uses (retail, residential, office, warehouse, manufacturing, etc.)

	Description	Floor Area (sq ft)
Use 1	_____	_____
Use 2	_____	_____
Use 3	_____	_____
Use 4	_____	_____

Property Uses (parking lot, landscaping, patio, eating area, storage, garbage, etc.)

	Description	Area (ac or sq ft)
Use 1	_____	_____
Use 2	_____	_____
Use 3	_____	_____
Use 4	_____	_____

Housing Units (if any)

Type	Existing	Proposed (if different from existing)
Single family detached units (#)	_____	_____
Apartment units (#)	_____	_____
Condominium units (#)	_____	_____

Bedrooms	Existing	Proposed (if different from existing)
Studio units (#)	_____	_____
1 or 2 bedroom units (#)	_____	_____
3+ bedroom units (#)	_____	_____

Parking	Required	Existing	Proposed (if different from existing)
Regular spaces (#)	_____	_____	_____
Compact spaces (#)	_____	_____	_____

Operating Information

	Existing	Proposed (if different from existing)
Business name	_____	_____
Days of operation (circle)	S M T W T F S	S M T W T F S
Operating hours	_____	_____
Operating hours, cont.	_____	_____
Employees (#)	_____	_____
Vehicles (#)	_____	_____

	Existing	Proposed (if different from existing)
Outdoor storage or display (sq ft)	_____	_____
Outdoor food service (sq ft)	_____	_____
Live entertainment (sq ft)	_____	_____

For Staff Use:	Appl. #(s) _____	Date Filed _____
-----------------------	------------------	------------------



Community Development Department Planning Division

ENVIRONMENTAL CHECKLIST FORM

1. Property Information.

Address/location East 2nd Street and Lake Herman Road
APN(s) 080-010-030;181-260-060;080-030-060,-070,-100,-140,-160 Parcel area (sq. ft. or ac) ~ 527 Acres
Other permits/approvals required for this project (federal, state, regional, etc.)

2. Project Information.

Indicate which of the following types of impacts may be applicable to or generated by the project. Discuss below all items checked "Yes" or "Maybe". Attach additional sheets if necessary.

Type of Impact	Yes	Maybe	No
a. Change in existing features of any bay, tidelands, beaches, lakes or hills, or substantial alteration of ground cover.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Change in scenic views or vistas from existing residential areas or public lands or roads.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Change in pattern, scale, or character of general area of project.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Creation of significant amounts of solid waste or litter.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Change in dust, ash, smoke, fumes, or odors in vicinity.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Change in bay, lake, stream, or groundwater quality or quantity, or alteration of existing drainage patterns.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Change in existing noise or vibration levels in the vicinity.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h. Site on filled land or slope of 10 percent or more.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Use or disposal of potentially hazardous materials (toxic substances, flammables, explosives, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j. Substantial change in demand for municipal services (police, fire, water, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
k. Substantial increase in fossil fuel consumption (oil, natural gas, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
l. Relationship to a larger project or series of projects.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
m. Construction in a floodplain.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Use this space to discuss items checked "Yes" or "Maybe" (attach additional sheet if necessary)
To be discussed and evaluated during Specific Plan and Environmental Review

3. Applicant's Signature.

By signing below, I hereby certify that the information I am submitting is complete and accurate to the best of my knowledge. I understand that any misstatement or omission of the requested information may cause unforeseen delays in the processing of my application.

Applicant Robert Schy For: Schwartz Land Development Date Filed April 20, 2015

For Staff Use: Appl. #(s) _____ Date Filed _____

EXHIBIT E

Suzanne Thorsen

From: Suzanne Thorsen
Sent: Thursday, September 03, 2015 3:39 PM
To: Jason Riley; Richard Ryan; Rick Knight
Cc: Graham Wadsworth; Joshua Chadwick; Christina Ratcliffe; Mario Giuliani; cyoung (cyoung@beniciaunified.org)
Subject: Northern Gateway - Conceptual Land Use Diagram & Phasing
Attachments: Land Use Plan.pdf; phasing.pdf

Good afternoon,

Attached please find updated preliminary/conceptual information for the Northern Gateway project. This conceptual land use diagram is prepared for the purposes of an economic analysis (presently underway). The Planning Commission will consider the development concept (light industrial, commercial and residential uses) along with the economic analysis at a future public workshop. Following the workshop, the applicant will consider the City's feedback and, if he decides to move forward with the project, begin preparation of a Specific Plan. The Specific Plan will precede additional reviews and agreements, including environmental review and mitigations under the California Environmental Quality Act. In summary, this project is still in the very preliminary stages.

Please let me know if you have any questions or comments related to this information.

Suzanne Thorsen, Senior Planner
City of Benicia
sthorsen@benicia.org
(p): 707.746.4279
(f): 707.747.1637

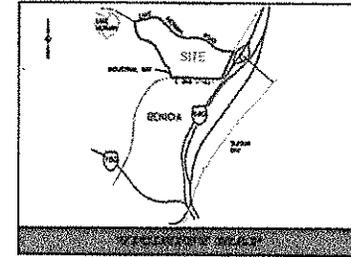
NORTHERN GATEWAY MIXED-USE DEVELOPMENT

SCHWARTZ LAND DEVELOPMENT COMPANY

CONCEPTUAL LAND USE EXHIBIT

AUGUST 25, 2015

Scale: 1"=300'



PROPOSED LAND USE		
ZONING DISTRICT	ACRES	UNITS / S.F.
OS - OPEN SPACE	246.0	-
RS - SINGLE FAMILY RESIDENTIAL	64.1	50 - 50
RM - MEDIUM DENSITY RESIDENTIAL	14.8	80 - 100
RH - HIGH DENSITY RESIDENTIAL	15.5	100 - 200
CC - COMMUNITY COMMERCIAL	2.7	20K SF - 20K SF
IL - LIMITED INDUSTRIAL	18.4	15K SF - 2.5M SF
TOTAL	487.7 AC	



LAND USE MAP

NORTHERN GATEWAY MIXED-USE DEVELOPMENT

SCHEMATIC DEVELOPMENT PLAN

BREA, CALIFORNIA

DATE: _____

SCALE: _____

PROJECT NO: _____

DATE PLOTTED: _____

DESIGNED BY: _____

DRAWN BY: _____

CHECKED BY: _____

APPROVED BY: _____

SCALE: _____

DATE: _____

PROJECT NO: _____

DATE PLOTTED: _____

1 of 2

NORTHERN GATEWAY MIXED-USE DEVELOPMENT

SCHWARTZ LAND DEVELOPMENT COMPANY
PRELIMINARY PHASING PLAN

AUGUST 25, 2015

Scale: 1"=300'



PHASE	DESCRIPTION
PHASE 1	<ul style="list-style-type: none"> Construct 70 to 75 single family homes Construct 80 to 100 townhomes Erect infrastructure for approx. 30 acres of industrial zoned land Improve Heerman Road from E. 2nd Street to Lake Herman Road Improve Heerman Road to E. 2nd Street intersection to increase stacking distance Improve Industrial Way approx. 1400 LF
PHASE 2	<ul style="list-style-type: none"> Construct 200 to 250 single family homes Improve Lake Herman Road from north end of project to Water Treatment Plant (~ 4000 LF)
PHASE 3	<ul style="list-style-type: none"> Construct 80 to 100 single family homes Erect infrastructure for approx. 80 acres of industrial zoned land Improve East 2nd Street from Industrial Way to south end of Phase 3 (~ 2700 LF) Improve Lake Herman Road from Phase 2 (~ 2000 LF)
PHASE 4	<ul style="list-style-type: none"> Construct 150 to 175 single family homes Erect infrastructure for approx. 80 acres of industrial zoned land Improve East 2nd Street from Phase 3 to east end of Phase 4 (~ 3000 LF) Improve Lake Herman Road from Phase 3 (~ 1800 LF)
PHASE 5	<ul style="list-style-type: none"> Construct 200 to 250 apartments with townhomes Erect infrastructure for approx. 25 acres of commercial zoned land Improve East 2nd Street from Phase 4 to Lake Herman intersection (~ 1700 LF) Improve Lake Herman Road from Phase 4 to E. 2nd Street intersection (~ 1000 LF)

Potential drainage easement/detention areas



PHASING PLAN
 NORTHERN GATEWAY MIXED-USE DEVELOPMENT
 SCHEMATIC DEVELOPMENT PLAN

PROJECT NO. 15-001
 SHEET NO. 2 OF 2
 DATE: AUGUST 11, 2015
 DRAWN BY: [REDACTED]
 CHECKED BY: [REDACTED]
 PROJECT ENGINEER: [REDACTED]

S&O
 SCHWARTZ LAND DEVELOPMENT COMPANY
 1100 STATE ST.
 SAN FRANCISCO, CA 94103

2 OF 2

ADAMS BROADWELL JOSEPH & CARDOZO

A PROFESSIONAL CORPORATION

ATTORNEYS AT LAW

601 GATEWAY BOULEVARD, SUITE 1000
SOUTH SAN FRANCISCO, CA 94080-7037

TEL: (650) 589-1660
FAX: (650) 589-5062

rkoss@adamsbroadwell.com

SACRAMENTO OFFICE

520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4721

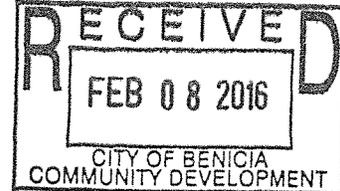
TEL: (916) 444-6201
FAX: (916) 444-6209

DANIEL L. CARDOZO
CHRISTINA M. CARO
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
LAURA E. HORTON
MARC D. JOSEPH
RACHAEL E. KOSS
JAMIE L. MAULDIN
ELLEN L. WEHR

February 8, 2016

BY EMAIL AND HAND DELIVERY

Amy Million, Principal Planner
City of Benicia Community Development Department
250 East L Street
Benicia, CA 94510
Email: amillion@ci.benicia.ca.us



Re: **Comments on the Final 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") and individuals who reside and work in the City of Benicia, to provide comments on the Valero Benicia Crude by Rail Project ("Project") Final Environmental Impact Report ("FEIR") prepared by the City of Benicia ("City"), pursuant to the California Environmental Quality Act ("CEQA").¹

On September 15, 2014, SAFER California provided comments on the original DEIR, identifying many fatal defects in the document. The City then revised and recirculated portions of the document with (1) new analyses of potential impacts that could occur uprail of Roseville, (2) an analysis of the amount of reactive organic gases ("ROG") emitted from railcars in air districts along the northern routes, and (3) supplemental analysis of the potential accidents involving crude trains based on new information that became available after the original DEIR was published. SAFER California provided comments on the Revised DEIR ("RDEIR") on October 30, 2015. Although the RDEIR addressed some of the errors and omissions we identified in our comments on the DEIR, most of the issues remained. The RDEIR still failed to adequately disclose, analyze and mitigate the Project's potentially significant impacts related to air quality, public health and hazards.

¹ Pub. Resources Code, §§ 21000 et seq.

February 8, 2016

Page 2

The FEIR fails to cure the defects we and other commenters identified in the DEIR and RDEIR and dismisses hundreds of pages of expert, technical comments with a few pages of unsupported, conclusory responses. Our September 15, 2014 and October 30, 2015 comments are, by and large, still applicable to the City's CEQA analysis of the Project and we incorporate them herein by reference. The FEIR completely fails to meet the requirements of CEQA. The numerous defects in the City's analyses, set forth in greater detail in these comments, are fatal errors. The City must withdraw the FEIR and prepare a revised EIR which fully complies with CEQA.

We prepared these comments with the assistance of experts Petra Pless, D.Env. and Phyllis Fox, Ph.D., P.E. Dr. Pless' and Dr. Fox's technical comments are attached hereto and are incorporated by reference.

I. INTEREST OF COMMENTERS

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.

These comments are also submitted on behalf of individuals who reside and work in the Project area, including, for example, Mark Sloan, who lives in the City of Benicia.

II. THE CITY'S RESPONSES TO COMMENTS ARE INADEQUATE

CEQA requires lead agencies to evaluate and respond to comments on a draft EIR.² Responses to significant environmental issues raised in comments must be detailed, reasoned, good faith responses.³ Conclusory statements unsupported by specific references to empirical information, scientific authorities or explanatory information are insufficient.⁴ The need for a reasoned, factual response is especially important when comments are made by agencies or experts.⁵ Failure of a lead agency to respond to comments raising significant environmental issues before

² Pub. Resources Code, § 21091(d); 14 Cal. Code Regs. §§ 15088(a), 15132 (hereinafter, "CEQA Guidelines").

³ CEQA Guidelines, § 15088(c); *Towards Responsibility in Planning v. City Council* (1988) 200 Cal.App.3d 671, 683; *San Francisco Ecology Center v. City & County of San Francisco* (1975) 48 Cal.App.3d 584, 596.

⁴ *Id.*; *Cleary v. County of Stanislaus* (1981) 118 Cal.App.3d 348.

⁵ *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Commissioners* (2001) 91 Cal.App.4th 1344, 1367, 1371; *People v. County of Kern* (1976) 62 Cal.App.3d 761, 772).

February 8, 2016

Page 4

approving a project frustrates CEQA's informational purpose and may render the EIR legally insufficient.⁶

Here, the City's responses to our comments on the DEIR and RDEIR are wholly inadequate. Our comments on the DEIR and RDEIR comprise hundreds pages of expert, detailed, technical comments raising significant environmental and public health issues, including (but not limited to):

- Reliance on marine vessel displacement to determine Project emissions;
- Significant impacts in seven air districts from fugitive volatile organic compound emissions from railcars;
- Significant air quality impacts from ROG and nitrogen oxides ("NOx") emissions;
- Cancer risks from toxic air contaminant emissions;
- Significant accident risks for tank cars;
- Significant air quality, public health and hazards impacts from importing Bakken crudes and tar sand crudes; and
- Significant air quality and public health impacts from construction emissions.

The City's responses to these comments in the FEIR are a far cry from the detailed, reasoned, good faith responses required by CEQA.⁷ The City's responses are unsupported, conclusory statements without reference to empirical information, scientific authorities or explanatory information.⁸ For the most part, the City's responses simply state the "analysis" in the DEIR and RDEIR are correct and repeat statements from the DEIR and RDEIR. The City's inadequate responses are particularly troubling since our comments were supported by technical comments from experts with decades of experience analyzing impacts from refinery projects. Thus, the need for a reasoned, factual response is especially important here.⁹ The

⁶ *Flanders Foundation v. City of Carmel-by-the-Sea* (2012) 202 Cal.App.4th 603, 615; *Rural Landowners Association v. City Council* (1983) 143 Cal.App.3d 1013, 1020.

⁷ CEQA Guidelines, § 15088(c); *Towards Responsibility in Planning v. City Council* (1988) 200 Cal.App.3d 671, 683; *San Francisco Ecology Center v. City & County of San Francisco* (1975) 48 Cal.App.3d 584, 596.

⁸ See FEIR, pp. 3.5-149 – 156, Responses J6-1 – J6-46.

⁹ *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Commissioners* (2001) 91 Cal.App.4th 1344, 1367, 1371; *People v. County of Kern* (1976) 62 Cal.App.3d 761, 772.

City's failure to adequately respond to comments raising significant environmental issues violates CEQA and renders the EIR legally insufficient.¹⁰

III. THE CITY'S APPLICATION OF FEDERAL PREEMPTION IS OVERBROAD AND CONFLICTS WITH THE CONSTITUTIONAL EXERCISE OF TRADITIONAL POLICE POWERS

The City concluded in the RDEIR that Project operation would result in a significant air quality impact because “[p]roject-related increases in locomotive exhaust emissions and fugitive emissions from tank cars would result in a net increase of air pollutant emissions within the air districts along the three [rail] routes.”¹¹ However, according to the City, the significant impact is not mitigable because the City:

cannot regulate UPRR's rail operations either directly, by dictating routing or choice of locomotives, or indirectly, by requiring Valero to pay a mitigation fee or purchase emission offsets. Any such attempt would be preempted by federal law, which proscribes any mitigation measures that would have the effect of managing or governing rail operations.¹²

Thus, according to the RDEIR, “mitigation measures requiring the use of ultra low-emitting switch locomotives, use of new Tier 4 interstate line haul locomotives, or compensation to reduce the significance of Project-related locomotive emissions in specific air districts are infeasible.”¹³ Our comments on the RDEIR explained how the City's argument is incorrect for two reasons.

First, we explained that locomotive emissions are released as a result of the Project, which changes the source of Valero's crude oil, which pollutes the ambient air (which is subject to regulation and control by local agencies).¹⁴ Thus, the City is obligated to require Valero (not Union Pacific Railroad (“UPRR”)) to mitigate the resulting impacts.

¹⁰ *Flanders Foundation v. City of Carmel-by-the-Sea* (2012) 202 Cal.App.4th 603, 615; *Rural Landowners Association v. City Council* (1983) 143 Cal.App.3d 1013, 1020.

¹¹ RDEIR, p. 2-30.

¹² *Id.*, p. 2-39.

¹³ *Id.*

¹⁴ Fox Comments on RDEIR, pp. 7-8.

Second, we explained that existing law does not preempt the City from requiring Valero to mitigate the impacts from its Project pursuant to CEQA. The Interstate Commerce Commission Termination Act of 1995 (“ICCTA”) does not preempt State and local regulations of general application with a remote or incidental effect on rail transportation, and which do not unreasonably burden rail transportation.¹⁵ We explained that the Project is intended solely to benefit Valero’s business and refinery operations. The Project entails the installation, operation and maintenance of new equipment, pipelines and associated infrastructure, and new and realigned segments of existing railroad track within the refinery boundary to allow the Applicant to receive crude oil by rail.¹⁶ These Project activities are neither undertaken by UPRR, nor are they integral to UPRR’s interstate operations. This is Valero’s Project, not UPRR’s. Moreover, a permit condition requiring Valero to source feedstock via Tier 4 locomotives does not regulate UPRR’s interstate operations. State regulation of in-state actors, which may impact contractual arrangements in interstate commerce, does not burden interstate commerce.¹⁷ Likewise, a condition requiring Valero to contribute to off-site mitigation fee programs in uprail communities in no way regulates UPRR’s operations.

We further explained that CEQA requires the City to endeavor to find alternative mitigation that would not fall within the zone of preemption. CEQA undoubtedly requires the City to incorporate all feasible mitigation measures into the Project.¹⁸ In comments on the RDEIR, Dr. Fox and Dr. Pless described in detail three categories of feasible mitigation measures that could be used to reduce the Project’s significant NOx and ROG emissions to a less than significant level: (1) actual contemporaneous reductions at facilities under Valero’s control; (2) banked emission reduction credits (“ERCs”); and (3) emission reduction agreements with affected air districts. In Dr. Fox’s and Dr. Pless’ opinions, these feasible measures would fully mitigate the Project’s significant impacts from NOx and ROG emissions.¹⁹

In response, the FEIR merely reiterates the City’s argument that requiring mitigation for Project locomotive emissions, such as requiring Valero to buy offsets,

¹⁵ *Association of American Railroads*, (2010) 622 F.3d 1094, 1097.

¹⁶ RDEIR, p. 2-3.

¹⁷ *Rocky Mountain Farmers Union v. Corey* (2013 9th Cir.)730 F.3d 1070,1103.

¹⁸ See Pub. Resources Code, § 21081(a)(1)-(3); CEQA Guidelines, §§ 15002(a)(3), 15021(a)(2), 15091(a)(1).

¹⁹ Fox Comments on RDEIR, pp. 8-14; Pless Comments on RDEIR, pp. 26-32.

February 8, 2016

Page 7

“would have the effect of managing or governing rail transportation” and the “ICCTA preempts such attempts to regulate railroad operations indirectly.”²⁰ The City relies on *Association of American Railroad v. South Coast Air Quality Management District* (2010) 622 F.3d 1094.²¹ However, *Association of American Railroad* is inapposite and does not support the City’s position.

In *Association of American Railroad*, railroads challenged the air district’s rules limiting air pollution created by idling trains and imposing reporting requirements, backed by threat of penalties, on railyard operators. The court held that the ICCTA preempted the air district’s rules because the rules “have the effect of managing or governing rail transportation.”²² Specifically, “[t]he rules apply exclusively and directly to railroad activity, *requiring the railroads to reduce emissions* and to provide, under threat of penalties, specific reports on their emissions and inventory.”²³

In this case, none of the suggested measures to mitigate the Project’s impacts from locomotive emissions (actual contemporaneous reductions at facilities under Valero’s control, ERC’s and emission reduction agreements with affected air districts) would require the railroad to do anything, or interfere with rail operations at all. Rather, the measures would require *Valero* to offset or reduce Project emissions. Therefore, *Association of American Railroad* is inapposite here.

Moreover, the *Association of American Railroad* court pointed out that “the statutory changes brought about by the ICCTA reflect the focus of legislative attention on removing *direct* economic regulation by the *States*, as opposed to the incidental effects that inhere in the exercise of traditionally local police powers such as zoning.”²⁴ The ICCTA “permit[s] the continued application of laws having a more remote or incidental effect on rail transportation. What matters is the degree to which the challenged regulation burdens rail transportation.”²⁵

²⁰ FEIR, p. 3.5-151, Response J6-11; see also FEIR, p. 3.5-154, Response J6-36 and pp. 2.5-268-269, Response B10-16.

²¹ See FEIR, p. 3.5-151, Response J6-11.

²² *Association of American Railroad v. South Coast Air Quality Management District*, 622 F.3d at 1098.

²³ *Id.* (emphasis added)

²⁴ *Id.* at 1097, quoting *Fla. E. Coast Ry. Co. v. City of W. Palm Beach* (2001) 266 F.3d 1324, 1337 (emphasis in original).

²⁵ *Id.* at 1097-1098, quoting *N.Y. Susquehanna & W. Ry. Corp. v. Jackson* (2007) 500 F.3d 238, 252 (internal quotations omitted).

Here, CEQA requires the City to incorporate all feasible mitigation measures into the Project. Our comments on the RDEIR provided feasible measures to mitigate the Project's impacts from locomotive emissions (ERCs, actual contemporaneous reductions at facilities under Valero's control and emission reduction agreements) that would have zero burden on rail transportation. The measures would simply require Valero to pay for offsets or to reduce emissions at facilities under its control. Thus, *Association of American Railroad* does not support the City's position in the FEIR and requiring Valero to mitigate the Project's impacts from locomotive emissions is not preempted.

Incredibly, in the Planning Commission staff report, City staff takes its preemption application one step further. City staff now claims that federal preemption not only prevents the City from requiring mitigation for the Project's significant impacts from rail operations (i.e., mitigation measures are legally infeasible under CEQA), but preemption also prevents the City from denying the Project application. City staff concludes that the Project's rail operations would result in 11 significant and unavoidable impacts related to air quality, greenhouse gas emissions, hazards and biological resources.²⁶ "All of these impacts identified are due to rail operations and the City is preempted from mitigating those impacts."²⁷ Staff also concludes that "the benefits of the Project do not outweigh the significant and unavoidable impacts on uprail communities."²⁸ However, according to City staff, "[p]otential impacts resulting from operation of the railroad...do not bear on the City's decision making with respect to certification of the EIR or consideration of the Use Permit."²⁹ Thus, staff argues, "[i]f the City were to deny the Project based on impacts from rail operations, and the absence of overriding benefits, the effect would be to preclude UPRR operations that have been authorized by the Surface Transportation Board. Thus, the City is preempted from denying the Project based on rail impacts."³⁰

Staff's argument boils down to this: any proposed project with a rail component must be approved, regardless of the project's environmental and public health and safety impacts from rail operations. In other words, no local agency can deny a project with a rail component unless there are significant, unavoidable impacts from a non-rail component of the project and, therefore, communities must

²⁶ Planning Commission Staff Report, Valero Crude By Rail Project, January 28, 2016, p. 5.

²⁷ *Id.*

²⁸ *Id.*, p. 35.

²⁹ *Id.*, p. 27.

³⁰ *Id.*, pp. 39-40.

endure the slew of environmental and health and safety impacts from rail operations. Staff's application of preemption is contrary to federal courts' narrow application of preemption, impedes the application of state law and impedes local agencies' exercise of traditional police powers to protect the health and safety of their citizenry.

Federal courts (including the Ninth Circuit) have plainly stated that Congress narrowly tailored the ICCTA preemption provision to displace only regulation that has the effect of managing or governing rail transportation, while preserving state laws with "a more remote or incidental effect on rail transportation."³¹ For those laws, Congress intended for states to retain police powers.³² In a preemption analysis, courts begin with the presumption that police powers to protect the health and safety of citizenry are not superseded by federal law unless that is Congress' clear purpose.³³ State laws aimed at pollution prevention and environmental protection (like CEQA) fall within a state's traditional exercise of its police powers.³⁴ The ICCTA's legislative history shows that Congress intended that the "States retain the police powers reserved by the Constitution."³⁵ Accordingly, courts have found that the ICCTA allows the exercise of local police power to protect the health and safety of the local community if the regulation does not unreasonably burden or discriminate against rail operations.³⁶ The Surface Transportation Board itself found that a local agency could hold a railroad to be financially responsible for disposing of waste from construction of a railroad line in a way that did not harm the health or well-being of a local community. This is because such a requirement neither unreasonably burdens nor discriminates against rail operations.³⁷

Exercising its police powers under CEQA, the City can and must deny the Project because the benefits of the Project do not outweigh its environmental harm.

³¹ *Association of American Railroad v. South Coast Air Quality Management District*, 622 F.3d at 1097, quoting *Fla. E. Coast Ry. Co. v. City of W. Palm Beach*, 266 F.3d at 1337.

³² *Id.*

³³ *Rice v. Santa Fe Elevator Corp.* (1914) 331 U.S. 218, 230; *Oxygenated Fuels Assn. v. Davis* (9th Cir. 2003) 331 F.3d 665, 673.

³⁴ *Askew v. American Waterways Operators, Inc.* (1973) 411 U.S. 325, 328-29; *Exxon Mobil Corp. v. U.S. EPA* (9th Cir. 2000) 217 F.3d 1246, 1255.

³⁵ See H.R. Rep. No. 104-311, p. 96, reprinted in 1995 U.S.C.C.A.N. 793, 808.

³⁶ *Norfolk Southern Ry. Co. v. City of Alexandria* (4th Cir. 2010) 608 F.3d 150, 160; *N.Y. Susquehanna & W. Ry. V. Jackson* (3d Cir. 2007) 500 F.3d 238, 254.

³⁷ *Cities of Auburn & Kent, Wa-Petition for Declaratory Order-Burlington N. R.R. Co.-Stampede Pass Line* (S.T.B. July 1, 1997), WL 362017 at 6.

When an EIR shows significant and unmitigated environmental effects, a lead agency has the authority to deny the project.³⁸

[W]hen an EIR shows that a project would cause substantial adverse changes in the environment, the governmental agency *must* respond to the information by one or more of the following methods:

- (1) Changing a proposed project;
- (2) Imposing conditions on the approval of the project;
- (3) Adopting plans or ordinances to control a broader class of projects to avoid the adverse changes;
- (4) Choosing an alternative way of meeting the same need;
- (5) Disapproving the project;
- (6) Finding that changing or altering the project is not feasible;
- (7) Finding that the unavoidable significant environmental damage is acceptable as provided in Section 15093.³⁹

Section 15093 states that an agency must issue a statement of overriding considerations whenever significant effects have not been avoided or substantially lessened, but the benefits of the project outweigh its environmental harm.

In this case, either (1) the mitigation measures are legally feasible (i.e. they are not preempted because they do not have the effect of managing or governing rail operations) and must be required by the City, or (2) the measures are legally infeasible because they are preempted, the impacts are significant and unavoidable, and the City must deny the project since the benefits do not outweigh the risks. The City and Valero can't have it both ways.

Notably, for the Phillips 66 Santa Maria Refinery Rail Spur project (a similar crude-by-rail project), San Luis Obispo County staff recommended that the Planning Commission deny the project because “[t]here are insufficient specific, overriding economic, legal, social, technological, or other benefits of the project that outweigh the significant effects on the environment, as would be required to approve the project pursuant to Public Resources Code section 21081.”⁴⁰ This is

³⁸ CEQA Guidelines, §§ 15002(h)(5), 15042; *Native Sun/Lyon Communities v. City of Escondido* (1993) 15 Cal.App.4th 892.

³⁹ CEQA Guidelines. § 15002(h) (emphasis added).

⁴⁰ **Attachment A:** Planning Commission Staff Report, Development Plan/Coastal Development Permit #DRC2012-00095/Phillips 66 Company, Exhibit C, Findings for Denial, p. 1.

February 8, 2016

Page 11

because implementation of some mitigation measures to lessen the project's impacts from rail operations may be legally infeasible due to federal preemption. However, San Luis Obispo County concludes that federal preemption does not prevent the County from denying the application on CEQA grounds.

It's important to note that San Luis Obispo County's EIR for the Santa Maria Rail Spur project states that not all mitigation measures are preempted. That EIR properly concludes that:

Some mitigation measures may be permissibly imposed despite federal law. For instance, mitigation measures AQ-2a and AQ-3 through AQ-6 would allow the Applicant to mitigate its Project-related air quality impacts by securing on and off-site emission reduction credits through the SLOAPCD. As these measures do not require the action or involvement of UPRR, it is questionable that such a measure would be preempted by federal law.⁴¹

However, because significant, unmitigated impacts would remain despite the imposition of mitigation, Staff recognizes that the County must deny the project because the benefits of the project do not outweigh its environmental harm, a finding required by CEQA.

In short, the City's application of preemption is overbroad and contrary to the exercise of constitutional police powers. The ICCTA does not preempt the City from requiring Valero to mitigate Project impacts from rail operations by, for example, paying for emissions offsets. Further, if the Project would result in significant and avoidable impacts that are not outweighed by the Project's benefits, the ICCTA does not preempt the City from denying the Project; rather, CEQA requires the City to deny the Project.

⁴¹ **Attachment B:** Phillips 66 Santa Maria Rail Spur Final Environmental Impact Report, Responses to Comments, Response ABJC-21.

IV. THE CITY STILL LACKS SUBSTANTIAL EVIDENCE TO SUPPORT ITS CONCLUSIONS IN THE FEIR REGARDING THE PROJECT'S SIGNIFICANT IMPACTS AND STILL FAILS TO INCORPORATE ALL FEASIBLE MITIGATION MEASURES NECESSARY TO REDUCE SUCH IMPACTS TO A LESS THAN SIGNIFICANT LEVEL

Like the DEIR and RDEIR, the FEIR fails to satisfy CEQA's two basic purposes. 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.⁴² The EIR is the "heart" of this requirement.⁴³ 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."⁴⁴

To fulfill this function, the discussion of impacts in an EIR must be detailed, complete, and "reflect a good faith effort at full disclosure."⁴⁵ An adequate EIR must contain facts and analysis, not just an agency's conclusions.⁴⁶ CEQA requires an EIR to disclose all potential direct and indirect, significant environmental impacts of a project.⁴⁷

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.⁴⁸ If an EIR identifies potentially significant impacts, it must then propose and evaluate mitigation measures to minimize these impacts.⁴⁹ CEQA imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation measures.⁵⁰ Without an adequate analysis and

⁴² 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.

⁴³ *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 84.

⁴⁴ *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.

⁴⁵ CEQA Guidelines, § 15151; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 721-722.

⁴⁶ See *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 568.

⁴⁷ Pub. Resources Code § 21100(b)(1); CEQA Guidelines § 15126.2(a).

⁴⁸ 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.

⁴⁹ Pub. Resources Code §§ 21002.1(a), 21100(b)(3).

⁵⁰ *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.⁵¹ 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.⁵² This approach helps “insure the integrity of the process of decision by precluding stubborn problems or serious criticism from being swept under the rug.”⁵³

In this case, the FEIR fails to satisfy the basic purposes of CEQA. Like the DEIR and RDEIR, the FEIR’s conclusions regarding air quality, public health and hazards impacts are not supported by substantial evidence. In preparing the FEIR, 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; (3) failed to incorporate feasible measures to mitigate environmental impacts to a less than significant level; and (4) failed to analyze all feasible alternatives to reduce impacts to a less than significant level. The City must correct these shortcomings and recirculate a revised EIR for public review and comment.

A. The FEIR Still Fails to Identify, Analyze and Mitigate the Air Quality Impacts from Refining Different Types of Crude

We explained in comments on the DEIR that the City failed to adequately describe and analyze a change in crude slate quality which would result in emission increases.⁵⁴ Specifically, heavy sour tar sand crudes and light sweet shale crudes, such as Bakken, which may be imported by the Project, have chemical and physical differences from those crudes that are currently refined at Valero’s refinery. Dr. Fox provided an exhaustive explanation in her comments on the DEIR of why and

⁵¹ CEQA Guidelines, § 15126.4(a)(2).

⁵² *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).

⁵³ *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn.* (1986) 42 Cal.3d 929, 935.

⁵⁴ Comments on DEIR, pp. 5-8.

how crude quality affects emissions.⁵⁵ For example, she explained that toxic air contaminants, like benzene, may be present at much higher concentrations in newly imported crudes.⁵⁶

In response, the FEIR states that newly imported crudes will be blended to the same sulfur and gravity as the currently refined crudes.⁵⁷ But the FEIR does not respond to the issue raised – that, aside from weight and sulfur content, there are physical and chemical differences between crudes that affect emissions.

Dr. Fox’s attached comments, once again, show that chemical and physical differences (other than gravity and sulfur content) in crudes imported by the Project will cause significant impacts that are not analyzed in the FEIR. For heavy sour crudes, these impacts include: (1) significant increases in malodorous sulfur compounds, resulting in significant odor impacts; (2) significant increases in greenhouse gas emissions; (3) significant increases in combustion emissions, contributing to existing violations of ambient air quality standards; (4) significant increases in metals, which end up in the coke and leave the site as coke dust, contributing to existing significant offsite health impacts; and (5) increased likelihood of accidents due to more corrosive nature of heavy sour crudes.⁵⁸ The FEIR completely fails to consider these significant impacts.

For light sweet crudes, such as Bakken, these impacts include: (1) higher ROG and toxic air contaminant (“TAC”) emissions from storage tanks, pumps, compressors, valves and connectors at the refinery and from tanker cars during transport and unloading, contributing to existing violations of ozone ambient air quality standards; (2) significant increases in TAC emissions, such as benzene, resulting in significant health impacts; and (3) increased crude flammability, resulting in significant increases in the potential for and severity of accidents involving train derailments or on-site spills.⁵⁹ The FEIR completely fails to consider these significant impacts.

The Bay Area Air Quality Management District (“BAAQMD”) had similar concerns regarding a change in crude slate. The BAAQMD recommended that “the

⁵⁵ Fox Comments on DEIR, pp. 4-17.

⁵⁶ *Id.*, p. 4.

⁵⁷ FEIR, pp. 2.5-364 – 365, Responses B11-36 – B11-40.

⁵⁸ **Attachment C:** Comments on Final Environmental Impact Report for the Valero Crude by Rail Project, Phyllis Fox, Ph.D., PE, February 8, 2016 (“Fox Comments on FEIR”), pp. 3-4.

⁵⁹ *Id.*, p. 4.

RDEIR address the potential changes in emissions associated with handling lighter crude, which can have higher volatile organic compound (VOC) content than the existing crude being processed; this can lead to increased fugitive emissions during transport and storage which should be evaluated for air quality impacts.”⁶⁰ In response, the FEIR states that:

the blended crude Valero processes is constrained by Valero’s operational restrictions and BAAQMD permits and regulations. These same limitations constrain the individual crudes Valero procures and stores for processing. Therefore, it follows that the Project will not result in an increase in tank emissions...The Project does not propose any changes to its existing permitting levels, except to permit ROG emissions associated with unloading crude oil from railcars.⁶¹

The City’s argument is legally flawed. The California Supreme Court made clear that the CEQA baseline against which to analyze a project’s air quality impacts is actual emissions on the ground, not permitted limits.⁶² CEQA requires the City to determine the difference in emissions from Valero’s existing operations and emissions from Valero’s operations with the Project.

B. The FEIR Still Fails to Identify, Analyze and Mitigate Potentially Significant Air Quality, Public Health and Hazards Impacts from the Southern Crude Import Route

The RDEIR described four routes that may be used to import crude oil for the Project -- three northern routes ((1) Oregon to Roseville, (2) Nevada to Roseville (northern) and (3) Nevada to Roseville (southern)), and one southern route through Sacramento.⁶³ However, the RDEIR only analyzed impacts along the three northern routes; the RDEIR failed to analyze impacts along the southern route. Rather, the RDEIR claimed that “it is less likely that Project trains would use the southern route because they first would have to travel through Sacramento to Roseville, and then back through Sacramento to reach the refinery.”⁶⁴ Our comments on the RDEIR showed that there is no evidence that Project crude trains

⁶⁰ BAAQMD comments on RDEIR, p. 3.

⁶¹ FEIR, p. 3.4-38, Response I12-10.

⁶² *Communities for a Better Environment v. South Coast Air Quality Management District* (2010) 48 Cal.4th 310, 321.

⁶³ RDEIR, pp. 1-2 - 1-4.

⁶⁴ *Id.*, p. 1-5.

would not travel the southern route. On the contrary, we provided evidence that they would. In addition, if it is a permissible route (i.e., not prohibited from being used by Valero), then the City is required to analyze impacts along the route.

UPRR can choose any route at its sole discretion.⁶⁵ The RDEIR itself admitted that “UPRR retains unfettered flexibility in selecting the routes that trains could travel from the crude oil origination sites to Roseville...it is theoretically possible, due to track sharing agreements for Project-related crude to be provided to the Refinery via any of the North American freight railroad tracks...”⁶⁶ Dr. Fox explained that for crudes sourced from Texas, Oklahoma or New Mexico, for example, the southern route would be the shortest and most economic route.⁶⁷

We explained in comments on the RDEIR that there is simply no evidence that Project crude trains would not travel the southern route. Thus, CEQA required the City to analyze the Project’s potentially significant impacts associated with the southern route. The City did not.

Instead, the City argues in the FEIR that, even if trains carried Project crude along the southern route, the impacts would be “substantially similar” to the type and severity of impacts that could result via any of the northern routes. The FEIR’s argument is unsupported.

Substantial evidence shows that some Project impacts would be *more* severe via the southern route and that these more severe impacts remain unanalyzed.⁶⁸ The distance travelled within California on the southern route, from Arizona to Roseville, is approximately 700 miles. The in-California distance on the longest northern route is 297 miles. Therefore, the southern route would be approximately 2.3 times longer than the longest northern route.⁶⁹ Dr. Fox explained that the probability of accidents increases as routes get longer.⁷⁰ In addition, the longer the route, the greater the emissions from locomotives and, consequently, the greater the

⁶⁵ RDEIR, p. 1-5 (“...on the basis of federal preemption, neither the Refinery nor the City has any authority to dictate or limit routes selected by UPRR...”).

⁶⁶ *Id.*, pp. 2-23 – 24 (internal citations omitted).

⁶⁷ Fox Comments on RDEIR, p. 2.

⁶⁸ *Id.*, pp. 2-4.

⁶⁹ *Id.*

⁷⁰ *Id.*

air quality and public health impacts.⁷¹ According to Dr. Fox, the southern route would result in “highly significant increases in both ROG and NO_x, ozone precursors, compared to the shorter northern routes.”⁷² Importantly, more than 90 percent of the southern route passes through areas with extreme to severe ozone nonattainment issues. In fact, the majority of the southern route passes through the heart of the San Joaquin Valley Air Basin, which is in extreme nonattainment with the federal 8-hour ozone standard and has the distinction, along with the South Coast Air Basin, of having the worst ozone nonattainment problem in the United States. The ozone concentrations in “extreme” areas are far above the current 8-hour state and federal standards (70 ppb). While the entire southern route passes through areas that are in nonattainment with both federal and state ozone standards, the northern routes pass through areas with much better air quality.⁷³ Thus, there is no support for the FEIR’s statement that impacts of crude oil transport by rail from the south are substantially similar to the impacts from travel on the northern routes.

C. The FEIR Still Underestimates Project Construction Emissions and Fails to Identify and Mitigate Significant Impacts on Air Quality from Construction Emissions

Project construction would result in engine exhaust emissions from on-site construction equipment, haul trucks and construction worker commuter vehicles. The City concluded in the DEIR and RDEIR that impacts from Project construction-related engine exhaust emissions would be less than significant.⁷⁴ Dr. Pless commented that the City’s conclusion is incorrectly based on a comparison of *average daily* exhaust emissions estimates (in pounds per day) to the BAAQMD quantitative daily significance thresholds recommended in its 2009 *Revised Draft Options and Justification Report*.⁷⁵ Specifically, the City improperly averaged daily construction emissions across all phases of construction, which substantially underestimates construction emissions because it fails to account for daily emissions during overlapping construction phases. Dr. Pless reviewed the FEIR and found that it completely fails to correct these flaws. Dr. Pless maintains that

⁷¹ *Id.*

⁷² *Id.*

⁷³ *Id.*

⁷⁴ DEIR, p. 4.1-15.

⁷⁵ Pless Comments on RDEIR, pp. 4-7.

the City failed to disclose the Project's significant air quality impacts from Project construction NOx emissions.⁷⁶

Dr. Pless also concludes that the FEIR still fails to mitigate the Project's significant air quality impacts from construction emissions to a less than significant level. In comments on the DEIR and RDEIR, Dr. Pless provided a list of feasible mitigation measures from BAAQMD's CEQA Guidelines and recommended by BAAQMD for other projects that would reduce the Project's construction emissions. In the FEIR, the City rejects Dr. Pless' recommended measures, stating that impacts from construction emissions would be less than significant.⁷⁷ In her attached comments, Dr. Pless reiterates that, when the appropriate methodology is applied to calculating construction emissions, Project construction would result in significant, unmitigated air quality impacts from NOx emissions. These short-term emissions can trigger a slew of health problems, including chest pain, coughing, throat irritation and congestion, reduced lung function and permanent lung tissue scarring, and can worsen bronchitis, emphysema and asthma.⁷⁸

Dr. Pless notes that, in her experience, "mitigation measures beyond those required by the EIR are almost always required in CEQA documents for projects with a construction fleet as large as the one specified for the Project."⁷⁹ Dr. Pless then provides a list of feasible measures recommended by BAAQMD for projects with significant construction emissions, including measures recently recommended by BAAQMD to reduce NOx emissions during construction of the WesPac Pittsburg Energy Infrastructure Project.⁸⁰

Substantial evidence shows that the FEIR underestimates construction emissions and fails to identify significant air quality impacts from NOx. As it stands, the Project's air quality and public health impacts from construction emissions remain significant and unmitigated.

⁷⁶ **Attachment D:** Letter from Petra Pless to Rachael Koss re: Review Final Environmental Impact Report for Valero Benicia Crude by Rail Project, February 8, 2016 ("Pless Comments on FEIR"), p. 11.

⁷⁷ FEIR, Response B11-65.

⁷⁸ Pless Comments on FEIR, p. 12.

⁷⁹ *Id.*

⁸⁰ *Id.*, pp. 12-13.

D. The FEIR Still Substantially Underestimates ROG Emissions from Project Operation and Fails to Identify and Mitigate the Project's Significant Impact from ROG Emissions

In her comments on the DEIR, Dr. Fox identified underestimated ROG emissions from numerous sources.⁸¹ Dr. Fox showed that, when all ROG emissions are properly considered, the Project would result in a significant air quality impact.⁸² As summarized below and explained in detail in Dr. Fox's attached comments, the Project's impact from ROG emissions remains significant and unmitigated.

1. The FEIR Still Incorrectly Assumes that the Project Would Reduce ROG Emissions from Marine Vessels

The FEIR, like the DEIR, incorrectly assumes that the Project would reduce current marine vessel ROG emissions by 5.18 ton/year by eliminating 73 vessel trips.⁸³ But, like the RDEIR, the FEIR includes no enforceable condition requiring 73 less vessel trips (let alone one less vessel ship). Rather, the Project description provides that the Project will allow the refinery to replace *up to* 70,000 barrels per day of crude oil currently transported by marine vessel. Yet, the City declares, without any support, that "it is valid to assume that marine vessel GHG and criteria pollutant emissions would be reduced as described in the DEIR."⁸⁴ Quite the contrary, the City's own consultant expressed concern that ship deliveries could increase in the future to replace diminishing supplies of crude oil available by pipeline.⁸⁵ Indeed, "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."⁸⁶ Thus, emissions from crude shipped by marine vessels could *increase*.⁸⁷

⁸¹ Fox Comments on DEIR, pp. 19-32.

⁸² *Id.*, p. 19.

⁸³ DEIR, p. 4.1-16; FEIR, Response B10-45 and B11-47.

⁸⁴ FEIR, Response B10-45.

⁸⁵ Valero Responses to: Valero Crude by Rail Project Data Request Number 2, April 2, 2013.

⁸⁶ http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2626/B2626_2010-05_renewal_03.ashx?la=en.

⁸⁷ See also Pless Comments on FEIR, pp. 16-29 re: underestimated NOx impacts from unsupported marine vessel displacement.

2. *The FEIR Still Omits ROG and TAC Emissions from Storage Tanks*

Like the DEIR, the FEIR fails to adequately quantify emissions from the tanks that would store the crude oil delivered by rail, including emissions from tank breathing losses (rim seal losses, withdrawal losses, deck fitting losses and deck seam losses), and roof landing, degassing and cleaning losses.

Dr. Fox explains that the Project could import light crudes, such as Bakken, Permian or Eagle Ford crudes, which would increase ROG emissions from the storage tanks. Specifically, “[b]ecause rail-imported crudes will have a higher vapor pressure than baseline crudes stored in these tanks, ROG emissions would increase.”⁸⁸ BAAQMD has similar concerns. BAAQMD recommended “that the RDEIR address the potential changes in emissions associated with handling lighter crude, which can have higher volatile organic compound content than the existing crude being processed; this can lead to increased fugitive emissions during transport and storage which should be evaluated for air quality impacts.”⁸⁹

In response, the City asserts that existing permits and regulations will control these emissions.⁹⁰ Once again, the City’s argument is legally flawed. The CEQA baseline against which to measure the Project’s air quality impacts from Project emissions is the actual emissions on the ground, not permit limits.⁹¹

a. Tank Breathing Losses

In comments on the DEIR, Dr. Fox showed that ROG emissions from tank breathing losses could increase by up to 56 lb/day if light crudes, like Bakken, are stored in the tanks.⁹² Dr. Fox explained 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).⁹³ The DEIR completely failed to disclose these emissions increases and the exceedance of BAAQMD’s CEQA significance

⁸⁸ Fox Comments on FEIR, p. 8.

⁸⁹ FEIR, p. 3.4-36, Comment I12-10.

⁹⁰ *Id.*, p. 3.4-38, Response I12-10.

⁹¹ *Communities for a Better Environment v. South Coast Air Quality Management District*, 48 Cal.4th at 321.

⁹² Fox Comments on DEIR, pp. 21-24.

⁹³ *Id.*

threshold of 54 lb/day. This is a significant impact that was not disclosed in the DEIR or RDEIR.

The FEIR states that the Project “would not increase emissions from storage tanks beyond existing levels...The tanks would not be modified, and would continue to be subject to the same throughput limits and permit conditions.”⁹⁴ The FEIR provides no support for this statement. The FEIR fails to address the fact that vapor pressure of stored crude could increase, increasing ROG emissions, and fails to address Dr. Fox’s calculation which shows a significant impact from an increase in ROG emissions. Therefore, a significant air quality impact from ROG emissions from tank breathing losses remains significant, undisclosed and unmitigated.

b. Roof Landing, Degassing and Cleaning Losses

Dr. Fox also showed that the Project would result in increased ROG and TAC emissions from roof landing losses, inspection losses and flashing losses, which would contribute to the Project’s significant impact from ROG emissions. These emissions were not disclosed or analyzed in the DEIR or RDEIR.

In the FEIR, the City repeats its unsupported response regarding tank breathing losses -- the Project “would not increase emissions from storage tanks beyond existing levels...The tanks would not be modified, and would continue to be subject to the same throughput limits and permit conditions.”⁹⁵ The FEIR provides no support for this statement. The FEIR fails to address the fact that vapor pressure of stored crude could increase, increasing ROG emissions. Thus, the Project’s significant air quality impact from ROG emissions from remains significant, unaddressed and unmitigated. To reduce ROG emissions, Dr. Fox recommends that geodesic domes be installed on all tanks that would store rail-imported crudes.⁹⁶

⁹⁴ FEIR, Response B10-47.

⁹⁵ *Id.*, Response B10-48.

⁹⁶ Fox Comments on FEIR, p. 9.

1. *The FEIR Still 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.⁹⁷ The DEIR failed to disclose any emissions from the unloading process at the Refinery.⁹⁸

The FEIR states that Revised DEIR Table 4.1-5 “includes a line item that shows emissions for rail car unloading.”⁹⁹ Table 4.1-5 contains a line item called “Unloading Rack and Pipeline Fugitive Components.” However, the “unloading rack” emissions are lumped together with pipeline fugitives and supporting calculations are not provided. According to Dr. Fox, the differences between the lump sum and pipeline fugitive components is unrealistically small, only 0.2 ton/yr. Since the City’s analysis is unverifiable and unrealistic for the proposed operations, the City lacks substantial evidence to support its allegation that it disclosed and analyzed emissions from the unloading process.

2. *The FEIR Still Fails to Disclose or Analyze Sump Emissions*

The DEIR stated that the unloading facility includes a liquid spill containment sump with the capacity to contain the contents of at least one tank car.¹⁰⁰ According to Dr. Fox, crude oil that spills into this sump would release vapors including ROG and TAC emissions.¹⁰¹ The DEIR completely failed to disclose these emissions.

The FEIR states, without any support, that these emissions were excluded because they “are associated with accidental spills that cannot be accurately predicted.”¹⁰² However, as Dr. Fox explains, these emissions result from spills and from “predictable drips when the loading racks are connected and disconnected.”¹⁰³ In Dr. Fox’s opinion, “[i]t is not true that they cannot be accurately predicted.”¹⁰⁴ According to Dr. Fox, “[t]hese emissions are routinely included in emission calculations required to secure operating permits for rail terminals” and “[s]tandard

⁹⁷ DEIR, p. ES-3.

⁹⁸ Fox Comments on DEIR, p. 28.

⁹⁹ FEIR, Response B10-51.

¹⁰⁰ DEIR, p. ES-2.

¹⁰¹ Fox Comments on DEIR, p. 29.

¹⁰² FEIR, Response B10-52.

¹⁰³ Fox Comments on FEIR, p. 10.

¹⁰⁴ *Id.*

methods exist for estimating them.”¹⁰⁵ Crude oil spills occur when the unloading rack is connected and disconnected from the rail cars. When the oil evaporates from the ground, ROG is released. Dr. Fox explains that the ROG emissions from these spills “can be calculated from the number of railcars per day, the average volume of spilled oil per disconnect (typically 3.2 mL per disconnect), and the density of crude oil, all of which are known.”¹⁰⁶ Thus, the City must prepare a revised EIR that includes these emissions. The revised EIR should also include controls to minimize spills, such as drybreak connectors.¹⁰⁷

3. *The FEIR Still Fails to Adequately Disclose or Analyze Railcar Fugitive Emissions*

Dr. Fox explained in comments on the DEIR that, because rail cars are not “vapor tight,” they will emit ROG and TACs from their point of origin through unloading.¹⁰⁸ Yet, the DEIR completely failed to include these emissions in its emission calculations and the health risk assessment.

Dr. Fox calculated that 9.3 ton/day of ROG would be emitted within California from Project railcar leaks, which exceeds the ROG significance thresholds of all air districts through which the trains would pass.¹⁰⁹ ROG emissions emitted within the BAAQMD would be 1,555 lb/day, which greatly exceed the BAAQMD daily CEQA significance threshold of 54 lb/day. In addition, 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 [could be emitted] 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.”¹¹⁰ We pointed out in our comments that these emissions greatly exceed the ROG (and HRA) significance thresholds of BAAQMD and other air districts along the rail route. These significant impacts were not disclosed or analyzed in the DEIR.

In response, the FEIR states that fugitive railcar emissions “can be found in Revised DEIR Tables 4.1-12, 4.1-13, and 4.4-14.”¹¹¹ Dr. Fox reviewed the tables and

¹⁰⁵ *Id.*

¹⁰⁶ Fox Comments on FEIR, p. 11.

¹⁰⁷ *Id.*

¹⁰⁸ Fox Comments on DEIR, p. 30.

¹⁰⁹ *Id.*, p. 31.

¹¹⁰ *Id.*

¹¹¹ FEIR, Responses B10-53 and B11-53.

discovered that the calculation method used to determine railcar fugitive emissions for the tables is incorrect.¹¹² Specifically, the method is inapplicable to railcars in transit.¹¹³ According to Dr. Fox, this incorrect calculation method “underestimates these emissions by huge amounts.”¹¹⁴ Thus, significant impacts from fugitive railcar emissions remain undisclosed, unanalyzed and unmitigated in the FEIR.

E. The FEIR Still Underestimates Fugitive Volatile Organic Compound Emissions from Railcars

The DEIR did not include any ROG emissions from rail cars from their point of origin through unloading. In her comments on the DEIR, Dr. Fox estimated that these emissions would be approximately 53 ton/day along the 1,500 mile route from the shipping point to the Terminal.¹¹⁵ In response to Dr. Fox’s comments, the City included a revised emission inventory in the RDEIR which included ROG emissions from rail cars.¹¹⁶ Dr. Fox reviewed the inventory and determined that the RDEIR grossly underestimated the emissions.

First, the calculations were based on emission factors for components in marketing terminals, a stationary source. Dr. Fox explained that these are not representative of components on trains travelling 50 mph.¹¹⁷

Second, the calculations were based on ROG emissions from pressure relief valves using a conventional valve emission factor at a marketing terminal. But, according to Dr. Fox, a conventional valve and a pressure relief valve emit different amounts of ROG.¹¹⁸ Pressure relief valves emit 6 to 75 times more than conventional valves.¹¹⁹

Third, the number of fugitive components on each rail car is underestimated.¹²⁰

¹¹² Fox Comments on FEIR, p. 10.

¹¹³ *Id.*

¹¹⁴ *Id.*

¹¹⁵ Fox Comments on DEIR, Comment II.E.

¹¹⁶ RDEIR, Appx. A.

¹¹⁷ Fox Comments on RDEIR, p. 5.

¹¹⁸ Fox Comments on FEIR, pp. 11-12.

¹¹⁹ *Id.*

¹²⁰ *Id.*, p. 12.

Fourth, the calculations were based on average emission factors rather than screening emission factors. Dr. Fox explains that screening factors are more accurate for railcars because they take the leak rate into account.¹²¹

Fifth, the calculations were based on unit trains arriving loaded with crude oil and leaving empty (i.e., filled with air). However, Dr. Fox explains that “[c]rude oil would be present in the departing rails as deposits on the railcar walls and within the piping and fugitive components and would outgas on the return journey, filling the railcars with crude oil vapors.”¹²²

Sixth, the calculations were based on an incorrect equipment count for the Sacramento Federal Nonattainment Area. The equipment count contains no valves or connectors in light liquid service for departing trains, while all other areas for arriving and departing trains include one light liquid valve and two light liquid connectors per railcar. Dr. Fox is unaware of any reason why railcars exiting the Sacramento Federal Nonattainment Area would have a different number of valves than arriving railcars or railcars passing through all other areas.¹²³

Seventh, the calculations assumed the unit trains would travel at an average speed of 35 mph. According to Dr. Fox, this speed is very high for the terrain that would be traversed via the northern routes that include mountainous areas and urban areas.¹²⁴ Indeed, the UPRR reported a system-wide average train speed for crude shipments of 23 to 26 mph.¹²⁵ Also, in a recent DOT rulemaking, it was assumed that unit trains travel 220 miles per day and make 16 round trips per year. Assuming a 3,000 mile roundtrip, 1 day loading and 1 day unloading, the average speed would be approximately 11 mph on average.¹²⁶ These lower speeds would result in substantially more ROG emissions.¹²⁷

Finally, the component emission factors used for PRVs and connectors significantly underestimate emissions on railcars compared to marketing terminals.¹²⁸

¹²¹ *Id.*

¹²² *Id.*

¹²³ *Id.*, p. 13.

¹²⁴ *Id.*

¹²⁵ *Id.*

¹²⁶ *Id.*, pp. 13-14.

¹²⁷ *Id.*, p. 14.

¹²⁸ *Id.*

Dr. Fox calculated the Project's railcar fugitive ROG emissions after correcting the methodological errors described above. Her comments provide a detailed, supported description of her assumptions and calculations. Dr. Fox found that, for all of the identified rail routes, the railcar fugitive ROG emissions exceed the daily significance thresholds in each and every air district the trains would travel through.¹²⁹ The northern-route trains would also result in fugitive ROG emissions that exceed the annual significance threshold for the Yolo-Solano AQMD.¹³⁰ In addition, ROG emissions would exceed BAAQMD's annual significance threshold.¹³¹ Dr. Fox recommends several measures to mitigate the Project's significant impacts from locomotive ROG emissions. These measures include:

- Emission reduction credits;
- Actual reductions at the Valero Benicia Refinery (including at the refinery, marking terminals, tanker truck fleet and storage tanks);
- Voluntary emission reduction agreements;
- Use of oxidation catalysts on existing heaters and boilers at the Valero Benicia Refinery;
- Use of pressure tank cars, such as the Tesoro DOT-120 design, or require that railcars be operated with an inert gas headspace, such as nitrogen; and
- Use of zero-leak fugitive components at the terminal and between the terminal and storage tanks.¹³²

F. The City's Exclusive Reliance on BAAQMD's Annual Significance Threshold to Assess Operational Emissions is Flawed and the FEIR Still Fails to Identify Significant Impacts on Air Quality in the San Francisco Bay Area Air Basin

Dr. Pless explained that 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).¹³³ BAAQMD's CEQA Guidelines make clear that BAAQMD's intent is that both daily and annual thresholds be used to

¹²⁹ *Id.*, pp. 14-17.

¹³⁰ *Id.*, p. 17.

¹³¹ *Id.*, p. 18.

¹³² *Id.*, pp. 19-20.

¹³³ Pless Comments on DEIR, p. 28.

determine the significance of a project's operational emissions.¹³⁴ 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..."¹³⁵ 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."¹³⁶ Despite this explicit guidance, the DEIR provided emission estimates only on an annual basis. Thus, the DEIR failed to identify the Project's significant short-term impacts from daily emissions.¹³⁷

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. Dr. Pless concluded 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 other air basins affected by transport."¹³⁸ Dr. Pless pointed 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 NOx, ozone precursors, may result in or contribute to existing violations of the federal and state ozone ambient air quality standards."¹³⁹ The DEIR completely failed to disclose, analyze or mitigate this significant impact.

The FEIR also fails to disclose, analyze or mitigate this significant impact. The City argues in the FEIR that "BAAQMD's CEQA thresholds are designed to compare a project's average daily emissions to the CEQA thresholds – not their worst case. Consequently, [Dr. Pless'] impact conclusions are not derived in a manner consistent with applicable District guidance or thresholds."¹⁴⁰ The City is wrong.

¹³⁴ *Id.*

¹³⁵ *Id.*, citing BAAQMD 2012 CEQA Guidelines, p. 4-3, *emphasis* added.

¹³⁶ *Id.*

¹³⁷ *Id.*

¹³⁸ *Id.* at p. 29.

¹³⁹ *Id.*

¹⁴⁰ FEIR, p. 3.5-154, Response J6-35.

CEQA requires the City to analyze all reasonably foreseeable impacts of the Project.¹⁴¹ This analysis must be based on a reasonable worst-case scenario.¹⁴² Further, in her attached comments, Dr. Pless explains that BAAQMD established separate daily significance thresholds and set daily permit limits to protect short-term impacts on air quality.¹⁴³ “Thus, averaging daily marine vessel emissions over an entire year even though the ships that allegedly would be displaced would have come in on only 73 days of the year, i.e., not contemporaneously with daily rail deliveries, does not disclose impacts on air quality on a short term, i.e. daily, basis.”¹⁴⁴

G. The FEIR’s Methodology for Estimating Locomotive Emissions Based on UPRR Fuel Consumption Index is Not Supported and Substantially Underestimates Emissions

Dr. Pless explains in her attached comments that rail operations are typically categorized in switch and line-haul due to different activity patterns and equipment configurations.¹⁴⁵ Line-haul operations are movements over long distances, generally with newer, more powerful locomotives than switch operations that tend to idle less. Switch activities include the assembling and disassembling of trains at railyards, sorting of rail cars and delivery of empty rail cars to terminals. Switch operations involve short-distance movements, significant idling, and often older equipment.¹⁴⁶

Dr. Pless explains that the City estimates locomotive emissions from three types of rail operations: 1) large line haul traveling between the Roseville Railyard and the Refinery in the BAAQMD and within air districts uprail of the Roseville Railyard; 2) small line haul at the Refinery; and 3) switching at the Refinery and the Roseville Railyard. Emission estimates assume two daily train round-trips with 50 tank cars per train (or 1 daily round trip of a 100-tank car train), 365 days per year.¹⁴⁷ Dr. Pless reviewed the City’s methodology and found that it substantially underestimates locomotive emissions within the BAAQMD and the uprail air districts.¹⁴⁸

¹⁴¹ CEQA Guidelines, § 15378.

¹⁴² *Planning and Conservation League v. Castaic Lake Water Agency* (2009) 180 Cal.App.4th 210, 244.

¹⁴³ Pless Comments on FEIR, p. 31.

¹⁴⁴ *Id.*

¹⁴⁵ *Id.*, p. 32.

¹⁴⁶ *Id.*

¹⁴⁷ DEIR, p. 4.1-18.

¹⁴⁸ Pless Comments on FEIR, p. 33.

1. *The City Improperly Used a System-wide Fuel Consumption Index to Estimate Regional and Local Emissions from Line Haul Locomotives*

Dr. Pless explains that a system-wide fuel consumption index “is a very poor indicator to use for estimating project-specific emissions on a regional or local basis based on freight weight because it represents annual nation-wide averages across all types of locomotives and freight and all types of terrain and traffic patterns encountered.”¹⁴⁹ Dr. Pless points to the example of hauling a load of coal across the Great Plains, versus hauling heavy crude tank cars across the rugged mountains of the Sierra Nevada. Clearly, the coal load across flat terrain is a lot more fuel-efficient than a heavy crude haul across the mountains.¹⁵⁰ Dr. Pless notes that a 1992 EPA report “recognizes that railroad operations may vary significantly from the national average...”¹⁵¹ Also, the Transportation Research Board, National Cooperative Freight Research Program, prepared a report in 2010 that cautions against using a system-wide fuel consumption index to estimate regional or project-level emissions, particularly within California.¹⁵² A recent University of California Davis study shows that freight rail operations in California are considerably more fuel-intensive than the system-wide averages in the U.S. The UC Davis study also showed that using system-wide fuel consumption index can lead to large errors in air pollutant emission estimates for California, particularly in hilly and mountainous areas.¹⁵³

Dr. Pless prepared revised ROG, NO_x and PM₁₀ emission estimates for the Project’s line haul emissions within the BAAQMD using California terrain-specific fuel efficiency as determined in the UC Davis study. Dr. Pless found that, by using a system-wide fuel consumption index, the City underestimated line haul emissions by about 38%.¹⁵⁴ Dr. Pless stressed particular concern regarding NO_x emissions, which would contribute to the BAAQMD’s ozone pollution problems and attendant health impacts.¹⁵⁵ Further, the additional emissions would contribute to the San Francisco Bay Area Air Basin’s continued noncompliance with the state and federal

¹⁴⁹ *Id.*, p. 37.

¹⁵⁰ *Id.*

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *Id.*, p. 38.

¹⁵⁴ *Id.*, p. 45.

¹⁵⁵ *Id.*, p. 49.

ambient air quality standards and, consequently, hamper the air basin's progress towards achieving attainment.

Dr. Pless also prepared revised emission estimates for the Project's line haul emissions within uprail air districts using California terrain-specific fuel efficiency as determined in the UC Davis study. Dr. Pless found that "the discrepancy between average system-wide and California terrain-specific fuel efficiencies discussed above for the BAAQMD is even greater for some of the uprail districts through which the crude trains will travel."¹⁵⁶ The FEIR's emission estimates fail to disclose the magnitude of the Project's emissions from line haul traveling through uprail districts.

2. *The City's Emission Estimates Fail to Use Information for Project-specific Locomotives*

While the above revised emission estimates for line haul locomotives are more accurate than the emission estimates provided in the FEIR, they still represent only rough emission estimates for the Project because they are based on aggregate data for various train types (train bulk, manifest, intermodal, etc.), all types of freight, and an average number of locomotives per train, etc.

For example, UPRR locomotives would be used for switching the tank cars at the Refinery site. Emissions from these very large locomotives (typically over 4000 horsepower) while performing switching operations are much higher than from smaller dedicated switching locomotives.¹⁵⁷ Moreover, according to Dr. Pless, when not in switching mode, these very large locomotives would idle on site. Yet, the City relies on aggregate data for all types of trains to determine the Project's emissions.

Dr. Pless explains that a more accurate approach to estimating Project-specific emissions involves identifying factors for Project locomotives, such as engine power, average speed on site, load factors for hauling and switching, switching time per engine and idling time per engine. According to Dr. Pless, "[s]ome of these parameters, for example the number of hours a locomotive spends switching or idling, can only be determined via detailed and project-specific locomotive timing calculations, which the EIR lacks."¹⁵⁸

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*, p.47.

¹⁵⁸ *Id.*, p. 46.

Dr. Pless prepared revised emission estimates for the Project based on information from a similar project, the Phillips 66 Santa Maria Refinery crude-by-rail project. Dr. Pless found that the City's reliance on aggregate data for all types of trains substantially underestimates the Project's daily ROG, NOx, PM10 and PM2.5 emissions within the BAAQMD and all uprail districts through which the trains will travel.¹⁵⁹

H. The FEIR Fails to Correlate the Project's Significant Impacts on Air Quality with Impacts on Human Health

The City estimates NOx emissions from locomotives in excess of significance thresholds developed by the Yolo-Solano Air Quality Management District, BAAQMD¹⁶⁰ and each of the air districts uprail of Roseville,¹⁶¹ and finds significant and unavoidable impacts on air quality for these air districts.¹⁶² The FEIR simply presents this information without putting the significant and unavoidable emissions of NOx it identifies into context. Specifically, the FEIR only presents emission estimates of NOx, which are potent ozone precursors, but fails to quantify their contribution to increased ozone concentrations within the affected airsheds and makes no attempt to correlate the significant impacts it identifies to resultant health effects, as required by CEQA.¹⁶³

The EIR for the Phillips 66 Santa Maria Refinery crude-by-rail project provides such an analysis and correlates increased ozone concentrations resulting from locomotive emissions of the ozone precursors ROG and NOx with increased incidences of mortality and morbidity for each affected air district.¹⁶⁴

The FEIR in this case fails to disclose the health impacts associated with Project emissions. The City must prepare a revised EIR that includes this analysis.

¹⁵⁹ *Id.*, p. 48.

¹⁶⁰ DEIR, Table 4.1-6.

¹⁶¹ RDEIR, Tables 4.1-11 through 4.1-14.

¹⁶² RDEIR, pp. 2-27 through 2-41.

¹⁶³ *Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704.

¹⁶⁴ SMR FEIR, pp. 4.3-6.2 – 4.3-6.4.

I. The FEIR's Health Risk Assessments Are Still Substantially Flawed

The RDEIR provided the results of revised health risk assessments for maximum cancer, acute and chronic non-cancer risks, and PM2.5 concentrations for Project impacts within the San Francisco Bay Area and Sacramento Valley air basins.¹⁶⁵ The assessments are based on modeling of toxic air contaminant emissions with AERMOD and based on OEHHA's 2015 Guidance Manual. The RDEIR finds that all results are below the applicable significance thresholds.¹⁶⁶ According to Dr. Pless, the health risk assessments are substantially flawed for several reasons.

1. The FEIR Fails to Provide Adequate Information for Health Risks

As an initial matter, the FEIR's presentation of health risk assessment results fails to provide sufficient information for the public and decision makers to understand and verify the results. Specifically, the health risk assessments for impacts near the Refinery and uprail quantify cancer and non-cancer chronic and acute health risks for the maximum exposed individual receptor ("MEIR"), the maximum exposed individual worker ("MEIW"), and the maximum sensitive receptor ("MSR"). But the City did not disclose the isopleth maps, which are required by the 2015 OEHHA Guidelines and which are necessary for the public to determine the geographic location and extent of impacts and identify the location of the maximum exposed receptors.¹⁶⁷

The health risk assessment also fails to identify the point of maximum impact ("PMI"), as required by the 2015 OEHHA Guidelines. Dr. Pless explains that the PMI is the receptor point with the highest acute, 8-hour, chronic or cancer health impact outside the facility boundary.¹⁶⁸ In addition, according to Dr. Pless, the health risk assessment fails to adequately describe the location of the MEIW and the MSR at the Day Care Center and Elementary School.¹⁶⁹ The health risk assessment provides Universal Transverse Mercator coordinates for the location of the MEIW, but fails to include a geographical presentation on a map. Dr. Pless

¹⁶⁵ RDEIR, Table 4.1-19, 4.1-10,

¹⁶⁶ RDEIR, p. 4.1-25.

¹⁶⁷ Pless Comments on FEIR, pp. 60-61.

¹⁶⁸ *Id.*, pp. 61-62.

¹⁶⁹ *Id.*, p. 62.

explains that “[t]his presentation is meaningless to the general public who wishes to understand the potential health risks they would experience” from the Project.¹⁷⁰

2. *The FEIR Still Fails to Identify the Highest Health Risks near the Refinery*

Dr. Pless demonstrated that the RDEIR failed to identify the Project’s highest health risks.¹⁷¹ Dr. Pless provided detailed calculations for a total cancer risk at the MEIW (471 East Channel Road) and found that the risk would be 11 in one million, which is a significant cancer risk. Dr. Pless also showed that, for the MEIR, the City failed to identify residential receptors with the highest cancer risk. Dr. Pless identified several residential receptors with higher cancer risks closer to the Refinery than identified in the RDEIR.

In response, the City states that Dr. Pless’ conclusion that the Project’s residential health risks would be significant “cannot be verified with the information supplied” because “the AERMOD output files were not provided in the Revised DEIR.”¹⁷² The City’s statement raises two issues. First, the City’s statement fails to actually respond to the significant environmental issue raised by Dr. Pless, as required by CEQA.¹⁷³ As a result, the Project’s health risks identified by Dr. Pless remain significant and unmitigated. Second, the City’s response confirms that the City did not verify the Applicant’s data and independently analyze the Project’s potentially significant health risks, as required by CEQA.¹⁷⁴

3. *The Health Risk Assessments Are Based on Incorrect Assumptions and Fail to Include Emissions of Toxic Air Contaminants*

The health risk assessments for near-Refinery and uprail air districts fail to identify the Project’s significant health risks because they: (1) are based on incorrect assumptions for locomotive emissions; (2) fail to account for all toxic air contaminant emissions from rail cars; and (3) fail to account for toxic air contaminant emissions from increased breathing losses from storage tanks.

¹⁷⁰ *Id.*, p. 62.

¹⁷¹ Pless Comments on RDEIR, pp. 33-36.

¹⁷² FEIR, p.3.5-15.5, Response J6-40.

¹⁷³ Pub. Resources Code, § 21091(d); CEQA Guidelines, § 15088.

¹⁷⁴ Pub. Resources Code, § 21082.1(c).

First, Dr. Pless explains that the health risk assessments for diesel particulate matter emissions from locomotives are based on several incorrect assumptions and, consequently, underestimate health risks.¹⁷⁵ The incorrect assumptions include: (1) relying on a system-wide fuel efficiency for emission estimates, which underestimates emissions of particulate matter from locomotives by a factor of at least 17%; (2) assuming that only one locomotive would idle on site, when two locomotives would be idling (each 50-tank car train would have two locomotives); and (3) assuming a high exit velocity from idling locomotives, which results in greater dispersion of diesel particulate matter concentrations and, therefore, lower impacts at nearby receptors.¹⁷⁶

Second, the health risk assessments fail to account for toxic air contaminants released with fugitive emissions from railcars. These emissions are substantial – approximately 92 lbs/day in the BAAQMD and between 65 lbs/day and 339 lbs/day in uprail districts.¹⁷⁷

Finally, the health risk assessments fail to account for toxic air contaminant emissions from breathing losses from storage tanks. Dr. Pless and Dr. Fox previously explained in comments on the RDEIR that the Project would increase emissions from the Refinery’s existing six storage tanks. The increase in fugitive emissions will result in increased toxic air contaminant emissions.¹⁷⁸ Yet, the increased toxic air contaminant emissions are not included in the health risk assessments.

J. The FEIR Still Fails to Include All Feasible Mitigation Measures for Significant Hazard Impacts

CEQA requires agencies to impose all feasible mitigation measures to “substantially lessen or avoid” significant adverse environmental impacts.¹⁷⁹ When an agency rejects mitigation measures as infeasible, the findings must reveal the agency’s reasons for reaching that conclusion. The agency’s findings must be supported by substantial evidence. Conclusory statements are inadequate.¹⁸⁰

¹⁷⁵ Pless Comments on FEIR, pp. 72-73.

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*, p. 74.

¹⁷⁸ *Id.*, pp. 74-75.

¹⁷⁹ Pub. Resources Code, § 21002.

¹⁸⁰ *Village Laguna of Laguna Beach, Inc. v. Board of Supervisors* (1982) 134 Cal.App.3d 1022, 1034-1035.

The City concludes that the Project would result in significant and unavoidable impacts from significant hazards to the public and the environment via upset and accident conditions involving release of hazardous materials. However, the City claims that there are no legally feasible measures to mitigate these impacts due to federal preemption. According to the City, “[w]hile the City can identify and disclose the risks posed by rail transport of crude oil, it must rely on the federal authorities to ensure that any such risks are mitigated as appropriate.”¹⁸¹

Our comments on the RDEIR showed that the City is wrong because Valero has discretion to choose which tank cars it will own or lease to transport crude.¹⁸² Thus, the City would not be regulating UPRR’s rail operations if it required Valero to choose the less dangerous tank cars. Indeed, Valero has committed to using non-jacketed CPC-1232 tank cars until April 1, 2020, when it would upgrade to the DOT-117R standard tank car.¹⁸³ In response to our comments, the FEIR merely reiterates the City’s preemption argument. We have fully addressed and put to rest the City’s preemption argument above.

Further, Dr. Fox revisited this issue in her comments in the FEIR. Dr. Fox explains that Valero can and should commit to tank cars that are safer than DOT-117R standard tank cars – DOT-120 and DOT-114 pressure tank cars.¹⁸⁴ Pressure tank cars are used to transport higher hazard materials to minimize leaks and prevent releases when accidents occur.¹⁸⁵ According to Dr. Fox, Tesoro recently upgraded its crude by rail fleet with DOT-120 pressure tank cars.¹⁸⁶

Notably, San Luis Obispo County’s EIR for the Phillips 66 Santa Maria Rail Spur Project (a new unloading facility that could accept up to five, 80-tank car unit trains per week), includes measures requiring Phillips 66 to use tank cars which exceed the DOT-117 standard.¹⁸⁷ There is no justifiable reason that the City could not do the same here.

¹⁸¹ RDEIR, pp. 2-105-2-106.

¹⁸² Fox Comments on RDEIR, p. 15.

¹⁸³ FEIR, Response A4-6 and FEIR, Appendix B.

¹⁸⁴ Fox Comments on FEIR, p. 34.

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ *Id.*, p. 40, citing Santa Maria Rail Spur FEIR Mitigation Measures HM-2a, PS-4b, WR-3 and AR-5.

V. THE FEIR STILL FAILS TO ANALYZE ALL FEASIBLE ALTERNATIVES

A primary purpose of CEQA is to identify, through the evaluation of alternatives to the proposed project, ways in which the environmental effects of a project can be avoided or minimized. CEQA mandates that, "... it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects..."¹⁸⁸ Pursuant to CEQA's implementing regulations,

[a]n EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.¹⁸⁹

An EIR must evaluate the comparative merits of alternatives, including the "no project" alternative.¹⁹⁰ The reasoning behind the requirement to analyze the "no project" alternative is to allow the public and the decision-makers to assess the effects of approving the project versus the effects of not approving the project.¹⁹¹ Alternatives that do not meet the project objectives and alternatives that are not reasonable or feasible may be eliminated from further consideration. Specifically, an alternative may be eliminated if: (1) the alternative fails to meet most of the basic project objectives; (2) the alternative is infeasible; (3) the alternative fails to avoid significant environmental impacts; or (4) an alternative for which the implementation is remote and speculative and for which the effects cannot be reasonably ascertained. With respect to feasibility, the CEQA Guidelines provide:

¹⁸⁸ Pub. Resources Code, § 21002.

¹⁸⁹ CEQA Guidelines, §15126.69(a)

¹⁹⁰ *Id.*, § 15126.6(d).

¹⁹¹ *Id.*, § 15126.6(e)(1).

Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent)...¹⁹²

Here, the RDEIR evaluated four alternatives to the Project:

- (1) Limiting Project to one 50-car train delivery per day;
- (2) Two 50-car trains delivered during nighttime;
- (3) Offsite unloading terminal; and
- (4) No project alternative.

The DEIR considered (but dismissed from further consideration) four additional alternatives, including locating unloading racks at the Port of Benicia, locating unloading racks at the AMPORTS property near the Benicia Marine Terminal, receiving crude from the proposed WesPac Energy Pittsburg Terminal, and receiving crude from an on-site Wye rail spur.¹⁹³ The City has not evaluated all feasible alternatives to the Project.

In her comments on the RDEIR, Dr. Fox described two alternatives that were not identified in either the RDEIR or DEIR, but would reduce many of the Project's impacts to less than significant levels: (1) the Bakersfield area crude terminals (Alon Terminal and Plains Terminal); and (2) crude imports from the San Joaquin Valley.¹⁹⁴ In response, the FEIR states "it is unclear how the Alon and Plains All American projects could serve as alternatives to the Project. The purpose of the Project is to allow the Benicia Refinery to receive up to 70,000 barrels per day of crude oil from North American sources."¹⁹⁵

Dr. Fox explains how these terminals could serve as alternatives to the Project. These terminals import more than 70,000 bbl/day of crude oil from the

¹⁹² *Id.*, §15126.6(f)(1).

¹⁹³ DEIR, Section 6.3.

¹⁹⁴ Fox Comments on RDEIR, pp. 19-20.

¹⁹⁵ FEIR, p. 3-5-15.2, Response J6-14.

same North American areas Valero wants to import crude from. The Alon Terminal is permitted to import 150,000 bbl/day and the Plains Terminal is permitted to import 168,000 bbl/day of North American crude oils.¹⁹⁶ Further, “[t]hese terminals are located in the Bakersfield area and can supply crude oil to the main pipeline system currently servicing Valero by either trucking it to a pump station equipped with a truck unloading rack or sending it directly into existing feeder pipelines between these terminals and the main Valero pipeline.”¹⁹⁷ Dr. Fox also points out that, in addition to these currently operating crude-by-rail terminals, Targa has proposed a rail to marine terminal in Stockton, which could service Valero by barge.¹⁹⁸ Indeed, Valero is familiar with these alternative delivery modes since it has historically received North American crudes imported by rail to other terminals and trucked them to its refinery (e.g., the Kinder Morgan Terminal in Richmond and the Interstate Oil Terminal in Sacramento).¹⁹⁹

In short, evidence shows that it is feasible for Valero to import up to 70,000 bbl/yr (the Project’s goal) from local sources, rather than importing it by rail from sites up to 1,500 miles away. Thus, CEQA requires the City to consider these import methods as Project alternatives.

VI. THE FEIR FAILS TO DISCLOSE THE PROJECT’S INCONSISTENCIES WITH THE CITY’S GENERAL PLAN

Under California law, a general plan serves as a “charter for future development”²⁰⁰ and embodies “fundamental land use decisions that guide the future growth and development of cities and counties.”²⁰¹ The general plan has been aptly described as “the constitution for all future developments” within a city or county.²⁰² Further, the “propriety of virtually any local decision affecting land use and development depends upon consistency with the applicable general plan and its elements.”²⁰³ The consistency doctrine has been described as the “linchpin

¹⁹⁶ Fox Comments on FEIR, p. 33.

¹⁹⁷ *Id.*

¹⁹⁸ *Id.*

¹⁹⁹ *Id.*

²⁰⁰ *Leshar Communications, Inc. v. City of Walnut Creek* (1990) 52 Cal.3d 531, 54.

²⁰¹ *City of Santa Ana v. City of Garden Grove* (1979) 100 Cal.App.3d 521, 532.

²⁰² *Families Unafraid to Uphold Rural El Dorado County v. Board of Supervisors of El Dorado County* (1998) 62 Cal.App.4th 1334, 1335.

²⁰³ *Citizens of Goleta Valley v. Board of Supervisors of County of Santa Barbara* (1990) 52 Cal.3d 553, 570.

of California's land use and development laws; it is the principle which infuses the concept of planned growth with the force of law."²⁰⁴

The FEIR fails to acknowledge the Project's conflicts with a number of the City's General Plan goals and policies. These goals and policies were adopted for the purpose of avoiding or mitigating environmental impacts.²⁰⁵ Therefore, these inconsistencies are significant environmental impacts. These inconsistencies are also separate, non-CEQA, bases for requiring the City to deny the Project. The City must revisit the FEIR's General Plan consistency analysis and must disclose and mitigate any inconsistencies in a revised EIR that is circulated for public review and comment. The following are examples of these inconsistencies:

A. The Project is Inconsistent with Goal 4.1 and Policy 4.1.1 – Community Health and Safety

The purpose of Goal 4.1 and Policy 4.1.1 is to prioritize the health and safety of the Benicia community when making planning and policy decisions.²⁰⁶ The Project is inconsistent with this goal and policy because, as described at length above, in the attached comments of Dr. Fox and Dr. Pless, and in our previous comments on the DEIR and RDEIR, the Project would result in significant, unmitigated impacts to air quality and public health and significant, unmitigated hazards impacts from accident risks. Should the City approve the Project, the City would threaten the community's public health and safety, not prioritize it.

B. The Project is Inconsistent with Goals 4.7, 4.8, 4.15 and 4.20 and Policy 4.8.1 – Hazards

The purpose of Goal 4.7 is to ensure that neighborhoods are safe from risks to public health that could result from exposure to hazardous materials.²⁰⁷ The purpose of Goal 4.8 and Policy 4.8.1 is to protect sensitive receptors from hazards.²⁰⁸ The purpose of Goal 4.15 is to reduce fire hazards.²⁰⁹ The purpose of Goal 4.20 is to

²⁰⁴ *Corona-Norco Unified School District v. City of Corona* (1993) 17 Cal.App.4th 985, 994.

²⁰⁵ CEQA Guidelines §X(b).

²⁰⁶ City of Benicia General Plan, p. 142, Goal 4.1 and Policy 4.1.1.

²⁰⁷ *Id.*, p. 160, Goal 4.7.

²⁰⁸ *Id.*, p. 162, Goal 4.8 and Policy 4.8.1.

²⁰⁹ *Id.*, p. 165, Goal 4.15.

reduce health and safety hazards associated with hazardous materials and toxic air contaminants, among other health and safety hazards.²¹⁰

The Project is inconsistent with these goals and policy because, as described above, in the attached comments of Dr. Fox and Dr. Pless, and in our previous comments on the DEIR and RDEIR, the Project would result in significant, unmitigated hazards impacts associated with accident risks from the transport of crude oil (explosion, fire, spills) and significant, unmitigated health risks from toxic air contaminant emissions. Thus, the City couldn't possibly approve the Project while protecting the public from health and safety hazards, including fire, toxic air contaminant emissions and hazardous materials.

C. The Project is Inconsistent with Goals 4.9 and 4.10 and Policy 4.9.1 – Air Quality

The purpose of Goal 4.9 and Policy 4.9.1 is to ensure clean air for Benicia residents.²¹¹ The purpose of Goal 4.10 is to support improved air quality in the BAAQMD.²¹² The Project is inconsistent with these goals and policy because, as described above, in the attached comments of Dr. Fox and Dr. Pless, and in our previous comments on the DEIR and RDEIR, the Project would result in significant, unmitigated air quality impacts in Benicia and the BAAQMD (as well as in every air district through which the trains would travel). Therefore, by approving the Project, the City would worsen air quality, not improve it.

VII. THE FEIR FAILS TO DISCLOSE THE PROJECT'S INCONSISTENCIES WITH THE GENERAL PLANS OF UPRAIL CITIES AND COUNTIES

The FEIR fails to acknowledge the Project's conflicts with a number of general plan goals and policies of uprail cities and counties, such as the City of Davis, the City of Sacramento and the City of Roseville. These goals and policies were adopted for the purpose of avoiding or mitigating environmental impacts.²¹³ Therefore, these inconsistencies are significant environmental impacts. The following are examples of these inconsistencies:

²¹⁰ *Id.*, p. 168, Goal 4.20.

²¹¹ *Id.*, Goal 4.9 and Policy 4.9.1.

²¹² *Id.*, p. 163, Goal 4.10.

²¹³ CEQA Guidelines §X(b).

A. City of Davis General Plan Goals HAZ 3 and HAZ 4

The purpose of Goal HAZ 3 is to protect citizens from natural and environmental hazards.²¹⁴ The purpose of HAZ 4 is to reduce the use, storage and disposal of hazardous substances.²¹⁵ The Project is inconsistent with these goals because, as described above, in the attached comments of Dr. Fox and Dr. Pless, and in our previous comments on the DEIR and RDEIR, the Project's import of crude oil via rail would result in significant, unmitigated impacts associated with train derailments and unloading accidents that lead to hazardous material spills, fires and explosions.²¹⁶ These impacts are particularly concerning since the UPRR main railroad tracks go through Davis' downtown and then adjacent to the University of California Davis.²¹⁷ Further, the tracks curve through Davis, which increases the chances of train accidents.²¹⁸

B. City of Davis General Plan Goal AIR 1

The purpose of Goal AIR 1 is to improve air quality.²¹⁹ The Project is inconsistent with this goal because, as described at length above, in the attached comments of Dr. Fox and Dr. Pless, and in our previous comments on the DEIR and RDEIR, the Project would result in significant, unmitigated impacts to air quality in every single uprail air district, including the Yolo-Solano County Air Quality Management District.

C. City of Sacramento General Plan Goal PHS 3.1

The purpose of Goal PHS 3.1 is to protect and maintain the safety of residents, businesses and visitors by reducing and eliminating exposure to hazardous materials.²²⁰ The Project is inconsistent with these goals because, as described above, in the attached comments of Dr. Fox and Dr. Pless, and in our previous comments on the DEIR and RDEIR, the Project's import of crude oil via rail would result in significant, unmitigated impacts associated with train

²¹⁴ City of Davis General Plan, p. 324, Goal HAZ 3.

²¹⁵ *Id.*, Goal HAZ 4.

²¹⁶ RDEIR, p. 2-108, Impact 4.7-6.

²¹⁷ Letter from Mike Webb to Amy Million re: Valero Benicia Crude by Rail Project Revised Draft Environmental Impact Report, October 30, 2015, p. 1.

²¹⁸ *Id.*

²¹⁹ City of Davis General Plan, p. 330, Goal AIR 1.

²²⁰ City of Sacramento General Plan, p. 2-293, Goal PHS 3.1.

derailments and unloading accidents that lead to hazardous material spills, fires and explosions.²²¹

D. City of Sacramento General Plan Goal ER 6.1 and Policies ER 6.1.2 and 6.1.3

The purpose of Goal ER 6.1 and Policies ER 6.1.2 and ER 6.1.3 is to improve regional air quality by reducing construction and operational emissions from development projects.²²² The Project is inconsistent with this goal and these policies because as described at length above, in the attached comments of Dr. Fox and Dr. Pless, and in our previous comments on the DEIR and RDEIR, the Project would result in significant, unmitigated impacts to air quality in every single uprail air district, including the Sacramento Metropolitan Air Quality Management District.

E. City of Roseville General Plan Hazardous Materials Goal

The purpose of the Hazardous Materials Goal is to protect the community's health and safety through the regulation of use, storage, transport and disposal of hazardous materials.²²³ The Project is inconsistent with these goals because, as described above, in the attached comments of Dr. Fox and Dr. Pless, and in our previous comments on the DEIR and RDEIR, the Project's import of crude oil via rail would result in significant, unmitigated impacts associated with train derailments and unloading accidents that lead to hazardous material spills, fires and explosions.²²⁴

F. City of Roseville General Plan Air Quality Goal 1

The purpose of Air Quality Goal 1 is to improve Roseville's air quality and minimize public exposure to toxic or hazardous air pollutants.²²⁵ The Project is inconsistent with this goal because, as described at length above, in the attached comments of Dr. Fox and Dr. Pless, and in our previous comments on the DEIR and RDEIR, the Project would result in significant, unmitigated impacts to air quality

²²¹ RDEIR, p. 2-108, Impact 4.7-6.

²²² City of Sacramento General Plan, p. 2-331, Goal ER 6.1, Policy ER 6.1.2 and Policy ER 6.1.3.

²²³ City of Roseville General Plan, p. VIII-43, Hazardous Materials Goal.

²²⁴ RDEIR, p. 2-108, Impact 4.7-6.

²²⁵ City of Roseville General Plan, p. IV-9, Air Quality Goal 1.

February 8, 2016
Page 43

in every single uprail air district, including the Placer County Air Pollution Control District.

VIII. CONCLUSION

The City's FEIR fails to comply with CEQA, and the Project violates the City's General Plan, along with the general plans of uprail jurisdictions. We urge the City to prepare and circulate a revised EIR which identifies the Project's potentially significant impacts, requires all feasible mitigation measures and analyzes all feasible alternatives to reduce impacts to a less than significant level. We also urge the City to require Valero to resolve its violations of each applicable general plan prior to reconsideration of the Project.

Sincerely,

A handwritten signature in black ink, appearing to read "Rachael E. Koss", with a long horizontal flourish extending to the right.

Rachael E. Koss

REK:ric
Attachments

ATTACHMENT A

Exhibit C – Findings for Denial

A. Environmental Determination

1. The Environmental Coordinator, after completion of the initial study, found that there is evidence that the project may have a significant effect on the environment, and therefore a Final Environmental Impact Report (FEIR) was prepared (pursuant to Public Resources Code Section 21000 et seq., and CA Code of Regulations Section 15000 et seq.) for this project. The FEIR considers the following issues: Aesthetics and Visual Resources, Agricultural Resources, Air Quality and Greenhouse Gases, Biological Resources, Cultural and Historical Resources, Geological Resources, Hazards and Hazardous Materials, Land Use and Recreation, Noise and Vibration, Population and Housing, Public Services and Utilities, Transportation and Circulation and Water Resources. The FEIR also considers alternatives in addition to the “No Project” alternative.
2. While a FEIR has been prepared, per the Public Resources Code 21080(b)(5) and CEQA Guidelines, CEQA does not apply to projects which a public agency rejects or disapproves. However, the FEIR has provided evidence and information to support this recommendation for denial, including an evaluation of the significant and unavoidable environmental impacts of the proposed project.
3. There are insufficient specific, overriding economic, legal, social, technological, or other benefits of the project that outweigh the significant effects on the environment, as would be required to approve the project pursuant to Public Resources Code section 21081. Additionally, due to federal preemption, implementation of mitigation measures to lessen the Class I impacts on the Mainline within San Luis Obispo County and the state are infeasible, as argued by the Applicant.

B. Environmentally Sensitive Habitat

4. The proposed project is located within an Environmentally Sensitive Habitat area:

Following the circulation of the Public Draft EIR, additional biological survey efforts were conducted in 2015 by Arcadis and Leidos to ensure accuracy and consistency with vegetation type mapping with the National Vegetation Classification system, as described within A Manual of California Vegetation (Sawyer et al 2009).

Based on the best available information, it is determined that the Rail Spur Project area:

- a. Is currently occupied by plant species that are listed as Rank 1B status by the California Native Plant Society; and,
- b. Is currently occupied by sensitive communities as classified by the California Department of Fish and Wildlife (CDFW) under the National Vegetation Classification system described in A Manual of California Vegetation, Second Edition.

Due to these factors, the project site meets the definition of Unmapped ESHA in the County's LCP (CZLUO Section 23.11). The area contains sensitive plant and animal species needing protection, including Rank 1B status plants, sensitive communities recognized by the CDFW, burrowing owls, and coast horn lizard. In addition, the Rail Spur Project area meets the definition of ESHA as defined in the guidelines set forth by the California Coastal Commission for defining ESHA (CCC 2013). As discussed further below in impact BIO.5, the Rail Spur Project would permanently impact a total of about 20 acres of ESHA, including the sensitive plant communities as classified by the California Department of Fish and Wildlife (CDFW)

under the National Vegetation Classification system described in A Manual of California Vegetation, Second Edition.

5. The Proposed Project does not meet the requirements of Coastal Zone Land Use Ordinance Section 23.07.170 b for Environmentally Sensitive Habitat Areas:
 - a. *There would be a significant negative impact on the identified sensitive habitat and the proposed uses would be inconsistent with the biological continuance of the habitat* because the proposed rail spur would remove approximately 20 acres of habitat area containing “rare” or “1B” species, and is not a project that is included within the list of projects noted in the ordinance as a “development project (which) would be allowable within an ESHA” such as a resource dependent use, habitat enhancement project, or coastal access way.
 - b. *The proposed uses would significantly disrupt the habitat* because development would remove approximately 20 acres of habitat area containing listed “rare” or “1B” species by the California Department of Fish and Wildlife and the California Native Plant Society. The Project is located within dune habitat containing sensitive vegetative communities as classified by the California Department of Fish and Wildlife (CDFW) under the National Vegetation Classification system described in A Manual of California Vegetation, Second Edition (i.e., Silver dune lupine – mock heather scrub). The Project and associated infrastructure would extend within this habitat area. Due to the extensive distribution of Unmapped ESHA, there does not appear to be an alternative design or Project configuration that would avoid disturbance and removal of this habitat in order for the Project, or any project alternative, to proceed on the portion of the property outside the existing disturbed envelope of the refinery. The inability to avoid ESHA is in direct conflict with sub-section (e) of 23.07.170 which states, “All development and land divisions within or adjacent to an Environmentally Sensitive Habitat Area shall be designed and located in a manner which avoids any significant disruption or degradation of habitat values.”

C. Development Plan Findings

The proposed project does not meet the requirements of 23.02.034.c.4 as follows:

- A. **The proposed project or use is not consistent with the Local Coastal Program, the Land Use Element of the General Plan, and the General Plan. Following is a list of the items for which the project is not in compliance:**

Coastal Plan Policies:

6. Environmentally Sensitive Habitats, Sensitive Habitats, Policy 1, Land Uses Within or Adjacent to Environmentally Sensitive Habitats: This policy states that new development within or adjacent to locations of environmentally sensitive habitats (within 100 feet unless sites further removed would significantly disrupt the habitat) shall not significantly disrupt the resource. Within an existing resource, only those uses dependent on such resources shall be allowed within the area. Unmapped ESHA is present throughout the Project area and within 100 feet of other areas determined to be Unmapped ESHA, including portions of the project area where the rail spur and unloading facility would be constructed, the emergency vehicle access route, and the area where the pipelines would be constructed from the rail spur unloading facility to the existing storage tanks. The Project would impact 20 acres of Unmapped ESHA. The Refinery was built in 1955 to be in close proximity to local onshore oil sources (non-coastal dependent). In the mid-1980's, upon development of offshore oil, the Refinery began use of offshore crude as a major source. During this time, and to present day, the Refinery has used a combination of offshore crude as well as a variety of onshore sources (including Canadian

Tar Sands crude which arrives by truck from the Central Valley and is delivered to the Santa Maria Pump Station). The Refinery is dependent upon a complex arrangement of roadways, rail lines, pump stations, and pipelines that are located, in some instances in the coastal zone, but primarily outside of the coastal zone. The Refinery does not rely on the ocean or marine resources and is therefore not coastal dependent. Because the Project would impact Unmapped ESHA and is not a coastal dependent use, it would be inconsistent with this policy.

7. **Environmentally Sensitive Habitats, Sensitive Habitats, Policy 29, Protection of Terrestrial Habitats:** This policy states that designated plant and wildlife habitats are environmentally sensitive habitat areas and emphasis for protection should be placed on the entire ecological community. Only uses dependent on the resource shall be permitted within the identified sensitive habitat portion of the site. The Project would be located within and would impact an approximate 20-acre area that contains Unmapped ESHA. In addition the Project is not a coastal dependent use as described above. Because the Project is not considered a coastal dependent use and would impact Unmapped ESHA, it is not consistent with this policy.

The proposed Project has the potential to result in oil spills and resultant fires that could impact terrestrial habitats along the mainline rail routes. Depending upon the location of an oil spill it could result in significant impacts to terrestrial habitats. Given the potential significant impacts that could occur to terrestrial habitats within the County in the case of an oil spill, rail transport of crude oil along the mainline it is not consistent with this policy.

8. **Environmentally Sensitive Habitat Area Policy 36, Protection of Dune Vegetation:** Policy 36 states "disturbance or destruction of any dune vegetation shall be limited to those projects which are dependent upon such resources where no feasible alternatives exist and then shall be limited to the smallest area possible. Development activities and uses within dune vegetation shall protect the dune resources and shall be limited to resource dependent, scientific, educational and passive recreational uses. Coastal dependent uses may be permitted if it can be shown that no alternative location is feasible, such development is sited and designed to minimize impacts to dune habitat and adverse environmental impacts are mitigated to the maximum extent feasible." Based on the location of proposed improvements associated with the Project, portions of the development would be located within and would impact approximately 20 acres of Unmapped ESHA. As described above, neither the Project nor the existing refinery are coastal dependent uses (i.e., requiring a site on, or adjacent to, the sea to be able to function at all). The objective of the Project is to increase the Applicant's ability to access more economically priced crude from a wider diversity of suppliers throughout various locations in North America. Because the Project and the existing refinery are not "coastal dependent" and would result in the removal of Unmapped ESHA, the Project does not comply with this policy.

Coastal Zone Framework for Planning:

9. **Land Use Goal 4:** The Land Use Element land use categories identify areas that are to be compatible with each other and specific goals related to conflicts of uses and preservation of important areas. Land use goal no. 4 provides that "areas where agricultural, residential, commercial and industrial uses may be developed in harmonious patterns and with all the necessities for satisfactory living and working environments." The proposed rail spur project would modify an existing industrial property to allow the construction of the spur within a buffer area between neighboring residential and agricultural land uses. Operation of the rail spur project could result in significant health risk impacts to the closest residences mainly due to diesel particulate matter from the locomotives servicing the refinery. The project would also generate additional particulate matter emissions due to fugitive dust and diesel locomotive engines at the refinery in an area that already exceeds state PM₁₀ standards. Therefore, the

project would be inconsistent with this policy by allowing an expansion of a use that is not compatible with neighboring residential or agricultural uses and would result in additional negative health impacts.

10. **Strategic Growth Goal 1, Objective 2. Air Quality:** This air quality objective is put forth to maintain and protect a living environment that is safe, healthful and pleasant for all residents. The applicable goal associated with this objective seeks to ensure that development projects maintain, or exceed, the minimum state and federal ambient air quality standards. The Project would not comply with this objective and goal because it would generate toxic air emissions that exceed San Luis Obispo County APCD (SLOCAPCD) health risk thresholds when factoring in the 2012 California Office of Environmental Health Hazard Assessment (OEHHA) childhood exposure and breathing rate adjustments. The proposed Project would result in a maximum exposed individual resident (MEIR) cancer risk of 26.5 in a million. This includes emission sources at the project site as well as the mainline emissions near the SMR. The SLOCAPCD cancer risk threshold is 10 in a million for toxic emissions. The use of Tier 4 locomotives and reduced idling time for locomotives onsite as mitigation would reduce the MEIR to 6.0 in a million at the same receptor. However, since UPRR (and not the Project Applicant) would own the locomotives, and the locomotives are used for interstate commerce, the mitigation measure requiring the use Tier 4 locomotives would likely be preempted by Federal law, and therefore may not be a feasible mitigation measure. Without the use of Tier 4 engines but with implementation of other mitigation measures, the MEIR would be 13.6 in a million at the same receptor (this includes the reduction in idling at the site, use of cleaner truck engines, and daytime unloading only). In addition, without full mitigation, the project would also exceed the SLOCAPCD diesel particulate matter threshold of 1.25 lbs per day onsite.

The Project would also not comply with this objective and goal because it would generate toxic air emissions that exceed San Luis Obispo County APCD (SLOCAPCD) health risk thresholds of 10 in a million for mainline rail operations in areas where train speeds would be less than 30 mph. The project would also exceed the SLOCAPCD NO_x, ROG, and diesel particulate matter emission CEQA thresholds without full mitigation. Due to Federal preemption, the County may not be able to require emissions reduction credits for the mainline rail NO_x, ROG, and DPM emissions, leaving potential exceedances of the state and/or federal ambient air quality standards unmitigated and making the Project inconsistent with this goal.

11. **Combining Designations, SRA – Sensitive Resource Area, General Objectives: 1.** General Objective 1 states that Environmentally Sensitive Habitats should be identified and protected by construction setbacks, use limitations, and other appropriate regulations. A portion of the Project area of disturbance is located within the existing refinery site in an area previously disturbed for storage and handling of coke; however, a large portion of the improvements associated with the Project would be located within identified sensitive vegetative communities as classified by the California Department of Fish and Wildlife (CDFW) under the National Vegetation Classification system described in A Manual of California Vegetation, Second Edition and Unmapped ESHA (i.e., Silver dune lupine – mock heather scrub). Project construction would impact approximately 20 acres of this sensitive vegetative community and Unmapped ESHA. For this reason, the Project would not comply with this objective.
12. **Coastal Zone Framework for Planning, Coastal Zone Land Use Element Strategic Growth Goal 1:** The Land Use Element states that the County will “preserve open space, scenic natural beauty and natural resources” and in addition “conserve energy” and “protect agricultural land and resources.” The project has the potential to result in an increased risk of oil spills and fires that could impact natural resources, scenic areas, and agricultural land along the mainline rail routes as a result of this project. An oil spill could result in significant impacts to agricultural, biological, and water resources in the event of a spill because of the

additional rail traffic from this proposed project. These impacts are discussed in applicable sections of Chapter 4.0 of the FEIR. Because the project is anticipated to increase the oil spill risk, the project would not be in compliance with this goal of the Land Use Element.

13. **Strategic Growth Goal 1: Objective 4. Agriculture & Land Use Goal 2:** This objective states that agricultural land for the production of food, fiber and other agricultural commodities is to be protected. This includes the protection and support of the rural economy and locally based commercial agriculture. The proposed rail spur project has the potential to result in oil spills or fires that could impact agricultural land along the mainline rail routes. An oil spill could result in significant impacts to agricultural commodities and soils within the County. Because of the increase in risk and potential for a spill which would directly impact agricultural resources the project is not consistent with this land use policy.
14. **Chapter 6: Environmentally Sensitive Habitats, Coastal Streams Policy 20:** Coastal streams and adjoining riparian vegetation are environmentally sensitive habitat areas and the natural hydrological systems and ecological functions of coastal streams shall be "protected and preserved". The proposed rail spur project has the potential to result in oil spills and fires that could impact coastal streams and riparian areas along the mainline rail routes. An oil spill could result in significant impacts to coastal streams and riparian vegetation which is discussed in section 4.4 (Biological Resources) of the FEIR. This project would allow for an increase of rail traffic which would increase the probability of a potential spill which could severely impact the County's riparian areas. Because of this, the project is not consistent with this Coastal Policy.
15. **Chapter 7: Agriculture Policy 1:** Policy 1 states that prime agricultural land shall be maintained and protected for agricultural uses. Similar to the strategic growth goals listed above related to agriculture, the Coastal Plan Policies also outlines requirements for protection of agricultural lands which would potentially be impacted severely as a result of an accident or spill of oil on agricultural resources or soils, which is discussed in section 4.2 Agricultural Resources in the FEIR. The proposed project would increase oil traffic via rail throughout the County and thereby increase the probability of an accident or spill. In the event of a spill or fire there could be significant impacts to agricultural resources as a result of this project. Therefore, the project is not in compliance with this policy.
16. **Chapter 12: Archaeology, Policy 1: Protection of Archaeological Resources:** This General Plan policy states that the County shall provide for the protection of both known and potential archaeological resources. All available measures shall be explored at the time of a development proposal to avoid development on important archaeological sites. While development is not proposed on or near an archaeological site, impacts to archaeological resources could occur as a result of an oil spill and associated clean up actions along the mainline rail routes. Impacts to archaeological resources could not be avoided if a spill were to occur within an area where these resources are located in proximity to the mainline rail within the County. Therefore, the project is not in compliance with this policy.

South County Coastal Area Plan:

17. **Land Use, Rural Area Land Use, Industrial:** The Area Plan states that for the existing Santa Maria Refinery (SMR), the refinery occupies only a portion of the total area, and the large vacant areas around the refinery provide a desirable buffer from adjacent uses and an area where wind-carried pollutants can be deposited onsite, thereby not affecting neighboring properties. This is particularly important to the agricultural uses in the vicinity of the project site. The Area Plan provides that any proposed modification or expansion of the refinery (e.g., the proposed rail spur project) should be subject to Development Plan approval covering the entire property to designate buildable and open space areas. The Area Plan continues by

stating offshore oil and gas lease sales may generate the need for onshore partial oil and gas processing facilities and that expansion of industrial uses in the vacant portion of the rail spur project site may be appropriate in the future to accommodate offshore oil and gas lease sales. However, the Plan does not envision expansion for other purposes such as the Project. The rail spur component of the Project would extend an approximate 200-foot wide swath of development and industrial use approximately 0.8 mile to the east beyond the currently industrialized portion of SMR, toward existing residences and Highway 1. From the eastern terminus of the proposed rail spur, the buffer would be reduced to approximately 0.5 mile to the eastern boundary of the project site. This would reduce the buffer area between the Project and the residential area to the east and would therefore result in the Project being inconsistent with this policy.

18. **Industrial Air Pollution Standards:** This requirement of the South County Area Plan requires that “any expansion or modification of existing petroleum processing or transportation facilities or the construction of new facilities shall meet San Luis Obispo County Air Pollution District (SLOCAPCD) standards.” The Project does not comply with this requirement as it exceeds the minimum threshold for cancer risk of 10 in a million. Without full mitigation, the project would also exceed the SLOCAPCD threshold for DPM of 1.25 lbs per day onsite and due to federal preemption, the County cannot impose measures (e.g. Tier 4 locomotives) to fully mitigate this impact. The toxic air emissions including the DPM added to the basin as a result of this project is not in compliance with this requirement.

Safety Element of the General Plan:

19. **Safety Element of the General Plan, Fire Safety Goal S-4:** “Reduce the threat to life, structures and the environment caused by fire.” There is the potential for fire and explosions along the mainline rail routes due to a train derailment, which could impact life, structures and the environment depending on the location of the accident. The County is likely preempted from implementing conditions or mitigation measures that could mitigate these impacts along the mainline rail route. There are significant impacts to the safety of the populations near the rail lines within the County and the project is not consistent with this policy of the General Plan.
20. **Safety Element of the General Plan, Fire Safety Policy S-14, Facilities, Equipment and Personnel:** “Ensure that adequate facilities, equipment and personnel are available to meet the demands of fire fighting in San Luis Obispo County based on the level of service set forth in the fire agency’s master plan.” It has come to the County’s attention through numerous letters from jurisdictions along the mainline that there are not adequate resources through their respective fire agencies to respond to a derailment, spill or explosion as a result of a rail accident. In addition, the County may be preempted from implementing conditions or mitigation measures that could mitigate these impacts along the mainline rail routes, therefore the County can’t ensure there will be adequate facilities, equipment and personnel available in the event of an accident. This is the case throughout the state as well as within San Luis Obispo County. Therefore, the project is not consistent with this policy of the General Plan.
21. **Safety Element of the General Plan, Hazardous Materials Policy S-26, Program S-68:** S-26 states: “Reduce the potential for exposure to humans and the environment by hazardous substances.” S-68 states “Review commercial projects which use, store, or transport hazardous materials to ensure necessary measures are taken to protect public health and safety.” Implementation measure Program S-68 states that commercial projects which use, store, or transport hazardous materials are to ensure necessary measures are taken to protect public health and safety. As the Applicant has stated, the County would not be able to mitigate or require conditions upon the project which would ensure the safety for citizens along the mainline rail routes, including the portions within the County, due to the County likely being preempted from requiring these types of measures. The project is not in compliance with this

policy because the County would not be able to ensure the safety of the residents of the County, or the state, as a result of the additional probability of a derailment, spill, fire or explosion because of the proposed project.

Conservation and Open Space Element of the General Plan:

- 22. Air Quality Policy AQ 3.2, Attain Air Quality Standards:** Policy AQ 3.2 states that the County will attain or exceed federal or state ambient air quality standards for measured criteria pollutants. San Luis Obispo County is in non-attainment for ozone standards as well as the state particulate matter standards. The Project would generate fugitive dust and DPM onsite that would contribute to PM₁₀ emissions within the County. It is unlikely that these fugitive dust and DPM emissions (i.e., PM₁₀ emissions) could be offset at the SMR due to a lack of available onsite emission reductions. The addition of these onsite PM₁₀ emissions would further exacerbate the ability for the County to attain the state particulate matter standards and therefore the project would not be in compliance with this General Plan policy of the Conservation and Open Space Element.

The rail spur project would be generating NO_x and ROG emissions along the mainline rail route that would lead to ozone increases and would generate DPM along the mainline rail routes that would contribute to PM₁₀ emissions within the County. Due to Federal preemption, the County may not be able to require emissions reduction credits for the mainline rail NO_x, ROG, and DPM emissions. The addition of these NO_x, ROG, and PM₁₀ emissions would further exacerbate the ability for the County to attain the state particulate matter and ozone standards. The addition of these NO_x, ROG, and PM₁₀ emissions along the mainline rail route within the County would further exacerbate the ability for the County to attain the state particulate matter and ozone standards and therefore the project would not be in compliance with this General Plan policy of the Conservation and Open Space Element.

- 23. Air Quality Policy AQ 3.3, Avoid Air Pollution Increases:** Policy AQ 3.3 states that the County will, "Avoid a net increase in criteria air pollutant emissions in planning areas certified as Level of Severity II or III for Air Quality by the County's Resource Management System (RMS)." The Nipomo Mesa area is in a level of severity II for Ozone, a level of severity III for PM_{2.5}, and a level of severity III for PM₁₀. The "PM" or particulate matter includes hazardous materials in the air that gets into the lungs and causes a variety of health effects. The PM_{2.5} tends to be a greater health risk because the particles are smaller and can travel deeper into the lungs. Sources of particulate pollution include diesel exhaust, mineral extraction and production, combustion products from industry and motor vehicles, smoke, wind-blown dust and other sources (Source: County Resource Summary Report). The Project does not comply with this standard because it would add diesel exhaust from locomotives to an area which is currently in a level of severity of III. Even with implementation of mitigation measures the Project would exceed the threshold of cancer causing diesel particulate which is 10 in a million by creating a risk factor of about 13.6 in a million (for emissions occurring at the project site and along the mainline impacting the same receptors near the SMR). Without implementation of mitigation, the Project would create a risk factor of 26.5 in a million, both of which are exceeding the threshold. In addition, without full mitigation, the Project would exceed the 1.25 lbs per day threshold for DPM onsite. In addition, the most effective mitigation measure is likely not implementable due to federal preemption (i.e., requiring use of Tier 4 locomotives).

Operation of the locomotives along the mainline rail routes would result in increase in NO_x and ROG emissions that would lead to ozone increases. The locomotives would also generate diesel particulate matter emissions along the mainline rail routes, which would increase PM₁₀ emissions in the County. Due to Federal preemption, the County may not be able to require emissions reduction credits for the mainline rail NO_x, ROG, and diesel particulate matter emissions. The addition of these NO_x, ROG, and PM₁₀ emissions would result in air pollution

increases in the County and therefore the project would not be in compliance with this General Plan policy of the Conservation and Open Space Element.

- 24. Air Quality Policy AQ 3.4, Toxic Exposure:** Policy AQ 3.4 states that the County will, "Minimize public exposure to toxic air contaminants, ozone, particulate matter, sulfur dioxide, carbon monoxide, nitrogen oxides, and lead." This Project does not comply with this Policy of the General Plan because it allows for an increase in hazardous emissions as a result of the project. Calculations in the FEIR have shown that this Project would exceed the cancer threshold, which is 10 in a million, by resulting in a cancer risk of about 26.5 in a million (with no mitigation), or about 13.6 in a million (with partial mitigation). This impact would exceed San Luis Obispo County Air Pollution Control District (APCD) health risk thresholds when factoring in the 2012 California Office of Environmental Health Hazard Assessment (OEHHA) childhood exposure and breathing rate adjustments.

The Project does not comply with this Policy of the General Plan because it allows for an increase in hazardous emissions as a result the locomotives operating on the mainline rail routes in the County. Calculations in the FEIR show that the Project would exceed the cancer threshold of 10 in a million for areas where trains speeds are limited to 30 miles per hour or less and thus impacting people in the county along the routes which will see the additional rail traffic as a result of this proposed project.

- 25. Air Quality Policy AQ 3.5, Equitable Decision Making:** Policy AQ 3.5 states that the County will, "Ensure that land use decisions are equitable and protect all residents from the adverse health effects of air pollution." This policy is also consistent with the discussion above regarding air quality Policy AQ 3.3. The Project would bring locomotives (up to 5 trains per week, 10 round trips) to the site for unloading of heavy crude, and would depart the site empty. The additional diesel exhaust from these locomotives, upwind of many residences and sensitive receptors, would cause a significant impact to the air quality for these residences. In addition, a large onsite buffer between the residential neighborhoods and the facility would be reduced from over 7,600 feet to approximately 3,300 feet. This project application for a "Development Plan/Coastal Development Permit" is a discretionary land use permit with the discretion by the County to decide if this project complies with the General Plan including the health and safety of the County's residents. The Project imposes health risks which would be inconsistent with the health and safety requirements of the General Plan with regard to air quality from the property (increase in cancer causing thresholds). This project would not ensure that all residents are protected from the adverse health effects of air pollution as this policy requires.

- 26. Air Quality Goal AQ 3: Implementation Strategy AQ 3.6.1, Identify Health Risks to Sensitive Receptors:** This implementation strategy of the General Plan states that health risks are to be mitigated consistent with Air Pollution Control District standards. This is generally applicable to projects for which construction would occur near a freeway or rail line and mitigation would be required to reduce the air quality hazards to "sensitive receptors" or citizens which are sensitive to these pollutants. However, this project would increase the amount of toxic emissions as an increase in rail traffic would occur as a result of the proposed project. Toxic emissions from the locomotives operating on the mainline rail routes would exceed the cancer risk thresholds for areas where speeds are limited to 30 miles per hour or less and thus impacting people in the county along the routes which will see the additional rail traffic as a result of this proposed project. Therefore, the project would not be in compliance with this General Plan policy of the Conservation and Open Space Element.

- 27. Biological Resources Policy 1.2, Limit Development Impacts:** This policy calls for the regulation and minimization of proposed development in areas that contain essential habitat for special-status species, sensitive natural communities, wetlands, coastal and riparian

habitats, and wildlife habitat and movement corridors as necessary to ensure the continued health and survival of these species and protection of sensitive areas. The Project would result in the extension of refinery infrastructure (i.e., rail spur, unloading facility, pipelines, and emergency vehicle access road) into a dune habitat system. Approximately 20 acres of various project features would be constructed within dune vegetation that is considered sensitive habitat as classified by the California Department of Fish and Wildlife (CDFW) under the National Vegetation Classification system described in A Manual of California Vegetation, Second Edition and is also considered Unmapped ESHA; therefore, the Project does not comply with this policy.

28. **Biological Resources, Policy BR 1.15: Restrict Disturbance in Sensitive Habitats during Nesting Seasons:** This General Plan policy states that projects are to avoid impacts to sensitive riparian corridors, wetlands and coastal areas in order to protect bird-nesting activities. In addition to the impacts discussed above related to Coastal Streams in Coastal Plan Policies, impacts as a result of a spill along the mainline would negatively impact nesting birds which is in conflict with this General Plan policy. This project would increase the risk of a spill or fire which would remove and damage nesting habitats. Therefore, the project would not be in compliance with this General Plan policy of the Conservation and Open Space Element.
29. **Energy, Goal E 7: Design, siting, and operation of non-renewable energy facilities:** Implementation Strategy E 7.1.1 states that new facilities will not be located in a manner which will impact the health and safety of human populations with special attention to disabled and elderly populations as they require additional resources for evacuation in the event of an emergency. The risk analysis for the mainline rail routes found that significant hazards would exist to the public in the vicinity of the mainline rail routes in the event of a derailment and release of crude oil that could lead to a fire or explosion. This proposed project would increase crude oil rail traffic which could have potential for catastrophic impacts in the event of a derailment or explosion and would be in direct conflict with this General Plan policy as it relates to the health and safety of the citizens around the mainline within San Luis Obispo County.
30. **Non-Renewable Energy Facility Siting Policy E 7.1:** Energy Goal 7 states that, "Design, Siting, and Operation of Non-renewable energy facilities will be environmentally appropriate." In addition the related Policy E 7.1 for Non-Renewable Energy Facility Siting, "Energy fossil fuel, and related facilities will be sited, constructed, and operated in a manner to protect the public from potential hazards and significant environmental impacts." The implementation Strategy related to Goal 7 and Policy 7.1 requires facility design, siting and operational standards: There are 30 of these outlined for energy projects and the pertinent policies for the rail spur project are listed here (numbers correspond to the numbers in the Conservation and Open Space Element Energy Policy E 7.1):

- 3) Continue to maintain, operate, monitor, and repair the facility so that it does not constitute a public safety hazard or an environmental threat.

The Project does not comply with this component of the goal due to air toxic emissions from the operation of the Project that would exceed the acceptable levels determined by the SLOCAPCD for both cancer risk and diesel particulate matter. The Project, while located within and adjacent to an existing facility, would increase the intensity of rail activity and change the use of the site to allow for crude to be brought in via rail. The addition of up to five trains per week would increase toxic air emissions which would impact neighboring residences to the east and north of the project site.

- 4) Employ the best reasonably achievable techniques available to prohibit disruption of environmentally sensitive areas such as wetlands, animal or bird refuges,

or habitat of species of special concern. Avoid impacts to habitat of rare, threatened, or endangered species.

The Project does not comply with this component of the policy because construction of the Project would impact about 20 acres of sensitive habitat as classified by the California Department of Fish and Wildlife (CDFW) under the National Vegetation Classification system described in A Manual of California Vegetation, Second Edition and an area of the project site considered Unmapped ESHA.

B. The proposed project does not satisfy all applicable provisions of Title 23 of the County Code because:

31. **Section 23.07.170 of the Coastal Zone Land Use Ordinance Environmentally Sensitive Habitats:** The Project is located within dune habitat containing sensitive vegetative communities as classified by the California Department of Fish and Wildlife (CDFW) under the National Vegetation Classification system described in A Manual of California Vegetation, Second Edition (i.e., Silver dune lupine – mock heather scrub). The Project will extend within this habitat area, and there are no alternatives around disturbance or removal of this habitat area in order for the project, or project alternative, to proceed. This is in direct conflict with this standard which states, "All development and land divisions within or adjacent to an Environmentally Sensitive Habitat Area shall be designed and located in a manner which avoids any significant disruption or degradation of habitat values. This standard requires that any project which has the potential to cause significant adverse impacts to an ESHA be redesigned or relocated so as to avoid the impact, or reduce the impact to a less than significant level where complete avoidance is not possible." The extension of the rail spur adjacent to the Santa Maria Refinery is located within a dune habitat area which also acts as a spatial buffer between the refinery and the residences to the east.

C. The establishment and subsequent operation or conduct of the use will, because of the circumstances and conditions applied in the particular case, be detrimental to the health, safety or welfare of the general public or persons residing or working in the neighborhood of the use, and will be detrimental or injurious to property or improvements in the vicinity of the use because:

32. The Rail Spur Project would modify and expand the existing industrial uses and activities at the Santa Maria Refinery (SMR) by delivering crude oil to the refinery by rail. The onsite activities associated with the rail spur project would result in cancer risk from air toxics and increased DPM that would both exceed Air Pollution Control District CEQA thresholds. These significant air quality impacts would directly impact neighboring residences, employees, and populations in the vicinity of the Santa Maria Refinery. The Project would generate toxic air emissions that exceed San Luis Obispo County APCD (SLOCAPCD) health risk thresholds when factoring in the most recent 2012 California Office of Environmental Health Hazard Assessment (OEHHA) childhood exposure and breathing rate adjustments. The SLOCAPCD cancer risk CEQA threshold is 10 in a million for toxic emissions and with this proposed project (with partial mitigation) there would be a risk of 13.6 in a million, which exceeds these thresholds. Onsite operation of the locomotives would exceed the SLOCAPCD CEQA threshold of 1.25 lbs per day of diesel particulate matter even with partial mitigation. These are both considered a significant and unavoidable environmental impact.

Operation of the locomotives along the mainline rail routes would result in increase in NO_x and ROG emissions that would lead to ozone increases both in the County and in other parts of the State. Operational activities of trains along the mainline rail route outside of San Luis Obispo County associated with the Project would generate criteria pollutant emissions that exceed thresholds of 15 air districts other than SLOCAPCD. For three of these districts

impacts cannot be mitigated to less than significant levels. Mitigation has been recommended that includes use of Tier 4 locomotives and the purchase of emission credits. For the mainline rail emissions it is possible that contractually the Applicant could require the use of lower emission locomotives such as Tier 4 locomotives. However, since these are operated by UPRR on UPRR tracks, a requirement that the Applicant enter into this type of contractual provision would likely be preempted by Federal law and therefore unenforceable. The County may also be preempted by Federal law from requiring emission reduction credits for mainline rail emissions. Since these mitigation measures may not be implementable and it is uncertain if the other Air Districts could require emission reduction credits, the impacts associated with the mainline rail operation would remain significant.

The locomotives would also generate diesel particulate matter emissions along the mainline rail routes, which would increase PM₁₀ emissions in the County. Due to Federal preemption, the County may not be able to require emissions reduction credits for the mainline rail NO_x, ROG, and diesel particulate matter emissions. The addition of these NO_x, ROG, and PM₁₀ emissions would result in significant and unavoidable air quality impacts.

This proposed project would increase rail traffic by importing heavy crude via rail into the Santa Maria Refinery. A risk assessment was conducted for the mainline rail routes to the Santa Maria Refinery. The risk along the mainline rail routes that were evaluated was found to be significant in the event of a rail accident that occurred near populated areas. The EIR identified mitigation measures to reduce the potential for release of crude oil in the event of an accident. However, the County may be preempted by Federal law from applying these mitigations to the project. Furthermore it has been communicated to the County through numerous letters from outside jurisdictions that many of the jurisdictions do not have the necessary personnel, equipment or training in order to provide appropriate emergency response to an oil train derailment or explosion within their areas. This proposed project will create a significantly hazardous and potentially dangerous situation within many areas along the mainline not only in San Luis Obispo County, but to other jurisdictions along the main rail lines and therefore, the project is inconsistent with this policy.

D. The proposed project or use will be inconsistent with the character of the immediate neighborhood or contrary to its orderly development because:

33. The proposed rail spur project will expand the existing industrial uses of the Santa Maria Refinery onto a currently vacant portion of the refinery property which acts as a buffer between the residential areas to the east and the refinery operations. The South County Coastal Area Plan specifically identifies the undeveloped areas of the project site as providing a desirable buffer from the heavy industrial activities and more sensitive adjacent land uses. The rail spur extension would extend a total of approximately 1.3 miles (6,915 feet), including approximately 0.5 mile (2,445 feet) within the exiting industrial coke area. This would result in an extension of industrial uses approximately 0.85 mile into the undeveloped area in the eastern portions of the project site. The buffer between residential and recreational uses east of State Route 1 would be reduced from approximately 1.4 miles to 0.6 mile. The rail spur extension would similarly reduce existing buffers between the industrial structures and agricultural crops located northeast and southeast of the project site.

This important buffer is what allows these incompatible land uses (refinery and residential) to coexist as neighbors, however this project will greatly reduce this buffer. The rail spur will be incompatible with the residential and agricultural resources that surround the spur and will bring additional toxic air contaminants and PM₁₀ closer to the residential and agricultural land uses. Therefore, the proposed extension of the industrial activities by allowing the railroad spur would be incompatible with surrounding uses and would therefore not comply with the character of the immediate neighborhood and will be contrary to its orderly development.

E. Coastal Access:

34. Coastal access was addressed in a previously approved permit (Throughput DRC2008-00146), which included a condition of approval requiring Phillips 66 to construct coastal access improvements associated with the vertical public access within "□ 10 years of the effective date of this permit (including any required Coastal Development Permit to authorize such construction) or at the time of any subsequent use permit approved at the project site, whichever occurs first." Because the proposed rail spur project (DRC2012-00095) is recommended for denial, the previous condition of approval from the Throughput project will remain in place and effective. Phillips 66 will be required to uphold the previous coastal access condition of approval from DRC2008-00146 as adopted. Denial of the proposed rail spur project will not impact Coastal Access.

ATTACHMENT B

Responses to Adams Broadwell Joseph & Cardozo Comments

	required to the comment.
ABJC-19	<p>The RDEIR states as part of the discussion in Impact AQ.2 (see Section 4.3, Air Quality and Greenhouse Gases) that "If the use of only Tier 4 locomotives cannot be implemented, then the Applicant would have to provide a <u>larger</u> amount of emission reduction credits" (emphasis added). The term larger clearly communicates that credits would still be required even if Tier 4 locomotives are secured. Table 4.3-15 in the RDEIR shows that the emissions, with Tier 4 mitigation, would still exceed SLOCAPCD thresholds.</p> <p>The reference to mitigation measure AQ-2c has been corrected. Mitigation measure AQ-2a clearly refers to the use of emission reductions - "If emissions of ROG+NO_x and DPM with the above mitigations still exceed the thresholds, as measured and confirmed by the SLOCAPCD, the Applicant shall secure SLOCAPCD-approved onsite and/or offsite emission reductions..."</p>
ABJC-20	<p>The RDEIR states as part of the discussion in Impact AQ.2 (see Section 4.3, Air Quality and Greenhouse Gases) that "If the use of only Tier 4 locomotives cannot be implemented, then the Applicant would have to provide a <u>larger</u> amount of emission reduction credits" (emphasis added). The term larger clearly communicates that credits would still be required even if Tier 4 locomotives are secured. Table 4.3-15 in the RDEIR shows that the emissions, with Tier 4 mitigation, would still exceed SLOCAPCD thresholds.</p> <p>The reference to mitigation measure AQ-2c has been corrected. Mitigation measure AQ-2a clearly refers to the use of emission reductions - "If emissions of ROG+NO_x and DPM with the above mitigations still exceed the thresholds, as measured and confirmed by the SLOCAPCD, the Applicant shall secure SLOCAPCD-approved onsite and/or offsite emission reductions..."</p>
ABJC-21	<p>As discussed in responses to AB-01, AB-03, and AB-04, it is unclear whether federal law preempts the County from imposing mitigation measures to reduce the potential for significant impacts along UPRR's mainline. While requiring certain tiered locomotive engines would reduce potential air quality impacts, it is possible that the County may not be able to require Phillips to contract with UPRR to use only these types of locomotives for its Project-related shipments. For this reason, the RDEIR concludes that air quality impacts relating to criteria pollutant emissions are potentially significant and unavoidable. This meets the lead agency's information disclosure requirements under CEQA and will allow County decision makers to evaluate the full spectrum of potential environmental impacts as well as possible measures that would mitigate those impacts. Some mitigation measures may be permissibly imposed despite federal law. For instance, mitigation measures AQ-2a and AQ-3 through AQ-6 would allow the Applicant to mitigate its Project-related air quality impacts by securing on and off-site emission reduction credits through the SLOAPCD. As these measures do not require the action or involvement of UPRR, it is questionable that such a measure would be preempted by federal law. It is</p>

Responses to Adams Broadwell Joseph & Cardozo Comments

	<p>possible, then, that a number of mitigation measures could be imposed that would lessen the Project's overall impacts to less than significant. The Revised Draft EIR properly discloses the potential for impacts and the possible mitigation measures that would lessen those impacts.</p> <p>The RDEIR addresses preemption under impact AQ.3, which is related to air emissions that occur along the mainline track outside of SLOC. Impact AQ.2, related to air emissions within SLOC, also addresses preemption as portions of the emissions within SLOC occur on the mainline track.</p> <p>Emission credits are not applied in Tables 4.3-14 and 4.3-15 in the RDEIR, which tabulate the emissions from sources within SLOC. A note has been added to Table 4.3-14 to clarify this issue.</p> <p>Note that the RDEIR clearly indicates that the mitigation measures for "outside of the SMR boundary" might be preempted, but not those within the boundaries, such as idling limits.</p>
<p>ABJC-22</p>	<p>For the mitigation measures AQ-2a, AQ-3 and AQ-8, the option is given to the Applicant to implement design features for the project which would allow for a decrease in the emissions levels. These might include the use of Tier 4 locomotives or other methods to reduce emissions. Whether these methods are implemented or not does not define the level of impact because under each of these mitigation measures, the requirement to obtain established credits is also included. The SLOCAPCD has a well established program of credits for criteria pollutants and GHG which can be used to offset the emissions increases. The allowing of different options to achieve the stated performance target of a reduction in emissions levels is not deferral of mitigation. The assurance that the plan will work is the requirement to obtain offsets.</p>
<p>ABJC-23</p>	<p>The SLOCAPCD has a well establish policy of requiring offsets for emissions and the agency issues permits for operations that enable it to ensure enforceability of the provisions in the EIR. Historical use of these instruments, and the permitting history of the SMR and the SLOCAPCD as well as consultation with and comments from the SLOCAPCD during the EIR process, provides the assurances that the mitigation measures are feasible, effective and will be adopted by the agencies.</p>
<p>ABJC-24</p>	<p>In the <i>Lotus v. Department of Transportation (2014) 223 Cal.App.4th 645</i> case cited in the comment, the Courts found that implementation of special construction techniques to avoid impacts to the structural root zone of redwoods should not have been considered to be part of the project description, but rather the impacts should have been determined without these measures and if an significant impact was identified, then these special construction techniques should have been identified as mitigation measures. The Court also found that one of the special construction techniques included as a project design feature, to use cement treated permeable base to limit the thickness of the road base and</p>

ATTACHMENT C

Comments

on

Final Environmental Impact Report

for the

Valero Crude by Rail Project

Benicia, California

February 8, 2016

Prepared by
Phyllis Fox, Ph.D., PE
Consulting Engineer
745 White Pine Ave.
Rockledge, FL 32955

I. SUMMARY AND CONCLUSIONS

I previously filed comments on the City of Benicia's (City's) Initial Study/Mitigated Negative Declaration (IS/MND)¹ (Fox IS/MND Comments²); the Draft Environmental Impact Report (DEIR)³ (Fox DEIR Comments⁴), and the Recirculated Draft Environmental Impact Report (RDEIR)⁵ (Fox RDEIR Comments⁶) for Valero's Crude-by-Rail Project ("Project") at its Benicia Refinery ("Refinery"). These four documents (IS/MND, DEIR, RDEIR, FEIR) are referred to collectively in these comments as "the EIR".

I was asked by SAFER to review the Final Environmental Impact Report (FEIR),⁷ which contains Responses to Comments (RTCs) on the DEIR and the RDEIR. My review indicates that the Final EIR and the responses to my comments on the IS/MND, the DEIR, and the RDEIR have not resolved the issues that I raised in my comments, which stand un rebutted in the record. Thus, I reincorporate my prior comments on the

¹ City of Benicia, Valero Crude by Rail Project, Initial Study/Mitigated Negative Declaration, Use Permit Application 12PLN-00063, May 2013; Available at: http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Valero_Crude_by_Rail_IS-MND.pdf.

² Phyllis Fox, Comments on Initial Study/Mitigated Negative Declaration (IS/MND) for the Valero Crude by Rail Project, Benicia, California, Use Permit Application 12PLN-00063, July 1, 2013; Available at: http://www.ci.benicia.ca.us/vertical/sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Report_by_Dr._Phyllis_Fox.pdf.

³ City of Benicia, Valero Benicia Crude by Rail Project, Draft Environmental Impact Report, Use Permit Application 12PLN-00063, June 2014; Available at: <http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Valero-Benicia-DEIR-CD.pdf>.

⁴ Phyllis Fox, Comments on the Draft Environmental Impact Report (DEIR) for the Valero Benicia Crude-by-Rail Project, September 15, 2014, Attachment A to SAFER Comments and Attachment 1 to NRDC Comments, Comment Letter B11 in FEIR, pp. 2.5-301/330; Available at: [http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Attachment_A\(2\).pdf](http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Attachment_A(2).pdf).

⁵ City of Benicia, Valero Benicia Crude by Rail Project, Revised Draft Environmental Impact Report, SCH # 2013052074, Use Permit Application 12PLN-00063, August 2015; Available at: http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Valero_Benicia_Crude_by_Rail_RDEIR_Complete_Version.pdf.

⁶ Letter from Phyllis Fox to Rachael Koss, Re: Review of Revised Draft Environmental Impact Report for Valero Benicia Crude by Rail Project, October 30, 2015, Attachment B to SAFER Comments, Comment Letter J6 in FEIR, pp. 3.5-82/92; Available at: [http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Attachment_B\(2\).pdf](http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Attachment_B(2).pdf).

⁷ City of Benicia, Valero Benicia Crude by Rail Project, Final Environmental Impact Report, SCH # 2013052074, Use Permit Application 12PLN-00063, January 2016; Available at: <http://www.ci.benicia.ca.us/index.asp?SEC=%7BFDE9A332-542E-44C1-BBD0-A94C288675FD%7D>.

IS/MND, the DEIR, and the RDEIR, which are summarized below. My comments on the FEIR were prepared with assistance from Ian Goodman⁸ on fugitive railcar reactive organic gases (ROG) emissions and hazards mitigation, who also filed comments on the IS/MND⁹.

First, the FEIR fails to evaluate all of the impacts of the Project. The Project involves replacing 43% of the Benicia Refinery's crude slate with "North American" crudes that have no history in the refining industry. These include heavy sour crudes from the Canadian tar sands deposits and light sweet crudes from fracked shale formations. These new crudes have higher levels of toxic heavy metals, higher levels of toxic and malodorous sulfur compounds, emit more greenhouse gases, and are much more corrosive than conventionally refined crudes, thus potentially increasing the probability of refinery accidents that could endanger the public at large. These differences will result in changes in emissions and increased likelihood of refinery accidents. The IS/MND, DEIR, RDEIR, and FEIR have refused to evaluate these impacts, sweeping them under the rug with the unsupported assertion that the new crudes will be blended with other crudes to meet the same sulfur and weight specifications as baseline crudes. However, there is no relationship between the sulfur and weight of crudes and the unique chemical and physical characteristics of these new crudes. The DEIR, RDEIR, and FEIR do not contain any crude quality data to support their claims, while my comments are supported by substantial evidence. Thus, the EIR has failed to evaluate an entire class of impacts.

Second, the FEIR either omits entirely or significantly underestimates reactive organic gas (ROG) emissions from the Project. Reactive organic gas emissions are important because they form ozone in the atmosphere, contributing to existing exceedances of ozone ambient air quality standards, a *per se* significant impact. The EIR either omits or significantly underestimates ROG emissions from marine vessels, storage tanks, railcar unloading, sumps, and railcar in-transit fugitive emissions.

Third, the RDEIR's estimate of railcar fugitive ROG emissions is significantly underestimated due to numerous errors and omissions. I modified the RDEIR's

⁸ Resume Ian Goodman Available at:

<http://www.thegoodman.com/pdf/TGG20160122IanGoodmanCV.pdf>.

⁹ Ian Goodman and Brigid Rowan, Comments on Initial Study/Mitigated Negative Declaration (IS/MND), Valero Crude by Rail Project, Benicia, California, July 1, 2013; Available at:

http://www.ci.benicia.ca.us/vertical/sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Report_by_the_Goodman_Group.pdf.

analysis, correcting these errors and omissions. My revised analysis indicates that railcar fugitive ROG emissions exceed CEQA daily and annual significance thresholds in every air district through which the unit trains are assumed to transit. The EIR does not include any mitigation for these significant impacts. Feasible mitigation is available and must be required.

Fourth, the FEIR improperly limits the geographic scope of its analysis to three routes that enter California from the north while asserting it can import any crude via any route, including through southern California. The FEIR asserts that it does not need to analyze the southern routes as the impacts are “substantially similar” to those on the northern routes. The EIR supports this approach by claiming that a similar contemporaneous EIR used the same approach – the Santa Maria Rail Spur Project EIR.¹⁰ However, the Valero EIR does not contain any substantially similar analyses for the southern routes and the Santa Maria Rail Spur EIR analyzed all routes, in direct contradiction to the Valero EIR’s claims. My analyses demonstrate that impacts of the southern route are distinguishable from the northern routes, are significant, and are not mitigated.

Fifth, there are at least three alternatives to the Project that would eliminate all of its direct impacts that were not evaluated in the EIR. These are crude import via two existing crude-by-rail terminals in the Bakersfield area with direct connection to the Benicia Refinery via pipeline or via truck to pipeline and a proposed crude-by-rail terminal at nearby Stockton with access via marine barge.

Sixth, the FEIR concludes that the risk of unit train accidents is significant but declines to require any mitigation. Feasible mitigation is available and has been required for the similar Santa Maria Rail Spur Project: the use of safer tank cars than required by current regulations, Option 1, the new DOT-117 standard with the added safety feature of “rollover protection,” which has a more damage-resistant top fittings design. Further, Tesoro, which is proposing a crude-by-rail terminal in Washington, has proposed to use DOT-120 pressure tank cars.

¹⁰ Marine Research Specialists, Phillips 66 Company Rail Spur Extension and Crude Unloading Project Final Environmental Impact Report and Vertical Coastal Access Project Assessment, Prepared for San Luis Obispo County, December 2015; Available at: <http://www.slocounty.ca.gov/Assets/PL/Santa+Maria+Refinery+Rail+Project/FEIR+Phillips+Rail+Spur+Project+Dec+2015/Main+Document+EIR/Phillips+Rail+Spur+Project+FEIR+December+2015.pdf>.

II. THE FEIR FAILS TO ANALYZE THE AIR QUALITY IMPACTS FROM REFINING DIFFERENT TYPES OF CRUDE

The Project will allow the Refinery to replace up to 70,000 barrels per day (BPD) of crude oil (43% of its total permitted crude slate) currently transported by marine vessel, with an equivalent amount of crude oil transported by rail, identified as "North American-sourced crude oil." These crudes could include heavy sour crudes, such as tar sands crudes, and light sweet crudes, such as Bakken crudes. As explained in my prior comments, there are important chemical and physical differences between these rail-imported crudes and those that are currently refined that would result in environmental impacts that have not been addressed in the FEIR. These are discussed for two broad classes of cost-advantaged crudes – heavy sour tar sands crudes and light sweet shale crudes that could be imported by the Project.

In my comments on the IS/MND, I explained why and how crude quality affects emissions, noting that data on many chemical and physical properties¹¹ is required to evaluate the impacts of the proposed crude switch (IS/MND Comments, pp. 19-31). This data was never supplied, and these comments were never addressed.

The DEIR did not provide any of this data nor include any analysis at all of the impact of crude quality on refinery emissions. Rather, it argued that rail-imported crudes will be blended with other crudes to meet the same sulfur and weight (API gravity) specifications as the baseline Refinery. Thus, the DEIR asserted that changes in crude slate quality would not affect emissions. This is incorrect and did not address my comments on the IS/MND. Therefore, I reasserted my IS/MND comments and incorporated them by reference into my DEIR comments.

In my DEIR comments, I further expanded my crude quality comments to explain that there are important physical and chemical differences between crudes that are not related to the weight and sulfur content of the crude that affect emissions. For example, even if the weight and sulfur content of a particular crude blend falls within the range specified in the DEIR, or doesn't change at all, other components in the crude, such as toxic air contaminants (TACs) like benzene, or highly malodorous compounds

¹¹Trace elements (As, B, Cd, Cl, Co, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Sb, Se, U, V, Zn); nitrogen; (total & basic); sulfur (total, mercaptans, H₂S); residue properties (saturates, aromatics, resins); acidity; aromatics content; asphaltenes (pentane, hexane and heptane insolubles); hydrogen content; carbon residue (Ramsbottom, Conradson); distillation yields; properties by cut; and hydrocarbon analysis by gas chromatography, among other.

such as mercaptans, or the total acid number (TAN) may be present at much higher concentrations than in the crudes they replace with identical sulfur and API gravity. My comments on the DEIR were included as attachments to letters from SAFER (B11-36 to B11-40) and NRDC et al. (B10-34 to B10-38).

The RDEIR also did not address the impact of crude quality on emissions that I raised in my comments on the IS/MND and DEIR. Therefore, I reincorporated my comments on the DEIR into my RDEIR comments. Fox RDEIR Comments, p. 1.

The Final Environmental Impact Report (FEIR)¹² responds to my comments on crude quality, originally raised in both the IS/MND and the DEIR. The responses to these crude quality issues are in RTC B10-34 to B10-38 (NRDC et al) and B11-36 to B11-40 (SAFER). FEIR, pp. 2.5-364/365. The responses again do not respond to the crude quality issue, but continue to side step it by arguing that crudes will be blended to the same sulfur and gravity. These non-responsive responses are discussed below.

A. Impacts from Refining Heavy Sour Crude Are Not Addressed (RTC B10-34 to B10-36 and RTC B11-36 to B11-38)

The Rail Project was preceded by the Valero Improvement Project or VIP, which was designed to facilitate the import and processing of much higher sulfur and heavier crudes than the current slate, increasing it from 30% up to 60% of the total supply.¹³ The VIP Project set the stage for the Rail Project to import tar sands crudes, which have unique chemical and physical characteristics that are not captured by the lumped parameters used in the EIR to characterize crude quality -- percent sulfur and API gravity.

These differences—in both chemical and physical characteristics other than API gravity and sulfur content— fluctuate independent of sulfur content and API gravity and will result in significant impacts that have not been considered in the FEIR.

¹² City of Benicia, Valero Benicia Crude by Rail Final Environmental Impact Report, January 2016; http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Final_EIR-Complete_without_Appendices.pdf.

¹³ VIP DEIR, p. 3-20 (“The refinery currently imports and processes two primary raw materials – crude oil and gas oil. Currently, about 30% of the refinery feedstocks are lower-grade raw materials, with higher levels of sulfur and higher heavy pitch content. The VIP changes would allow the refinery to purchase and process additional volumes of lower-grade raw materials (crude oils or gas oils). In general terms, the refinery would be able to increase this percentage to about 60%, raising the average sulfur content of the imported raw materials from current levels of about 1 - 1.5% up to future levels of about 2 - 2.5%.”).

For heavy sour crudes, these impacts include, for example, significant increases in malodorous sulfur compounds, resulting in significant odor impacts; significant increases in combustion emissions, contributing to existing violations of ambient air quality standards and increases in greenhouse gas emissions; and significant increases in metals, which end up in the coke and leave the site as coke dust, contributing to existing significant off-site health impacts. The IS/MND, DEIR, RDEIR, and FEIR fail to consider these changes in crude quality that can lead to significant impacts.

Responses RTC B10-34 to B10-37 (and B11-36 to B11-39) reiterate the same blanket, unsupported statement upon which I initially commented, back in 2013: “The Project proposes no changes to the Refinery’s throughput, processing equipment, or Refinery processing emissions. The refinery must continue to blend crudes that are actually processed to the same narrow range of weight and sulfur content...Consequently, the Project will not increase emissions above existing levels.” This is not responsive because many other parameters vary independently of weight and sulfur content.

In fact, the Project will replace up to 70,000 bbl/day of the Refinery’s crude slate or 43% of the total with new crudes that differ from those historically refined in ways that are not captured by sulfur content and API gravity. As demonstrated with substantial evidence in my prior comments, these new crudes have higher levels of toxic heavy metals, higher levels of toxic and malodorous sulfur compounds, and are much more corrosive, thus potentially increasing the probability of accidents. These differences will result in changes in emissions and increased likelihood of refinery accidents, even if the new crudes are blended to the same sulfur and API gravity. These new crude quality impacts have not been addressed anywhere in the City’s analyses, including responses to comments or elsewhere in the FEIR.

B. Impacts from Importing and Refining Light Sweet Crudes Are Not Addressed (RTC B10-41 to B10-42 and RTC B11-43 to B11-44)

Light sweet crudes such as Bakken can also be imported by the Valero Rail Project. These crudes also have unique chemical and physical properties, compared to the current crude slate. In my IS/MND and DEIR comments, I explained that these crudes are much more volatile than crudes in the current slate. They also have elevated levels of ROG and TACs. This means they would result in much higher ROG and TAC emissions from storage tanks, pumps, compressors, valves, and connectors at the baseline Refinery and from tanker cars during transport and unloading, contributing to

existing violations of ozone ambient air quality standards; significant increases in TAC emissions such as benzene, resulting in significant health impacts; and significant increases in crude flammability, thus increasing the severity of and the potential for accidents involving train derailments or on-site spills. Fox DEIR Comments B10-41 to B10-42 and B11-43 to B11-44.

The Bay Area Air Quality Management District (BAAQMD) made a similar comment: "Air District staff recommends that the RDEIR address the potential changes in emissions associated with handling lighter crude, which can have higher volatile organic compound (VOC) content than the existing crude being processed; this can lead to increased fugitive emissions during transport and storage which should be evaluated for air quality impacts." Comment I12-10. In response to the BAAQMD, RTC I12-10 asserts:

"the blended crude Valero processes is constrained by Valero's operational restrictions and BAAQMD permits and regulations. These same limitations constrain the individual crudes Valero procures and stores for processing. Therefore, it follows that the Project will not result in an increase in tank emissions...The Project does not propose any changes to its existing permitting levels, except to permit ROG emissions associated with unloading crude oil from railcars."

The response to the BAAQMD is wrong because the baseline for evaluating impacts under CEQA is actual emissions prior to the start of environmental review, not permit limits and regulations when those limits and sources have not been subject to CEQA review. The subject tanks and fugitive components have not been subject to CEQA review. Thus, the EIR has failed to evaluate the impact of processing lighter crudes through refinery components that previously handled heavier crudes with lower vapor pressures and thus lower ROG and TAC emissions.

In response to my comments on this same issue, the FEIR asserts that the RDEIR includes an analysis of ROG fugitives from railcars, including estimates for pressure relief valves, standard valves, and connectors on the tanker cars. RTC B10-41 and B10-42 and B11-43 and B11-44. These responses do not cite to any pages or tables that contain the asserted information. However, it appears the cited emissions are in RDEIR Table 4.1-12 and supporting calculations are in RDEIR Appendix A.1 at p. A-3 and Appendix A.6 at p. A-11. This new information is discussed below in Comment III.E.

This response does not address the fact that the higher vapor pressure of these light crudes would result in higher ROG and TAC emissions from storage tanks and fugitive components throughout the Refinery, not just the railcars. Further, the railcar calculations do not include TAC emissions and the railcar ROG emission calculations are wrong, as explained below.

I explained that the RDEIR's railcar fugitive ROG emissions were wrong in my comments on the RDEIR and presented a corrected calculation that showed the RDEIR significantly underestimated ROG emissions from tanker cars. Fox RDEIR Comment J6-19. The RDEIR's railcar emissions are wrong because they rely on default fugitive emission factors for stationary sources and thus do not apply to railcars, resulting in a significant underestimate in these emissions. My revised fugitive ROG emissions indicate that railcar ROG emissions exceed the ROG significance threshold of every air district along the rail route in California. Fox RDEIR Comment J6-19.

The response to my Comment J6-19 and SAFER's summary of my fugitive ROG comment in Comment J6-5 do not address my revised calculation and findings of significant ROG impacts in every air district along the route. Rather, RTC J6-19 merely points again to its own original Table 4.1-12 that includes the underestimated emissions and asserts the ROG emissions "would be less than the significance thresholds in all uprail air districts." RTC J6-19. And RTC J6-5, responding to SAFER's summary of my ROG comment, refers to RTC I12-10, the comment by the BAAQMD discussed above recommending the RDEIR address "the potential changes in emissions associated with handling lighter crude...this can lead to increased fugitive emissions during transport and storage which should be evaluated" does not respond at all to the tanker car ROG emissions issue. These responses totally fail to address my revised railcar ROG emissions, which stand un rebutted in the record.

I also commented that when these light crudes are blended with heavy crudes, as proposed by the Rail Project, many refinery operating problems have resulted, which increase emissions. Fox RDEIR Comment B10-42. The FEIR does not respond to this issue at all.

C. Crude Slate Impacts Are Not Part of the Baseline for Sour Crudes (RTC B10-37 to B10-40 and RTC B11-39 to B11-42)

The DEIR argues that heavy crude slate impacts are part of the VIP baseline, "[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.” DEIR, p. C.1-1.

I commented that this argument has no technical merit for three reasons. First, the scope of operations previously approved did not include any impacts from a crude slate change and did not contemplate the crudes listed in DEIR Table 3-1. Second, the Rail Project is not a modification of the previously permitted Valero Improvement Project (VIP), which underwent CEQA review. Third, even assuming the VIP EIR evaluated a crude slate change and the Rail Project is just a modification of the VIP, both of which are false, the regulatory framework has changed, requiring additional CEQA review.

The responses to these comments all refer to RTC B10-34, which does not address any of these issues. Rather, RTC B10-34 asserts no change in throughput, processing equipment, or emissions, without addressing the fact that the Project proposes to change the chemical and physical characteristics of the crude slate, which can result in changes in emissions and new significant impacts. Thus, heavy crude slate impacts are not part of the VIP baseline.

D. Crude Slate Impacts Are Not Part of the Baseline for Light Crudes (RTC B10-43 and B11-45)

The DEIR argues that light crude slate impacts are also part of the VIP baseline because “the baseline includes the full scope of operations allowed under existing permits that were issued based upon prior CEQA review.” DEIR, p. C.2-1. The DEIR goes a step further for light crudes, also arguing that “Valero holds permits for all of the Refinery’s process equipment...based on the environmental impact report (EIR) for the Valero Improvement Project... The baseline includes the full scope of operations allowed under these permits.”

I responded that this mischaracterizes the VIP EIR and the permits for the subject tanks. The VIP EIR only evaluated two new storage tanks. The increase in ROG and TACs in my comments would potentially affect all storage tanks and fugitive components in the Refinery, most of which have not been subject to CEQA review. Further, the VIP EIR did not analyze TAC emissions from these two tanks. Finally, when an impact, such as these, is not covered by an existing EIR, the baseline is actual emissions, not permitted emissions. Fox DEIR Comments B10-43 and B11-45.

The FEIR responds to B10-43 and B11-45: "Crude slates are part of the baseline." This does not respond, but rather just repeats the original erroneous assertion. It does not address the fact that the Valero VIP did not evaluate light "North American" crudes that only recently entered the market and did not address emissions from tanks and fugitive components throughout the Refinery. It also fails to address the fact that actual emission, not permitted emissions, are the baseline under CEQA.

III. THE FEIR UNDERESTIMATES ROG EMISSIONS

I commented that the DEIR underestimated ROG emissions from ten sources and that the revised ROG emissions are significant and unmitigated. My responses to the FEIR's responses to my DEIR comments on ROG emission are addressed below.

A. Ship ROG Emissions (RTC B10-45 and B11-47)

The Project's ROG emissions assume marine vessel emissions would be reduced by 5.18 ton/yr by eliminating 73 vessel trips. DEIR, p. 4.1-16. I commented that the EIR must be modified to include an enforceable condition to assure any increase in ROG and TACs from rail import is offset by an equivalent decrease in marine vessel emissions. The response to this comment does not respond, but just reasserts that "...it is valid to assume that marine vessel GHG and criteria pollutant emissions would be reduced as described in the DEIR." RTC B10-45. There is no assurance that these reductions would occur as there is no enforceable condition requiring these reductions or any monitoring and reporting to confirm that marine vessel emissions decline.

B. Storage Tank ROG Emissions

The crude imported by rail would be off-loaded into existing storage tanks at the Refinery. Because rail-imported crudes would have a higher vapor pressure than baseline crudes stored in these tanks, ROG emissions could increase. As explained in Comment II, the Project could import light crudes, such as Bakken, Permian or Eagle Ford crudes, which would increase ROG emissions from these tanks. The BAAQMD made a similar comment as also noted elsewhere:

"Valero plans to purchase and process a range of crudes but does not expect to increase the total crude oil throughput or increase production of existing products or by-products. Air District staff recommends that the RDEIR address the potential changes in emissions associated with handling lighter crude, which can have higher volatile organic compound (VOC) content than the existing crude being processed; this can lead to increased

fugitive emissions during transport and storage which should be evaluated for air quality impacts.” Comment I12-10.

The DEIR did not include any emissions from these tanks. Rather, it asserts without any analysis that existing permits and regulations will control these emissions. RTC I12-10. This is incorrect, as explained elsewhere, as the proper baseline for CEQA analysis is actual baseline emissions when the subject tanks have not gone through CEQA review, not permit limits. Thus, I estimated the increase in emissions from various tank operations that would result from increases in crude vapor pressure.

B.1. Tank Breathing Losses (RTC B10-47 and B11-49)

I estimated that ROG emissions from tank breathing losses could increase by up to 56 lb/day if light crudes, such as Bakken, were stored in these tanks. This would result in a significant ROG impact not disclosed in the DEIR. Fox Comment B10-47 and B11-49. The FEIR responded that the Project “would not increase emissions from storage tanks beyond existing levels...The tanks would not be modified, and would continue to be subject to the same throughput limits and permit conditions.” RTC B10-46.

This does not respond to the fact that the vapor pressure of stored crude could increase, increasing ROG emissions, which are unrebutted facts. It also does not address my ROG calculation, which demonstrates a significant increase in ROG not disclosed in the FEIR. My ROG emission calculations remain unrebutted in the record. Further, the baseline for estimating ROG emission increases from these tanks is actual throughput and ROG emissions, not “throughput limits and permit conditions” that are not even identified.

B.2. Roof Landing, Degassing, and Cleaning Emissions (RTC B10-48 and B11-50)

I commented that tank ROG and TAC emissions could be even higher than I estimated in Comment B10-47 as my tank breathing loss ROG calculation does not include other sources of emissions from operating these tanks, including ROG emissions from: roof landings, degassing and cleaning. ROG emissions from these sources also would be higher for the lighter crudes that could be imported by rail and stored in these tanks. I did not estimate this increase as it just contributes to the significant ROG impact from tank breathing emissions. Thus, ROG emissions from the

storage tanks that would hold rail-imported crude are significant and unmitigated. I recommended that geodesic domes be installed on all tanks that would store rail-imported crudes.

The FEIR does not respond to these separate comments, but rather reasserts its non-responsive response to Comment B10-47 on tank breathing losses. The FEIR responds again that the Project “would not increase emissions from storage tanks beyond existing levels...The tanks would not be modified, and would continue to be subject to the same throughput limits and permit conditions.” RTC B10-48.

This does not respond to the fact that the vapor pressure of stored crude could increase, increasing ROG emissions, which are unrebutted facts. Further, the baseline for estimating ROG emission increases from these tanks is actual throughput and ROG emissions, not “throughput limits and permit conditions” that are not even identified. Thus, ROG emissions remain significant and unmitigated.

C. Railcar Unloading Emissions (B10-51 and B11-53)

I commented that the DEIR did not include any ROG or TAC emissions from unloading the railcars. Fox Comment B10-51 and B11-53. The response asserts that Table 4.1-5 “includes a line item that shows emissions for rail car unloading.” RTC B10-51. This table does include a line item called: “Unloading Rack and Pipeline Fugitive Components.” However, the appendices contain no support for any “unloading rack” emissions, which are lumped with pipeline fugitives.

The difference between the “unloading rack and pipeline fugitive component” ROG emissions (1.88 ton/yr)¹⁴ and pipeline fugitive ROG emissions (1.71 ton/yr)¹⁵ is only 0.2 ton/yr (1.88-1.71=0.17), which is a gross underestimate of the ROG emissions from unloading 70,000 bbl/day of light crude oil. The ROG emissions from connecting and disconnecting the railcars to the loading rack would be substantially larger than this. Thus, loading rack emissions are unsupported and underestimated.

D. Sump Emissions (B10-52 and B11-54)

I commented that the DEIR did not include ROG and TAC emissions from sumps, which collect oil drips during railcar unloading. Fox Comment B10-52 and B11-54. The response asserts that these emissions were excluded because they “...are

¹⁴ DEIR, Table 4.1-5.

¹⁵ DEIR, Appendix B-3, pdf 469.

associated with accidental spills that cannot be accurately predicted.” RTC B10-52. Some of these emissions do result from spills, but they also arise from predictable drips when the loading racks are connected and disconnected. It is not true that they cannot be accurately predicted. These emissions are routinely included in emission calculations required to secure operating permits for rail terminals. Standard methods exist for estimating them.

The unloading rack is individually connected to each railcar, typically with drybreak connectors. When the loading rack is attached and disconnected from the rail cars, some of the crude oil within the connector spills to the ground and evaporates, releasing ROG. The ROG emissions drips from hooking up each railcar with the loading rack and disconnecting it can be calculated from the number of railcars per day, the average volume of spilled oil per disconnect (typically 3.2 mL per disconnect), and the density of crude oil, all of which are known.¹⁶

The FEIR should be revised to include these emissions and controls should be recommended to minimize them, such as the mandatory use of drybreak connectors.

E. Railcar Fugitive Emissions (B10-53 and B11-55)

I commented that the DEIR did not include ROG and TAC emissions from rail car component leakage between their point of origin through unloading. Thus, I estimated that 9.3 ton/day of ROG would be emitted within California from railcar leaks, which exceeds ROG significance thresholds of all air districts through which the trains pass. Fox DEIR Comment B10-53. The response to this comment only asserts: “The DEIR includes fugitive railcar emissions and can be found in Revised DEIR Tables 4.1-12, 4.1-13, and 4.1-14.” RTC B10-53 and B11-53. These emissions apparently were added to the RDEIR in response to my comments on the DEIR. RDEIR, Appx. A.6.

However, the RDEIR used an incorrect calculation method. The RDEIR’s method resulted in much lower railcar fugitive ROG emissions. The RDEIR did not comment on the method I used, but simply ignored it. Thus, in my comments on the RDEIR, I explained that its railcar fugitive calculation method does not apply to railcars in transit and underestimates these emissions by huge amounts. Fox RDEIR Comment J6-19.

In my comments on the RDEIR, I also updated my railcar ROG calculations, using newly reported miles travelled from the RDEIR. My updated railcar fugitive

¹⁶ See, for example, typical calculation in: San Joaquin Valley Air Pollution Control District, Authority to Construct Application Review for the Bakersfield Crude Terminal, LLC, p. 4, July 25, 2012 (Exhibit 1).

emissions also exceed the ROG significance thresholds in every air district through which the trains pass. Fox RDEIR Comment J6-19.

The response to this comment does not address any of the issues I raised in my comments on railcar fugitive emissions. Rather, RTC J6-19 refers again to its own erroneous ROG emission calculations in RDEIR Appendix A.6, replying only that: "Appendix A.6 of the RDEIR shows Valero's fugitive ROG railcar emissions." It concludes they are not significant in any up-rail air district, without ever addressing any of my comments.

The RDEIR's railcar ROG emissions are incorrect and underestimate these emissions for the reasons I explained in my DEIR Comment B11-56. In addition, the emission calculation spreadsheets in Appendix A.6 reveal additional errors in the FEIR's railcar fugitive emissions.

E.1. Revised Rail Car Fugitive ROG Emissions

Railcar fugitive emissions arise from leaking valves and connections on the railcar. They were estimated in the RDEIR from an average emission factor for four air districts of 0.0047 pounds per mile per day (lb/mile-day), calculated in RDEIR Appendix A.¹⁷ There are many errors and omissions in the supporting calculations, summarized below. I recalculated the average emission factor, based on the assumptions discussed below. The revised emission factor is 2.9 lb/mile-day using the RDEIR's calculation method, but correcting errors and omissions, or 617 times higher. The RDEIR's calculations are riddled with errors.

First, the RDEIR's railcar fugitive emission calculations are based on emission factors for components in marketing terminals (PRVs, valves, connectors), a stationary source.¹⁸ These are not representative of railcar components (PRVs, pressure relief vents,¹⁹ manways, bottom and top fittings) on unit trains travelling at up to 50 mph, as previously explained in Fox RDEIR Comment J6-19. The RDEIR's calculation simply ignores my prior comments and continues pretending that unit trains travelling

¹⁷ RDEIR Appx. A, p. A-3.

¹⁸ CARB, Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, Table IV-1b, 1999; Available at : http://www.arb.ca.gov/fugitive/impl_doc.pdf.

¹⁹ A pressure relief vent, designed to prevent or forestall over-pressuring the tank in event of exposure to fire, uses a frangible (breakable) disk that bursts at its rated pressure and remains open until replaced. They are distinguishable from pressure relief valves (PRVs), which self closes after a release.

through mountainous terrain in Northern California are like stationary marketing terminals at a refinery.

In railcars, particularly when travelling in mountainous terrain, the contents are sloshed about, outgassing ROG and creating pressure surges which can push headspace gases out of tiny openings in connectors, valves, vents, and PRVs. These high-pressure surges created by sloshing are often great enough to exceed the pressure relief vent disc burst pressure, leaving the vent open for the remainder of the trip. This is a well known problem in rail transportation that has been studied but not eliminated.²⁰ Further, as the transported crude oil warms up, it expands, and the internal pressure of the tank car increases. Pressure relief valves are used to periodically relieve this pressure to ensure the internal pressure does not increase to dangerous levels, damaging the car shell. Both of these events results in direct releases to the environment of much larger amounts of ROG than would be released from a PRV at a marketing terminal.

Second, the RDEIR assumed a typical railcar is equipped with 2 PRVs, 1 liquid valve, 3 gas valves, 9 gas connectors, and 2 liquid connectors.²¹ The RDEIR does not disclose any source for these assumptions. Industry literature identifies many more sources of fugitive leaks, including the fill hole cover, manway cover, stuffing box for bottom outlet valve, bottom outlet, loading/unloading valves, air inlet valve, vacuum release valve, liquid line flange, gauging devices, sample lines, thermometer wells, heater coils, washout nozzle/plate, leaks in liquid lines, and leaks at welds. Pressure relief devices, *i.e.*, rupture discs or safety vents, may also be present.²² These remain open for the duration of the trip if triggered by pressure surges. In contrast, a pressure relief valve or PRV is spring-loaded and recloses after excessive pressure in the tank.

Each of these components may release ROG into the atmosphere even if the components or associated gaskets are properly sealed. They release substantially more

²⁰ M.R. Saat, C.P.L. Barkan, and T.T. Treichel, Statistical Approach to Estimating Surge Pressure Reduction Devices' Performance, Railway Supply Institute Report R-974, November 2005; Available at: https://www.aar.org/Documents/NAR/RA_05-01_SPRD_Performance_Saa_Nov_05.pdf.

²¹ RDEIR, pp. A-11/14.

²² See, for example, Charles J. Wright, Assessing Tank Car Damage, Union Pacific Railroad, Participant's Manual: Tank Car Safety Course, July 2007; Available at: http://www.iafc.org/associations/4685/files/haz09_sprkr410-assessingTankCarDamage.pdf; Association of American Railroads, Field Guide to Tank Cars, 2010; Available at: http://www.bnsfhazmat.com/wp-content/uploads/2015/06/4185_Field_Guide_To_Tank_Cars1-opt.pdf; Tank Car Loading and Unloading, May 8, 2014; Available at: <https://www.youtube.com/watch?v=1PzNbQlvGDw>; TransQuip USA, General Service Car Fittings 101; Available at: www.fra.dot.gov/Elib/Document/3441.

if not properly sealed. Leak Repair and Detection (LDAR) programs at stationary sources use VOC detectors to find leaks so they can be repaired. LDAR programs are not used for railcars, allowing leaks to go undetected.

Third, the RDEIR estimated ROG emissions from pressure relief valves (PRVs) using an average generic “valve” emission factor at a marketing terminal. A conventional valve and a pressure relief valve emit different amounts of ROG, especially on railcars. The PRVs would have much higher emissions. Other tables in the CARB report relied on by the RDEIR indicate that emissions from PRVs are 6²³ to 75²⁴ times higher than from conventional valves at stationary sources and would be even higher for moving railcars. In my revised railcar fugitive emission calculation, I used the lower end of this range to adjust the “marketing terminal” valve emission factor to a PRV basis.

Similarly, the RDEIR estimated emissions from connectors using an average emission factor of 8.0E-6 kg/hr/source (light liquid) to 4.2E-5 kg/hr/source (gas).²⁵ However measurements on threaded pipe connections and quick connect couplers on railcars indicate that ROG emission factors range from 0.0025 to 0.0097 kg/hr/source, or factors of 231 to 312 higher than for average connectors in marketing terminals.²⁶ I did not adjust my revised ROG calculations for this underestimate as the data were discovered after my work was complete.

Fourth, the RDEIR’s railcar fugitive emissions are based on average emission factors rather than screening emission factors. The screening factors are more accurate for railcars as they take into account the leak rate. Facilities that comply with a leak detection and repair program (LDAR) that meets a leak rate of <10,000 ppm total hydrocarbon (THC) can use the lower end of the range as the components are periodically tested and repaired. However, facilities that do not operate a LDAR program, such as moving railcars, should use the upper end of the range, >/= 10,000 ppmv, as leaking components are not routinely detected by monitoring and repaired. As railcars are not subject to LDAR, railcar fugitive emissions should be estimated using emission factors for the upper end of the leak rate range. The upper-bound screening factors are 535 (light liquid valve) to 813 (light liquid connector) times

²³ CARB 1999, Table IV-2a (refinery screening: 1.691/0.2626 = 6.44).

²⁴ CARB 1999, p. 12 (3 refinery heaters: 4.47E-2/6.0E-4= 74.5).

²⁵ CARB 1999, Table IV-1b (marketing terminal average emission factors) and RDEIR, Appx. A.6, p. A-11.

²⁶ URS, Measurement of VOC Emissions from Pressurized Railcar Loading Arm Fittings, July 31, 2006, Executive Summary; Available at: <http://files.harc.edu/Projects/AirQuality/Projects/H051A/H51AExecutiveSummary.pdf>.

greater than the average emission factors at marketing terminal, consistent with actual measurements on railcars.

Fifth, the RDEIR estimated ROG emissions for unit trains arriving loaded with crude oil and leaving empty, assumed to be filled with air. The departing emissions are calculated as 5% of emissions from full railcars. The 5% is called a “dilution factor.” No support whatsoever is presented for the dilution factor. Crude oil would be present in the departing rails cars as deposits on the railcar walls and within piping and fugitive components and would outgas on the return journey, filling the railcars with crude oil vapors.

This “dilution” factor is not justified in the record. I am not aware of any precedence for a “dilution” factor in calculating fugitive railcar emissions and none is cited. The FEIR does not include any condition requiring that railcars be filled with and maintained full of air during transit out of state. Residual oil would outgas into the tank car interior and be emitted as gases. Thus, gas screening emission factors should be used for all departing unit trains. In an effort to be conservative, I retained the 5% dilution factor, even though it likely underestimates emissions during the return journey.²⁷

Sixth, the equipment count for the Sacramento Federal Nonattainment Area (SFNA) does not include any valves or connectors in light liquid service for departing trains, while all other areas for arriving and departing trains include one light liquid valve and two light liquid connectors per railcar. I am not aware of any reason why railcars exiting via SFNA would have a different number of valves than arriving railcars or railcars passing through all other areas. This is evidently an error. I corrected it in my calculations.

²⁷ An estimate made by Ohio EPA reported purging emissions from railcars that previously contained crude oil of 132 pounds per rail car during cleaning. In addition, each unloaded railcar would have residual crude oil that clings to the inside of the railcar and fittings and can outgas ROG during transit, replenishing any lost vapors during transit. The Ohio permit evaluation estimated 0.15 bbl/1000 ft² based on AP-42, Table 7.1. An EPA study found that the volume removed in cleaning tank cars that transported petroleum and coal products averaged 128 gallons. See, *e.g.*, OhioEPA, Draft Air Pollution Permit-to-Install and Operate, January 16, 2014, pdf 5 - 6; Available at: http://wwwapp.epa.ohio.gov/dapc/permits_issued/1103115.pdf and EPA, Final Development Document for Effluent Limitations Guidelines and Standards for the Transportation Equipment Cleaning Category, Report EPA-821-R-00-012, June 2000, Table 4-3; Available at: http://www.epa.gov/sites/production/files/2014-03/documents/tec_development_doc_final_2000.pdf.

Seventh, the RDEIR estimated ROG emissions assuming the unit trains travel at an average speed of 35 mph. This is very high for the terrain that will be traversed via the northern routes given:

- a) some of the routing is mountainous where trains will move slower and pause to add/drop helper engines;
- b) some of the routing is in urban areas where speeds may be lower, e.g., Sacramento;
- c) crude unit trains are long and heavy; and
- d) there may be congestion and delays, especially in areas with lots of rail traffic and passenger trains that have priority (such as Roseville-Benicia).

The Surface Transportation Board (STB) requires weekly data collection, including average rail speed for various commodities. The Union Pacific reported a system-wide average train speed for crude shipments of 23 to 26 mph.²⁸

Alternatively, in a recent DOT rulemaking, it was assumed that unit trains travel 220 miles per day and make 16 round trips per year.²⁹ Assuming a 3,000-mile roundtrip and 1 day loading and 1 day unloading yields 11.6 linehaul days, which works out to an average speed of 11 mph.³⁰ Thus, a more reasonable range for unit train speed is 11 to 26 mph. I used the upper end of this range, or 26 mph in my revised calculations to be conservative. However, a much lower speed is justified for much of the terrain the Valero trains would traverse within California, which would significantly increase fugitive ROG emissions beyond the levels I estimated.

Regardless, high speeds may actually increase leakage from rail cars, beyond levels assumed in these calculations. This was not considered in these calculations. Thus, railcars either leak a lot per hour at lower speeds (including when parked at

²⁸ Calculated by dividing train-miles by total hours from origin to destination, less intermediate terminal time. Excludes the following train categories: yard, local, passenger, foreign, and maintenance of way. See:

http://www.up.com/cs/groups/public/@uprr/@newsinfo/documents/up_pdf_natedocs/ep724-stb-data-spreadsheet.pdf.pdf.

²⁹ Final Regulatory Impact Analysis, DOT Final Rule for High-Hazard Flammable Trains, May 2015, pp. 150, 153, 233; Available at: <http://www.regulations.gov/contentStreamer?documentId=PHMSA-2012-0082-3442&attachmentNumber=1&disposition=attachment&contentType=pdf>.

³⁰ The average speed, assuming a 3,000 mile roundtrip, 1 day loading, and 1 day unloading: (3000 mi/220 mi/day) - 1 day loading - 1 day unloading = 11.6 line haul days. The average speed then is: 3000/(11.6×24)=10.8 mph.

railyard and at the Benicia Refinery) or they leak even more per hour at the higher speeds assumed in the RDEIR's calculations.

Eighth, the RDEIR did not calculate fugitive railcar ROG emissions for the 2 mi roundtrip distance at the Valero railyard nor for the time that the railcars would spend at the Roseville and Valero railyards (24 hours). The railcars would continue to release ROG during these times.

I corrected most of these errors and omissions and recalculated fugitive railcar ROG emissions, otherwise using the EIR's method. I first reproduced the calculations in RDEIR Appendix A, pp. A-11/14 as the County declined to provide unlocked Excel spreadsheets. I then made most of the changes discussed above. The results are compared with the FEIR's ROG estimates in Table 1 for arriving railcars and in Table 2 for departing railcars, corrected for errors and omissions. My revised fugitive ROG railcar emission calculations are included in Exhibit 2 to these comments. These tables show that fugitive ROG emissions from railcars, calculated using the RDEIR's method, the use of fugitive emission factors, but corrected to eliminate errors and omissions, yields ROG emissions that are comparable to those that I calculated in Comments B10-53, B11-53, and J6-19 based on the lower end of the range of product loss or 0.5% of the amount loaded.

**Table 1:
Arriving Railcar Fugitive ROG Emissions**

Area	RDEIR (ton/yr)	Revised (ton/yr)	RDEIR (lb/day)	Revised (lb/day)
Yolo Solano AQMD	0.026	23.2	0.144	126.8
Sacramento MAPCD	0.0128	11.2	0.070	61.4
Placer County APCD	0.0696	61.1	0.381	334.9
SFNA	0.1086	95.5	0.595	523.2

**Table 2:
Departing Railcar Fugitive Emissions**

Area	RDEIR (ton/yr)	Revised (ton/yr)	RDEIR (lb/day)	Revised (lb/day)
Yolo Solano AQMD	0.001	1.2	0.007	6.3
Sacramento MAPCD	0.0006	0.6	0.003	3.1
Placer County APCD	0.0035	3.1	0.0035	16.8
SFNA	0.0050	4.8	0.0050	26.2

I next used the sum of my revised arriving and departing ROG emissions as reported in Tables 1 and 2 and the roundtrip distance in miles through each district³¹ to estimate an emission factor for railcar fugitive ROG emissions in pounds of ROG emitted per mile traveled per day (lb/mi-day) and in tons of ROG emitted per mile traveled per day (ton/mi-yr). The average ROG emission factors are 2.1 lb/mi-day and 0.38 ton/mi-yr. Exhibit 2.

These emission factors were then used to calculate daily and annual railcar ROG emissions in each traversed air district for three routes and compared to CEQA ROG significance thresholds.³² The daily analysis is summarized in Tables 3 to 5 and shows that railcar fugitive ROG emissions are significant in every traversed air district for all routes, when some of the methodological errors made in the RDEIR are corrected. Actual increases would be even higher if correct fugitive component counts and railcar fugitive emission factors were used. These results are consistent with those in my comments on the RDEIR, Comment J6-19, calculated assuming 0.5% product loss.

³¹ RDEIR, Appendix A.6, p. A-3.

³² The CEQA significance threshold used in the RDEIR for the Sacramento Metro AQMD should be 65 lb/day for operational emissions, not 85 lb/day. See: <http://www.airquality.org/ceqa/CH2ThresholdsTables5-2015.pdf>.

**Table 3:
Significance of Daily Railcar Fugitive ROG
Oregon to Roseville Alternative**

District	Round Trip Distance (miles)	ROG Emissions (lb/day)	Significance Threshold (lb/day)	Significant?
Siskiyou County APCD	178	374	25	Yes
Shasta County AQMD	156	328	25	Yes
Tehama County APCD	80	168	25	Yes
Butte County AQMD	88	185	25	Yes
Feather River AQMD	52	109	25	Yes
Placer County APCD	40	84	82	Yes
Sacramento Metro AQMD	31	65	65	Yes
Bay Area AQMD	44	92	54	Yes

Notes:

Round trip distance & significance threshold: RDEIR, p. A-4 & DEIR Appx. E-5, Attach. B-4.
 ROG (lb/day) = 2.1 lb/mi-day × round trip distance.

**Table 4:
Significance of Daily Railcar Fugitive ROG
Nevada to Roseville (Feather River Canyon) Alternative**

District	Round Trip Distance (mi)	ROG Emissions (lb/day)	Significance Threshold (lb/day)	Significant?
Butte County AQMD	106	223	25	Yes
Feather River AQMD	50	105	25	Yes
Placer County APCD	40	84	25	Yes
Sacramento Metro AQMD	31	65	65	Yes
Lassen County APCD	72	151	82	Yes
Northern Sierra AQMD	190	399	82	Yes
Bay Area AQMD	44	92	54	Yes

Notes:

Round trip distance & significance threshold: RDEIR, pp. A-4/5 & DEIR Appx. E-3, Attach. B-4.
 ROG (lb/day) = 2.1 lb/mi-day × round trip distance.

**Table 5:
Significance of Daily Railcar Fugitive ROG
Nevada to Roseville (Truckee) Alternative**

District	RoundTrip Distance (mi)	ROG Emissions (lb/day)	Significance Threshold (lb/day)	Significant?
Placer County APCD	176	370	25	Yes
Norther Sierra County AQMD	62	130	25	Yes
Sacramento Metro AQMD	31	65	65	Yes
Bay Are AQMD	44	92	54	Yes

Notes:

Round trip distance & significance threshold: RDEIR, p. A-5 & DEIR Appx. E-3, Attach. B-4.

ROG (lb/day) = 2.1 lb/mi-day × round trip distance.

In addition to these exceedances of daily significance thresholds, the northern-route trains would pass through the Yolo-Solano AQMD, which has an annual ROG significance threshold of 10 ton/yr. The average annual ROG emission factor, calculated in Exhibit 2, is 0.38 ton/mi-yr. The round trip distance through this district is 64 miles.³³ Thus, annual ROG emissions in Yolo-Solano AQMD are 24.3 ton/yr, which exceeds the annual ROG significance threshold and are significant. Similarly, the Bay Area AQMD has an annual ROG significance threshold of 10 ton/yr³⁴. The round trip distance through this district is 44 miles. Thus, annual ROG emissions in the Bay Area AQMD are 16.7 ton/yr, which exceeds the significance threshold and are significant.

The emissions in the BAAQMD would be even higher than shown in these calculations because they do not include emissions from the 2 mi roundtrip and 24 hours within the Valero railyard. Similarly, ROG emissions within Placer AQMD are higher than shown in Tables 3 to 5 as they do not include railcar fugitive ROG emissions from the time the railcars spend at the Roseville Railyard.

In sum, ROG emissions from railcar fugitive emissions are significant in every air district through which they pass. Thus, all feasible mitigation is required. I recommended several feasible air quality mitigation measures in my comments on the RDEIR. Comment J6-11. The response to J6-11 refers to J6-20 (SAFER), which states that mitigation is not required because it is federally pre-empted.

The mitigation measures I recommended in my Comment J6-11 are not preempted because they do not manage or govern rail operations. Further, they control pollutants that are emitted from the railcars, which are owned by Valero. And railcar

³³ RDEIR, Appx. A, p. A-11.

³⁴ BAAQMD, Adopted Air Quality CEQA Thresholds of Significance.

ROG fugitive emissions, once released, are part of the ambient air and thus are part of the “commons” subject to regulation and control by local agencies.

In addition, ROG is twice removed from its source. The significance criteria for ROG are based on the fact that it is an ozone precursor. Ozone is the pollutant of concern. Ozone is not emitted by railcars, but rather, it is formed in the atmosphere from precursor compounds, primarily NO_x and ROG. The amount of ozone that forms depends on the level of other pollutants present in the air where it is emitted. For example, in areas with low ambient NO_x levels, such as many of the northern air districts, NO_x emissions contribute to an increase in ambient ozone levels, beyond what would be predicted from a 1:1 relationship.³⁵ Thus, reductions in ROG could be used to offset increases in NO_x and vice versa.

For these reasons, I reassert the mitigation I recommended in Comment J6-20, all of which are feasible and described in detail in my RDEIR comments, including:

Emission Reduction Credits (ERCs);

- Actual reductions in emissions at the Benicia Refinery, including at the refinery, marking terminals, tanker truck fleet, and storage tanks; and
- Voluntary Emission Reduction Agreements (VERAs).

In addition, I recommend the following mitigation:

- Follow recommended industry practices to minimize railcar releases including pre-loading inspection of all railcar fugitive components, including rupture discs; adherence to change-out procedures; preventative maintenance; and tank car operator training;³⁶
- Prohibit use of tank cars equipped with non-closing pressure relief devices;
- Require the use of oxidation catalysts on existing heaters and boilers at the Benicia Refinery to offset increases in ROG emissions;
- Require the use of pressure tank cars, such as the Tesoro DOT-120 design

³⁵ D.J. Rasmussen, J. Hu and others, *The Ozone-Climate Penalty: Past, Present, and Future*, *Environmental Science & Technology*, v. 47, no. 24, 2013, pp. 14258–14266 (Exhibit 3).

³⁶ See Wright 2007, footnote 22; Tank Car Loading and Unloading, May 8, 2014; Available at: <https://www.youtube.com/watch?v=1PzNbQlvDw>; and AAR/CMA North American Non-Accident Release Reduction Committee, *Improving Securement in Hazardous Materials Tank Car Shipment. Recommended Industry Practices*, October 1999; Available at: https://www.aar.org/Documents/NAR/Improving_Securement_in_Hazardous_Materials.pdf.

(see Comment VI.C);³⁷

- If pressure tank cars are not selected, require that railcars be operated with an inert gas headspace, such as nitrogen;³⁸
- Require the use of zero-leak fugitive components at the rail terminal and between the rail terminal and storage tanks.

IV. THE SOUTHERN ROUTE WAS NOT ANALYZED

The RDEIR disclosed for the first time that four routes may be used to import crude oil. The RDEIR analyzed impacts for the three northern routes from the California border to the Roseville Yard: (1) Oregon to Roseville; (2) Nevada to Roseville (northern); and (3) Nevada to Roseville (southern).³⁹ However, the RDEIR did not identify southern routes or analyze impacts along any of the southern routes.

In my comments on the RDEIR, I explained why the southern routes will be used and must be analyzed in the EIR. Comments J18, summarized in Comment J6-4 (SAFER). The response to my Comment J18 refers to Response J6-4 (SAFER). The response to J6-4 refers to Response A4-13 (Yolo County Board of Supervisors). Response A4-13 asserts that the EIR "...analyzes in more detail the geographic areas where there is greater certainty () and in less detail those areas where information is not known and cannot be determined with reasonable inquiry." RTC A4-13.

However, the FEIR does not contain any analysis of the southern route(s) but rather only an assertion that impacts will be "substantially similar" to those on the northern route. This is not a reasonable explanation for limiting the geographic scope of the analysis to only the northern routes, when the EIR itself concedes the southern route is an option and asserts UP has unfettered discretion to select any route. The information to analyze the southern route is not known to the City only because the City did not bother to collect it. The information required to evaluate the southern route is readily available and has been compiled and analyzed for a similar, contemporary crude-by-rail project, the Santa Maria Rail Spur Project. The EIR must provide a reasonable explanation for a geographic limitation when it concedes that the

³⁷ The Tesoro DOT-120 design (with a shell thickness of 9/16") has a rated test pressure of 200 psi, but other DOT-120 and DOT-114 designs (with a shell thickness of 11/16") have rated test pressures of 300, 400, or 500 psi.

³⁸ The RDEIR's railcar fugitive ROG emissions assumed a 95% ROG control efficiency for using an ambient air headspace on the return-trip railcars. RDEIR, Appx. A, p. A-3 (5% dilution factor).

³⁹ RDEIR, pp. 2-24, footnote 6 and 2-30. See also Figure 1-2.

route(s) are possible and the information, tools for analysis, and a relevant analysis for a similar contemporary project exist.

In contradiction to its responses to comments, the RDEIR asserts that it did not evaluate any of the impacts along this route because “potential direct, indirect, and cumulative impacts of crude oil transport by rail approaching the Refinery from the south are expected to be substantially similar to the type and severity of impacts that could result between the Refinery and the State border via any of the northern routes.” RDEIR, p. 1-5. I explained in my comment J6-18 why the impacts were not “substantially similar.” All of the responses to comments fail to address my demonstration that the impacts are not “substantially similar” but rather distinct and more significant than impacts along the northern route. Thus, the FEIR has failed to analyze the worst case.

A. The “Substantially Similar” Argument Is Invalid

The RDEIR conceded that the southern route, through southern California, is an option. However, the FEIR failed to evaluate any impacts along this route, arguing instead for each impact area in the summary section of the RDEIR⁴⁰ that “potential direct, indirect, and cumulative impacts of crude oil transport by rail approaching the Refinery from the south are expected to be substantially similar to the type and severity of impacts that could result between the Refinery and the State border via any of the northern routes.”⁴¹

There is no “substantially similar” exemption from CEQA. Further, what does “substantially similar” mean? The significance of an impact depends upon site-specific conditions, the interaction of the impact with the surrounding environment.

For example, an increase in air emissions may not be significant in an air basin that is in compliance with all existing air quality standards, while that same increase in a nonattainment area would be significant. Similarly, rail accidents along a major water way or aqueduct would result in significant water quality and/or biological impacts while the same accident in a hardscape landscape would not result in water quality and biological impacts. Biological impacts would be more significant if the rail lines intercepted more wildlife corridors or passed through areas with more threatened and

⁴⁰ RDEIR, Section 2.3, Chapter 2.

⁴¹ RDEIR, p. 1-5, 2-41 (air quality), 2-45 (biological impacts), 2-46 (cultural resources), 2-52 (energy conservation), 2-53 (geology and soils), 2-62 (greenhouse gases), 2-124 (hazards & hazardous materials), 2-125 (hydrology & water quality), 2-137 (land use), 2-137 (noise), 2-140 (transportation & traffic). See also RDEIR,

endangered species such as the southern desert lands, which have many threatened and endangered species not found along the northern routes, including Desert tortoise (ST, FT), San Joaquin kit fox (ST, FE), Mohave ground squirrel (ST), San Bernardino kangaroo rat (FE), Fresno kangaroo rat (SE, FE), and Coachella Valley fringe-toed lizard (SE, FT).⁴² “Substantially similar”, without considering site specific conditions is meaningless.

Finally, what does “substantial” mean? Does it mean the impact is of the same magnitude as along the northern routes or higher? If higher, does it exceed any significance thresholds?

Regardless, there are no “substantially similar” analyses in the EIR, but rather only general statements in the RDEIR summary section that are not backed up by actual analyses. The City asserts, without any analyses at all, that all impacts via the southern route would be substantially similar to those along northern routes, arguing this is consistent with the Santa Maria Rail Spur RDEIR (dubbed the “Phillips 66 Revised EIR”). The “substantially similar” argument for each impact area is followed by generalized statements such as the following:⁴³

- Air Quality: “locomotives’ internal combustion engines would emit criteria pollutants and toxic air emissions that would or could exceed air pollution control district thresholds and, thereby, result in a significant and unavoidable impact related to significance criteria a) regarding conflicts with air quality plans, b) regarding violation of air quality standards, and c) regarding the cumulatively considerable net increase of criteria pollutants.”
- Biological Resources: potential impacts to biological resources along any southern route could include collision-related injury and mortality to protected wildlife and migratory bird species.
- Cultural Resources: No substantially similar example.
- Energy Resources: No substantially similar example.

⁴²In this list, excerpted from the California Natural Diversity Database, “State & Federally Listed Endangered & Threatened Animals of California”, January 2016, species are identified as: ST = state threatened, SE = state endangered, FT = federally threatened, and FE = federally endangered.

⁴³ RDEIR, substantially similar: pp. 2-41 (air quality), 2-45 (biological resources), 2-47 (cultural resources), 2-52 (energy conservation), 2-53 (greenhouse gases), (hazards & hazardous materials) 2-124 (hazards & hazardous materials), 2-126 (land use & planning), 2-137 (noise), 2-141 (traffic & transportation).

- Greenhouse Gases: No substantially similar example.
- Hazards and Hazardous Materials: significant & unavoidable impacts if trains derailed and ruptured, resulting in significant and unavoidable impacts.
- Land Use and Planning: No substantially similar example.
- Noise: existing train noise.
- Transportation and Traffic: delayed traffic at grade crossing.

The “substantially similar” unsupported statement, for each impact area, is followed by the assertion that this “substantially similar” conclusion is consistent with that reached by San Luis Obispo County in the “Phillips 66 Revised EIR”.⁴⁴ However, based on my analyses, the impacts are not “substantially similar” but rather significantly different due to differences in the landscape, distances, population density, sensitive species along the route, and background ambient air quality conditions. Further, the “Phillips 66 Revised EIR” that the RDEIR points to as supporting evidence is now a Final EIR that actually carries out a detailed, quantitative analysis of a southern route, discussed further below as support for my contention that the southern route must and can be analyzed.

The Santa Maria FEIR does not conclude that impacts along the southern route are “substantially similar” to those along the northern route. The phrase “substantially similar” does not even occur in the Santa Maria FEIR, which fully analyzes southern and northern routes. The northern and southern routes that Valero trains would take are different from those that Santa Maria trains would take. Thus, it is not possible to substitute Santa Maria results and conclusions for the missing Valero analyses.

The southern route in the Santa Maria FEIR, for example, is much shorter due to the location of the Santa Maria Refinery in the middle of the state and hugs the coast. The southern route for Valero would pass up the middle of the state, through the San Joaquin Valley, ending at either Stockton or Roseville, a much greater distance through areas with more severe air pollution and more threatened and endangered biological species. Cumulative impacts, for example, are lower along the Santa Maria southern routes as other crude-by-rail projects would not be present, while Valero trains using a

⁴⁴ RDEIR, consistent with Phillips 66 RDEIR: pp. 2-15 (air quality), 2-47 (cultural resources), 2-52 (energy conservation), 2-53 (greenhouse gases), p. 2-124 (hazards & hazardous materials), 2-125 (hydrology & water quality), 2-127 (land use & planning), 2-137 (noise), 2-141 (transportation & traffic).

southern route would share the same rail lines from Bakersfield north to Roseville or Stockton.⁴⁵ Air emissions are also lower along the Santa Maria southern route than the northern routes due to these difference in distance.⁴⁶ However, risks of injury from train accidents are higher along the Santa Maria southern routes than northern routes due to higher population density.⁴⁷

I commented that the EIR must evaluate the worst case route that would be facilitated by the Project, regardless of whether impacts are “substantially similar.” Comment J6-18. I also commented that many impacts on the southern route would be much more significant than on the northern routes for Valero unit trains. The responses to comments inadequately addresses the need to evaluate alternate routes and fails totally to address the fact that impacts on the southern route are not “substantially similar to the type and severity” of impacts on the northern routes.

B. The Southern Route Must Be Analyzed

The RDEIR wishes to keep all of its options open as to crude source and rail route to deliver the crude but only evaluates a subset of these options, which does not include the worst case.

III.B.1. The EIR Must Evaluate All Routes

First, the RDEIR asserts that UPRR can use any route at its sole discretion.⁴⁸ The RDEIR, for example, asserts: “... UPRR retains unfettered flexibility in selecting the routes that trains could travel from the crude oil origination sites to Roseville... it is theoretically possible, due to track sharing agreements () for Project-related crude to be provided to the Refinery via any of the North American freight railroad tracks, which are shown in Figure 1-1...”⁴⁹ However, the Valero FEIR only evaluates impacts of the three northern routes and ignores all of the southern routes.

The route taken by UPRR trains would be determined by the source of the crude, dictated by economics. California Energy Commission (CEC) data for 2009 to 2015

⁴⁵ Santa Maria Rail Spur FEIR, pp. 4.2-41, 4.4-61, 4.5-16, 4.7-99, 4.8-29, 4.9-32, 4.11-32, 4.13-35.

⁴⁶ Santa Maria Rail Spur FEIR, Tables 4.3-18/20, 4.3-25.

⁴⁷ Santa Maria Rail Spur FEIR, Figures 4.7-5, 4.7-7/9.

⁴⁸ RDEIR, p. 1-5 (“...on the basis of federal preemption, neither the Refinery nor the City has any authority to dictate or limit routes selected by UPRR...”).

⁴⁹ RDEIR, pp. 2-23/24 (“Any of the North American freight railroad tracks shown in Figure 1-1 could be used due to track-sharing agreements.”)

indicate that current crude-by-rail (CBR) deliveries largely originate from Canada, Colorado, North Dakota, New Mexico, Utah, and Wyoming, with smaller deliveries from Oklahoma, Texas and other states.⁵⁰

Given the configuration of the UPRR network,⁵¹ the three northern routes evaluated in the RDEIR are likely to be used for some of these, but not all of these sources. New Mexico has been a major and on-going source of CBR for California. Crudes from New Mexico would be virtually certain to be routed via southern California, rather than the three northern routes analyzed in the RDEIR. Crudes from Canada (tar sands) and the Dakotas (Bakken) would most likely take the northern route, while crudes from Oklahoma (Permian), New Mexico (Permian), and Texas (Eagle Ford), for example, would take the southern routes.

Further, for a variety of reasons, trains and especially CBR do not always travel via the shortest routings. The northern Nevada to Roseville and southern Nevada to Roseville routings traverse mountainous terrain both within California and Nevada, and between Nevada and various CBR originating locations (such as Utah and Colorado). CBR trains are heavy and typically quite long, and thus are problematic on routings that are mountainous and curvy. Moreover, the routings via Nevada, Utah, and Colorado are subject to severe weather (especially in winter), delays, and congestion. Meanwhile, the routing via southern California is typically less mountainous and less affected by weather (especially in winter). Thus, CBR from some originating locations (such as Nevada, Utah, and Colorado) could be routed via southern California, even if routings via Nevada are shorter.

The EIR only evaluated the northern routes. There is no justification for not evaluating routings through southern California.

Second, the RDEIR failed to disclose a specific crude or class of crudes that it seeks to import, asserting its target is “North American” crudes, all of which is confidential business information. “North American” crudes could originate anywhere

⁵⁰ See: 2015 (http://energyalmanac.ca.gov/petroleum/statistics/2015_crude_by_rail.html); 2014 (http://energyalmanac.ca.gov/petroleum/statistics/2014_crude_by_rail.html); 2013 (http://energyalmanac.ca.gov/petroleum/statistics/2013_crude_by_rail.html); 2012 (http://energyalmanac.ca.gov/petroleum/statistics/2012_crude_by_rail.html); 2011 (http://energyalmanac.ca.gov/petroleum/statistics/2011_crude_by_rail.html); 2010 (http://energyalmanac.ca.gov/petroleum/statistics/2010_crude_by_rail.html); 2009 (http://energyalmanac.ca.gov/petroleum/statistics/2009_crude_by_rail.html).

⁵¹ RDEIR, Figure 1-2.

from Canada all the way to Texas. Thus, using both northern and southern routes is reasonably foreseeable, *viz.*

- “The DEIR’s Executive Summary has been further developed and refined to clarify the geographic scope of the whole of the Project as extending between the various potential North American points of origin of Project-related crude oil and the Refinery⁵²”.
- “Valero has proposed the Project for the purpose of receiving a larger proportion of its crude oil by railcar, up to 70,000 barrels per day of North American crude ()⁵³”.
- “The crude oil to arrive by tank car would originate at sites in North America and be shipped by Union Pacific Railroad (UPRR)⁵⁴”.
- “Tank cars carrying crude oil destined for the Refinery arrive at the UPRR’s J.R. Davis Yardin Roseville, California (the “Roseville Yard”) railyard from a variety of potential North American crude sources including, but not limited to, locations in Texas, North Dakota, Oklahoma, New Mexico, or Canada ()⁵⁵”.
- “As indicated in Section 1.7, *Confidential Business Information*, and Appendix D, *Discussion of Confidential Business Information*, Valero considers the specific North American crudes that would be shipped to the Refinery to be confidential under Public Resources Code §21160⁵⁶”.

If crudes were sourced from Texas, Oklahoma or New Mexico⁵⁷, for example, the southern route would be the shortest and thus most economic. As the RDEIR chooses to leave all of its options open, as to both crudes and routes, the EIR must evaluate a reasonable range of routes, including the worst case. I demonstrated in my comments on the RDEIR that the worst case for air quality and rail accidents would be importing crude via the southern route as it passes through areas with the worst air quality in the United States, is the longest distance, and passes through areas with the highest population density in the state.

⁵² RDEIR p. 2-1.

⁵³RDEIR pp. 2-2, 2-6.

⁵⁴ RDEIR, p. 2-20.

⁵⁵ RDEIR p. 2-21.

⁵⁶ RDEIR, p. 2-23.

⁵⁷ RDEIR, Figure 1-2 and p. 2-21 .

The Valero EIR has failed to evaluate the worst case transportation route. The southern route is not speculative, but indeed presaged by the City's admission that Valero may import any North American crude, including those that would arrive by the southern route (Texas, Oklahoma, New Mexico). In the alternative, the EIR must impose enforceable conditions that assure that the routes/crudes it elected not to evaluate in the EIR are not imported in the future, and require that a new EIR be prepared if the routes and/or crudes that were not evaluated in this EIR are selected at another time.

In response to my Comment J6-18, the FEIR asserts "it is reasonably certain" that Project-related trains will use one of the three northern routes" and "not at all certain" which among other routes would be used. Thus, "the EIR for this Project analyzes in more detail the geographic areas where there is greater certainty and in less detail those areas where information is not known and cannot be determined with reasonable inquiry." RTC J6-4 and A4-13. This is not correct.

There is no analysis whatsoever in the EIR for the southern route, but rather only sweeping statements that impacts are "substantially similar" to the northern routes. Thus, I presented an analysis of rail accidents and air quality impacts of the southern route, demonstrating significant impacts, distinguishable from those on the northern route. RDEIR Comment J6-18. My analysis stands unrebutted in the record as the responses to comments do not even mention it.

Market forces will ultimately determine whether crudes come from the north or the south. Either route is equally likely, given market forces. The applicant may have contracts for the crude oils that will initially be imported and thus may know that they will initially typically use the northern routes. However, even if there are contracts, they certainly have expiration dates. There is nothing in this EIR that would prevent the applicant from striking a new deal with a supplier in the south or from acquiring rights to southern resources. Absent an enforceable condition prohibiting crude import from the south, the EIR must evaluate the impacts of the southern route.

Further, there is nothing that is intrinsically knowable about the northern route that is not also knowable about the southern routes. The locations of the rail lines are well known, and the most likely route(s) from each area can be easily mapped to the Roseville (or Colton or Stockton) railyards from the south. Information on agricultural resources, biological resources, water resources, cultural and historic resources, geological resources, hazards and hazardous materials, land use, noise, air quality, etc.

are equally known and accessible for the northern and southern routes. The same environmental impact calculation methods apply for both routes. The routes themselves are known. It is simply not true that the information required to analyze the southern route “is not known and cannot be determined with reasonable inquiry.” The City just didn’t collect it. The sources and availability of information and analytical tools required to analyze impacts of the southern route are identical to those used for the northern route.

Any expert in the subject areas covered by the EIR could perform the requisite analyses for the southern routes. In fact, the hazards analysis for the Valero and the Santa Maria Refinery rail projects were both done by the same consultant (Barkan/RailTEC). Thus, hazards on a southern route have already been analyzed by the Valero consultant in another similar project. While the southern route for Santa Maria Refinery differs from the southern route for Valero, Barkan/RailTEC could analyze the southern route for Valero.⁵⁸

III.B.2. Phillips 66 Santa Maria Rail Spur FEIR Analyzes the Southern Route

The Phillips 66 Santa Maria Rail Spur FEIR acknowledged uncertainties in both routes and analyzed all of them, either quantitatively or qualitatively for all impact areas.⁵⁹ This FEIR, for example, acknowledges the same uncertainties expressed in the Valero EIR, *viz.*

*“Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. The exact location of the source of crude oil that would be delivered to the refinery is unknown and could change over time based upon market conditions and availability. Union Pacific Railroad (UPRR) would be responsible for delivering the trains to the SMR. The main UPRR train routes within the United States are shown in Figure 2-8. Trains could enter California from at least five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona). Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south”.*⁶⁰

⁵⁸ The southern route analyzed for the Santa Maria Refinery (via Santa Maria, Colton, and Mohave) partially overlaps potential southern routes for Valero. Santa Maria Rail Spur FEIR, pp. 2-25, 4.7-62.

⁵⁹ Marine Research Specialists, Phillips 66 Company Rail Spur Extension and Crude Unloading Project Final Environmental Impact Report and Vertical Coastal Access Project Assessment, Prepared for San Luis Obispo County, December 2015; Available at: <http://www.slocounty.ca.gov/Assets/PL/Santa+Maria+Refinery+Rail+Project/FEIR+Phillips+Rail+Spur+Project+Dec+2015/Main+Document+EIR/Phillips+Rail+Spur+Project+FEIR+December+2015.pdf>.

⁶⁰ Santa Maria Rail Spur FEIR, pp. 2-24/25.

This project was ironically and incorrectly relied on in the Valero RDEIR to substantiate the City's "substantially similar" argument. But rather than substantiating it, it thoroughly rebuts it as the Santa Maria Rail Spur EIR carries out the analysis rather than arguing impacts are "substantially similar". The Santa Maria EIR did not make any excuses about lack of information. Instead, it properly recognized uncertainties and varied the depth of analysis depending on those uncertainties.

The Valero EIR, on the other hand, did not include any analysis at all of any impacts on the southern route and incorrectly asserts its approach is consistent with this very same Phillips 66 Santa Maria Rail FEIR that did in fact do the analysis. The Santa Maria FEIR acknowledges the uncertainties and evaluates both routes:

"Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. Given that the route the trains would travel to get to these two UPRR yards is speculative, the EIR has evaluated in more detail the impacts of trains traveling from these two UPRR yards to the SMR...."

Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton are somewhat speculative, the EIR has discussed in a more qualitative nature the potential impacts of train traffic beyond these two rail yards."⁶¹

In spite of these uncertainties, the Santa Maria FEIR (Santa Maria FEIR, p. 2-24) still manages to analyze the impacts along both segments of both routes:

"For purposes of environmental review, this DEIR has assessed in detail the impacts from the nearest UPRR rail yards in Roseville and Colton to the SMR, though in both cases, this extends the review beyond those sections of track for which there is route certainty. Figure 2-9 shows the main UPRR train routes from the California State border to these two rail yards, and then on to the SMR. In addition, the DEIR has discussed, in less detail, the impacts of rail transportation beyond these two rail yards in the applicable issue areas."

The Santa Maria FEIR includes either qualitative and/or quantitative analysis (air quality, hazards) of both segments (state line to railyard and railyard to project site)

⁶¹Santa Maria Rail Spur FEIR, pp. ES-6, 7, 1-7.

for all routes (from the north and south) for all issue areas. A few examples from the Santa Maria Rail Spur FEIR are noted:

- Agricultural resources: pp. 4.2-39, -41, -55;
- Air quality: Table 4.3-18 (mainline emissions northern & southern routes to Colton & Roseville) and Table 4.3-19 (mainline emissions past Roseville & Colton rail yards);
- Biological resources: pp. 4.4-12, 14, 55, 58, 61;
- Cultural resources: pp. 4.5-14, 16;
- Hazards and hazardous materials, pp. 4.7-1, 2, 14, 15, 39, 44, 47, 88, 99; Table 4.7-3 (local safety hazards all routes), Table 4.7.9 (accident & spill rates all segments, Colton to SMR); Table 4.7.10 (accident & spill rates, Roseville to SMR via Oakland); Figure 4.7-5 (risk analysis, mainline all routes), Table 4.7.13 (accidents & spills Nevada to Colton); Table 4.7.14 (accidents & spills Oregon to Roseville); Table 4.7.15 (accidents & spills Nevada to Roseville via Oakland); Figure 4.7.16 (accidents & spills Oregon to Roseville via Altamont Pass); Table 4.7.17 (accident & spills Nevada to Roseville via Altamont Pass), etc. covering all possible segments of all routes.
- Water resources: pp. 4.13-7, 25-27; Table 4.13.1/2 (waterbodies railyard to project site).

The Santa Maria air quality and hazard analyses are notable as they include quantitative analyses of both routes from the state line to the Colton and Roseville railyards and from these railyards on to the project site. Santa Maria FEIR, Secs. 4.3, 4.7. The water resource analysis includes detailed compilations of streams, rivers, lakes, sloughs, and major drainages along all routes that could be impacted by spills. Santa Maria FEIR, Sec. 4.13. If the Santa Maria FEIR can carry out such detailed analyses for all potential routes, including both segments of each (state line to railyard and railyard to project site), surely it is feasible for the Valero EIR to perform similar analyses.

The Valero RDEIR, on the other hand, misquotes this source, inaccurately claiming that its determination of “substantially similar” is consistent with the Santa Maria Rail Spur RDEIR:

“These determinations are consistent with the analysis documented by San Luis Obispo County in its October 2014 CEQA evaluation of the Phillips 66 Company Rail Spur Extension and Crude Unloading Project Revised EIR (San Luis Obispo County, 2014)

*(the "Phillips 66 Revised EIR"). In the Phillips 66 Revised EIR, see Section 4.3, Air Quality and Greenhouse Gases, pp. 4.3-50 through 4.3-56; 4.3-66 through 4.3-71."*⁶²

This is incorrect. The determinations in the Valero EIR deviate substantially from those in Santa Maria FEIR (and RDEIR), which both analyze impacts of all routes. The cited pages in the RDEIR (which were superseded by the FEIR) do not make any "substantially similar" excuses for not analyzing southern route impacts. Rather, the cited pages acknowledge uncertainty of the routes, but do not claim this prevents analysis. Instead, the Santa Maria RDEIR (and FEIR) present analyses for both northern and southern routes, *viz*:

*"Mainline rail emissions are calculated for each Air District along the rail route from SMR to the UPRR Yards in the south (i.e., Colton, California, near Los Angeles) or in the north (i.e., Roseville, California, northeast of Sacramento)."*⁶³

C. The EIR's Excuses for Not Evaluating The Southern Route Are Invalid

One of the excuses that the RDEIR used for not using a southern route is that trains from the south would have to pass through Sacramento to reach Roseville, where they would be broken down into 50-car trains for the final leg of their journey to Benicia.⁶⁴

This is not a valid reason for eliminating the southern route. First, 26 miles is a tiny fraction of the 1,500-mile route and would add very little to either the cost or transit time and would thus have little to no influence on routing. Second, an additional 26 miles is much less than the increase in mileage that would result from routing trains carrying crude from Texas, Oklahoma or New Mexico via the northern route. Third, there is a UP railyard in Stockton, which would be a good staging location for trains coming from the south.

III.C.1 The Southern Route Will Result in Significant Impacts That Are Not Disclosed in the Valero EIR

In Comment J6-18, I noted that the RDEIR concedes the southern route is an option but fails to evaluate any of the impacts along this route because "potential direct, indirect, and cumulative impacts of crude oil transport by rail approaching the Refinery

⁶² RDEIR, p. 2-42.

⁶³ Santa Maria Rail Spur RDEIR, p. 4.3-51.

⁶⁴ RDEIR, p. 2-24, footnote 6.

from the south are expected to be substantially similar to the type and severity of impacts that could result between the Refinery and the State border via any of the northern routes.”⁶⁵

My Comment J6-18 demonstrates this is wrong. Some impacts would be much more significant via the southern route due to the greater distance traveled, the higher population density, and the worse local air quality. The southern route would be about 2.3 times longer than the longest northern route. As most impacts (*e.g.*, air quality, greenhouse gases, and hazards) increase as the miles travelled in California increase, the longer southern route has the largest impacts. See Comment J6-18. The responses to comments in the FEIR do not address this issue.

V. ALTERNATIVES TO THE PROJECT

I commented that since the Project was initially proposed in 2013, two additional alternatives have appeared that would reduce many of the Project’s impacts that were not identified as alternatives in either the DEIR or RDEIR. Comment J6-22. The response to J6-22 refers to response J6-14, which is SAFER’s summary of my comment.

The response states: “it is unclear how the Alon and Plains All American projects could serve as alternatives to the Project. The purpose of the Project is to allow the Benicia Refinery to receive up to 70,000 barrels per day of crude oil from North American sources.” RTC J6-14.

These terminal import more than 70,000 bbl/day of crude oil from the North American areas identified in the Valero EIR as supplying its crude-by-rail project. The Alon Terminal is permitted to import 150,000 bbl/day and the Plains Terminal to import 168,000 bbl/day of North American crude oils. These terminals are located in the Bakersfield area and can supply crude oil to the main pipeline system currently servicing Valero by either trucking it to a pump station equipped with a truck unloading rack or sending it directly into existing feeder pipelines between these terminal and the main Valero pipeline.⁶⁶

⁶⁵ RDEIR, p. 1-5.

⁶⁶ See, for example, Richard Nemeč, West Coast Seeing Rail Oil Terminal Building Boom, *NGI’s Shale Daily*, June 11, 2015 (“I would characterize the Alon project as being at the headwaters of the California crude pipeline distribution system...so they would be able to get into the three major pipelines going north...”; Available at: <http://www.naturalgasintel.com/articles/102634-west-coast-seeing-rail-oil-terminal-building-boom>).

In addition to these two new, currently operating crude-by-rail terminals, Targa has proposed to build a 70,000 bbl/day rail to marine terminal in Stockton, which could service Valero by barge.⁶⁷ The IS/MND for this Project states: "Barges would transport the crude oil to refineries located in California, such as Rodeo, Richmond, Benicia, Martinez..."⁶⁸ This nearby terminal could serve Valero's need, eliminating the need for a redundant rail spur at the Benicia refinery and removing cumulative train traffic from the rails. Alternatively, the Stockton Targa Terminal should have been evaluated as a cumulative project. The FEIR is silent on this nearby terminal.

Valero should be familiar with these alternate delivery modes as it has historically received North American sourced crudes imported by rail to other nearby terminals and trucked thence to its refinery. Two contemporary examples are the Kinder Morgan Terminal in Richmond and the Interstate Oil Terminal in Sacramento.

VI. ALL FEASIBLE MITIGATION WAS NOT REQUIRED FOR SIGNIFANT HAZARD IMPACTS

I commented that to mitigate significant hazard impacts, safer tank cars should be required, at least new DOT-117s. Comment J6-21. The response merely reiterates the assertions in the RDEIR⁶⁹ that the City is preempted from requiring safer railcars.

The FEIR fails to require all feasible mitigation for Significant Hazard Impact 4.7-2. I thus reassert my RDEIR Comment J6-21 and incorporate it by reference into my FEIR comments. Rather, Valero has committed to only railcars required by federal law: non-jacketed CPC-1232s until April 1, 2020, when it would have to upgrade to the DOT-117R standard. These commitments are made through an Operational Aid Agreement, reported to be an enforceable commitment. RTC A4-6 & FEIR Appx. B.

My RDEIR Comment J6-21 is summarized below, and then supplemented with my new analysis of feasible mitigation with railcars safer than DOT-117s. Based on this new analysis, higher standard DOT-120 or DOT-114 pressure tank cars should be required.

⁶⁷ Nemec, June 11, 2015; Targa's California Marine Oil Terminal Project Rolls on - Completion in 2016, February 10, 2014; Available at: https://www.tankterminals.com/news_detail.php?id=2661. See also: http://www.recordnet.com/article/20140803/A_NEWS/408030303.

⁶⁸ Stockton Port District, Tiered Initial Study & Proposed Mitigated Negative Declaration, Targa Stockton Terminal Project, February 2012, p. 3-41. Exhibit 4.

⁶⁹ RDEIR, pp. 2-105/106.

A. Summary of Comment J6-21

The RDEIR uses a Quantitative Risk Analysis (QRA) to determine the significance of an accident associated with the Project. The QRA compares the accident risks for various tank cars. Based on the QRA, the RDEIR concludes that the accident risk is significant for any of the tank car scenarios analyzed, but risks are highest for the non-jacketed CPC-1232s that Valero proposes to use until 2020, lower for DOT-117R (retrofitted CPC-1232s), and lower still for DOT-117 new builds.

Likewise, the RDEIR uses a QRA to evaluate cumulative impacts for the Project in combination with other California crude by rail projects. The QRA results show that the California crude by rail projects have a cumulative risk that is substantially larger than the risk for just the Benicia Project. Likewise, while the QRA results show that the cumulative accident risk is significant for any of the tank car scenarios analyzed, risks are significantly reduced with DOT-117R (retrofitted CPC-1232s), and lower still for DOT-117 new builds.

The accident risk (from the Valero Project individually and in combination with other California crude by rail projects) is large and significant. In spite of these findings, namely that there are feasible railcars that significantly reduce the risk of both Project and cumulative impacts from accidents, the RDEIR failed to require their use, even though their selection is at the discretion of Valero. The RDEIR concludes that there is no mitigation available to reduce accident risk for the Project beyond CPC-1232 until 2020, when it will upgrade to DOT-117R.

B. The FEIR Fails to Consider and Require Railcars Safer than DOT-117 New Builds

As explained in Comment J6-21 (and summarized above), the RDEIR found that accident risk is significant for any of the tank car scenarios analyzed, but risks are significantly reduced with DOT-117R (retrofitted CPC-1232s), and lower still for DOT-117 new builds.

The RDEIR and FEIR fail to consider tank cars safer than DOT-117 new builds. As more fully explained below, DOT-117 is not the safest tank car that is available and permitted for transporting crude. There are higher standard pressure tank cars that would provide an additional safety benefit. These cars would also provide feasible mitigation of one of the Project's significant air quality impacts, namely railcar fugitive ROG emissions, which are designed to minimize leaks.

The tank cars considered in the RDEIR QRA are all general service (non-pressure) tank cars.⁷⁰ Crude oil has most commonly been transported in non-pressure tank cars, but DOT regulations specify that pressure tank cars can also be used for crude oil and other flammable liquids.⁷¹ These would be particularly appropriate for the highly volatile Bakken crudes proposed to be imported by Valero. Pressure tank cars are used to transport higher hazard materials to minimize leaks and prevent releases when accidents occur.⁷² They are designed to minimize leaks of toxic materials such as chlorine and can be retrofitted with enhanced fittings packages specifically designed to minimize leaks.⁷³

Tesoro⁷⁴ has recently upgraded its crude-by-rail fleet with DOT-120 pressure tank cars that exceed the new DOT-117 non-pressure tank car standard.⁷⁵ Figure 1 provides the Tesoro Fact Sheet on these DOT-120 tank cars.

⁷⁰ RDEIR, pp. 2-72-74, 79-81.

⁷¹ Crude and other flammable liquids are permitted to be transported in pressure tank cars including DOT-105, 109, 112, 114, and 120. See USDOT Final Rule: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains, Table 6 (80 FR 26653 (May 8, 2015)).

⁷² Field Guide to Tank Cars, AAR Transportation Technology Center Bureau of Explosives, revised edition January 30, 2012, pp. 47-48

<https://drive.google.com/file/d/0B2FxpRhLGkEmTIZORm5YSVpTOGc/view?pref=2&pli=1>

Classes DOT-105, 109, 112, 114, and 120 are pressure tank cars used to transport liquefied compressed gases, poison/toxic inhalation hazard (PIH/TIH) materials, reactive materials, and/or corrosive materials requiring the additional protection afforded by a stronger car.

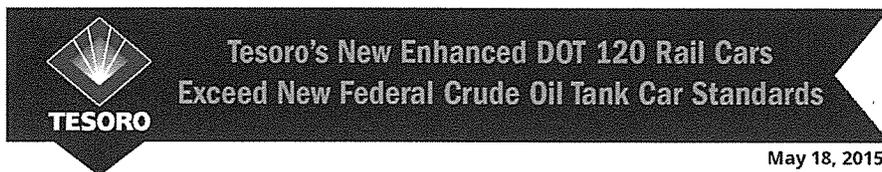
Pressure tank cars are used to transport highly flammable LPG (liquefied petroleum gases, such as propane and butane), as well as very high hazard TIH chemicals such as chlorine gas and anhydrous ammonia.

⁷³ See: <http://www.opwglobal.com/docs/libraries/sales-literature/transportation/midland/brochures/pressure-car/ethylene-oxide-4pg-brochure.pdf?sfvrsn=4> and <http://www.opwglobal.com/docs/libraries/sales-literature/transportation/midland/brochures/pressure-car/ethylene-oxide-4pg-brochure.pdf?sfvrsn=4>; Midland Pressure Cars, Exhibit 5.

⁷⁴ Tesoro is a large independent refiner, with six refineries in the western US, including two in California. <http://tsocorp.com/>. Tesoro is extensively involved in crude by rail. See RDEIR, p. 2-146; <http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9NTcwOTEyYfENoaWxkSUQ9MjcyMDYxfrFR5cGU9MQ==&t=1>; <http://phx.corporate-ir.net/phoenix.zhtml?c=79122&p=irol-newsArticle&ID=2128049>; <http://www.reuters.com/article/tesoro-rail-crude-idUSL2N0IS13N20131107>. <http://www.efsec.wa.gov/Tesoro-Savage.shtml>.

⁷⁵ Tesoro May 18, 2015 Press Release, Available at: <http://phx.corporate-ir.net/phoenix.zhtml?c=79122&p=irol-newsArticle&ID=2049329>.

Figure 1: Tesoro DOT-120 Tank Cars⁷⁶



Tesoro is upgrading its crude oil rail car fleet with the addition of 210 enhanced tank cars that exceed new safe transport standards issued by USDOT.

These new rail cars have many of the same safety features as the new DOT 117 standard announced May 1 but offer additional safety features (outlined below). Manufacturer UTLX essentially modified the design of the DOT 120 pressure car to make it compatible with existing crude oil loading and unloading facilities.

Tesoro has consistently chosen rail cars that are among the safest and most robust available at the time the order was placed. Every time we've added to our fleet, it's been with cars that offer additional safety enhancements. This latest set of cars reaffirms our commitment to continually improve our fleet and lead the industry in the safe transport of crude oil via rail.

Safety Features at a Glance	
DOT 117 <i>Built to general service car standards</i>	Tesoro's DOT 120 <i>Built to pressure car standards</i>
9/16" Tank Shell Thickness	9/16" Tank Shell Thickness
Full-Height Head Shields	Full-Height Head Shields
9/16" Tank Head Thickness	19/32" Tank Head Thickness
Tank Jacket	Tank Jacket
Thermal Protection via Insulation OR High-Flow Pressure-Relief Valve	Thermal Protection via Insulation AND High-Flow Pressure-Relief Valve
Exposed Manway	Protected Manway
Upgraded Bottom Outlet Valve Handle	Upgraded Bottom Outlet Valve Handle
100 psi Test Pressure	200 psi Test Pressure

Tesoro's Ongoing Commitment to Safe Rail Cars

<p>2011: Tesoro ordered CPC 1232 rail cars to serve our Anacortes crude oil unloading facility</p>	<p>Feb. 2014: Tesoro was the first in the industry to commit to use only CPC 1232 rail cars (or better) for crude oil service</p>	<p>Mid 2014: Tesoro removed its last legacy DOT 111 from crude oil service</p>	<p>May 1, 2015: DOT announces new DOT 117 rail car standards</p>
<p>2012 - 2014: Tesoro ordered rail cars with additional enhancements</p>	<p>Feb. 2014: Tesoro orders 210 modified DOT 120 pressure cars for crude oil service</p>	<p>July 2014: DOT announces Notice of Proposed Rule Making for safe transportation of crude oil</p>	<p>May 18, 2015: Tesoro announces substantial completion of first DOT 120 rail cars</p>

The DOT-120 cars have most of the same safety features as the DOT-117 standard, but also have some additional safety features:

- thicker tank head (19/32" vs. 9/16"),
- protected manway, and
- two times the rated tank test pressure (200 psi vs. 100 psi).

⁷⁶<https://tsocorpsite.files.wordpress.com/2015/05/tesoro-dot-120-fact-sheet.pdf>.

Compared with the DOT-117 standard, the Tesoro DOT-120 tank car would improve safety.⁷⁷ But the Tesoro DOT-120 car is not the only available option for railcars safer than DOT-117s; other higher standard tank cars would provide more substantial mitigation of significant hazard impact 4.7-2.

The Tesoro DOT-120 tank car has a minimum tank shell thickness of 9/16", as does the DOT-117 standard.⁷⁸ Other DOT-120 and DOT-114 pressure tank car designs have a minimum tank shell thickness of 11/16".⁷⁹ Additional tank shell thickness can provide a substantial safety benefit.⁸⁰

The DOT-120 and DOT-114 designs with additional shell thickness also have higher rated tank pressure (300-500 psi, vs. 200 psi for the Tesoro DOT-120 design).⁸¹ This would provide an additional safety benefit, and it would also provide mitigation of one of the Project's significant air quality impacts, namely railcar fugitive emissions. See Comment II.E.

The Valero FEIR has failed to incorporate all feasible mitigation measures to reduce significant impacts, as required under CEQA. Mitigation for significant hazard impact 4.7-2 and air quality impacts (rail car fugitive ROGs and TACs) should include requiring DOT 120 or DOT 114 pressure tank cars that include all of the following safety features:⁸²

⁷⁷ The Valero QRA did not evaluate the Tesoro DOT-120 tank car design, and there do not now seem to be any publically available safety studies for this car design. Compared with the DOT-117 standard, the Tesoro 120 tank car design has several additional safety features, but it is uncertain how much this will improve safety. See: <https://www.sightline.org/2015/12/15/tesoros-new-oil-train-cars-too-few-and-still-too-dangerous/>.

⁷⁸ Other non-pressure tank car designs used for crude by rail (including DOT-117R and some CPC-1232 and DOT-111) have a minimum tank shell thickness of 7/16".

⁷⁹ See footnote 82.

⁸⁰ See <http://www.nts.gov/investigations/AccidentReports/Reports/RAR1201.pdf> pp. 58, 76-77.

⁸¹ See footnote 82.

⁸² DOT-114 and DOT-120 pressure tank car designs are permitted to have bottom outlets and can be configured to be compatible with crude by rail loading and unloading facilities. The Tesoro DOT-120 tank cars meet all the requirements of DOT Specification 120J200W, except that the manway area (cover thickness and insulation) has been modified to be compatible with crude by rail facilities. Tank cars similar to the Tesoro DOT-120 tank cars, but with a 11/16" minimum Tank Shell Thickness, would be modified versions of one of the following DOT Specifications:

- 120J300W (11/16" minimum Tank Shell Thickness, Jacketed, 300 psi Test Pressure),
- 120J400W (11/16" minimum Tank Shell Thickness, Jacketed, 400 psi Test Pressure),
- 120J500W (11/16" minimum Tank Shell Thickness, Jacketed, 500 psi Test Pressure).

- 11/16" minimum tank shell thickness
- Full-height head shields
- Tank jacket
- Thermal protection
- High-flow pressure-relief valve
- Protected manway/TIH top fittings protection system/nozzle
- Upgraded bottom outlet valve handle
- Minimum 300 psi test pressure
- ECP brakes.

C. Mitigation of Hazard Impacts with Safer Tank Cars Required at Santa Maria Crude by Rail

The Valero FEIR fails to require feasible mitigation of hazard impacts with safer tank cars, and this failure is further confirmed by consideration of the contemporary Santa Maria Crude by Rail Spur Project. The Phillips 66 Santa Maria Rail Spur Project is a new unloading facility proposed at the existing Santa Maria Refinery that could accept up to five, 80-tank car unit trains per week.⁸³

The Benicia and Santa Maria projects are very similar projects with similar hazard impacts and similar EIR analyses of those impacts. The EIRs for both projects compare the accident risks for various tank cars and were performed by the same consultant. Both EIRs conclude that the risk is significant for all of the tank car

Under the DOT specifications for DOT-114 tank cars, insulation is optional. Jacketed DOT-114 tank cars for crude service would have one of the following DOT Specifications:

- 114J340W (11/16" minimum Tank Shell Thickness, Jacketed, 340 psi Test Pressure).
- 114J400W (11/16" minimum Tank Shell Thickness, Jacketed, 400 psi Test Pressure).

See Figure 1 in these Comments; Field Guild to Tank Car (footnote 72), pp. 5-10, 47-48; 49 CFR 79.101-1; 49 CFR 79.22; USDOT Final Rule, Table 6 (80 FR 26653 (May 8, 2015)); DOT Special Permit for Tesoro DOT 120 Tank Cars: 80 FR 9307 (February 20, 2015); DOT Special Permit DOT-SP 16188, January 7, 2015, pp. 1-2 www.phmsa.dot.gov/staticfiles/PHMSA/SPA_App/OfferDocuments/SP16188_2014060840.pdf

This special permit authorizes the manufacture [...] of non-DOT specification tank cars [...] for transportation of Class 3 flammable and combustible liquids [...] meeting the requirements of [...] DOT120J200W specification tank cars except that the hinged and bolted manway cover does not meet the minimum thickness required in §179.100-12(b), and the tank does not have insulation around the manway in accordance with the requirements of §179.100-4.

⁸³ RDEIR, pp. 2-144, 2-146, Appendix F, pp. 67-68.

scenarios analyzed, but risks are highest for non-jacketed CPC-1232s, the cars that Valero and Phillips 66 both propose to use.⁸⁴

Moreover, the Valero RDEIR concurs that hazard impacts of the Santa Maria Rail Spur Project are “substantially similar” to the Valero hazard impacts.⁸⁵

Despite these similarities between the two projects, there is a notable difference in the mitigation of hazard impacts for the two projects. The Valero FEIR concludes that there is no mitigation available in regard to accident risk for the Project. The Santa Maria FEIR includes mitigation measures requiring tank cars which exceed the new DOT-117 standard.⁸⁶

The Santa Maria Rail Spur FEIR concludes that use of these higher standard tank cars would result in substantially lower risk, but the hazards associated with the Project would still be significant:

Implementation of HM-2a would reduce the probability of a release from a rail car by about 74 percent over the rail car design that is currently proposed by the Applicant. [...]

Even with this reduction in release probability, the hazards associated with the Rail Spur Project risk along the UPRR right-of-way would still be potentially significant (Class I) in the event of a release of crude oil that resulted in a fire or explosion.⁸⁷

The Valero RDEIR concluded that hazard impacts of the Santa Maria Rail Spur Project are “substantially similar” to the Valero crude-by-rail hazard impact.⁸⁸ Thus, if Valero impacts are “substantially similar” to those at Santa Maria, at least the same mitigation is warranted. The Santa Maria Rail Spur FEIR recommends substantial mitigation of hazard impacts with safer tank cars, while the Valero DEIR does not recommend any. Nonetheless, the residual hazard impacts are still significant for the Santa Maria Rail Spur Project.

⁸⁴ RDEIR, p. 2-8; Santa Maria Rail Spur FEIR, pp. ES-12/13, 1-4, 2-22.

⁸⁵ RDEIR, p. 2-124.

⁸⁶ Santa Maria Rail Spur FEIR mitigation measures HM-2a (as well as PS-4b, WR-3, and AR-5) require “Option 1” tank cars. Option 1 is the new DOT-117 standard, with the added safety feature of “rollover protection” (a more damage-resistant top fittings design). Santa Maria Rail Spur FEIR, pp. 4.7-27, 88, 96, 4.11-28; Appendix H.2, p. 7; Valero RDEIR, pp. 2-81; App. F, Att. 2, p. 11.

⁸⁷ Santa Maria Rail Spur FEIR, pp. 4.7-88 and ES-12/13.

⁸⁸ RDEIR, p. 2-124.

Regardless, reliance on the Santa Maria Rail Spur FEIR mitigation does not go far enough. The Santa Maria Rail Spur FEIR does not adequately consider and recommend all feasible options to mitigate hazards. All feasible mitigation should be required, including higher standard DOT-120 or DOT-114 pressure tank cars.

D. All Feasible Mitigation Not Required for Significant Hazard Impacts 4.7-6 and 4.7-9

Rail accidents that lead to hazardous materials spills, fires, and explosions could:

- result in substantial adverse secondary effects, including to biological resources, cultural resources, geology and soils, and hydrology and water quality (significant impact 4.7-6); and
- expose people or structures to significant risk, injury, or loss from wildland fires (significant impact 4.7-9).

The FEIR fails to require all feasible mitigation for significant hazard impacts 4.7-6 and 4.7-9. As was also the case with significant hazard impact 4.7-2, the RDEIR concludes that there is no mitigation available for other hazard impacts of the Project (significant hazard impacts 4.7-6 and 4.7-9).⁸⁹

As explained in Comment VI.C, mitigation for significant hazard impact 4.7-2 should include requiring higher standard DOT 120 or DOT 114 pressure tank cars. Likewise, mitigation for significant hazard impacts 4.7-6 and 4.7-9 should include requiring these higher standard pressure tank cars.

The mitigation measures in the Santa Maria Refinery Rail Spur FEIR require higher standards and safer tank cars to mitigate impacts to public services and utilities (significant impact PS.4), water resources (significant impact WR.3), and agricultural resources (significant impact AR.5).⁹⁰

⁸⁹ RDEIR, pp. 2-112-113, 116, 123.

⁹⁰ Santa Maria Rail Spur FEIR, pp. 4.2-39/40; 4.11-29; 4.13-27/28.

ATTACHMENT D

Pless Environmental, Inc.

440 Nova Albion Way, Suite 2
San Rafael, CA 94903
(415) 492-2131 voice
(815) 572-8600 fax

February 8, 2016

Via Email

Rachael Koss
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037
rkoss@adamsbroadwell.com

Re: Review Final Environmental Impact Report for Valero Benicia Crude by Rail Project

Dear Ms. Koss,

Per your request, I reviewed the Final Environmental Impact Report ("Final EIR" or "FEIR") and Responses to Comments ("RTCs") for the crude-by-rail project ("Rail Project" or "Project") proposed by Valero ("Applicant") at its Benicia Refinery ("the Refinery"). The City of Benicia ("City"), as the lead agency for review under the California Environmental Quality Act ("CEQA"), published the FEIR in January 2016.¹ The City previously issued a Draft Environmental Impact Report ("Draft EIR" or "DEIR") in June 2014 and a Revised Draft Environmental Impact Report ("Revised Draft EIR" or "RDEIR") in August 2015, which I reviewed in my September 15, 2014 and October 30, 2015 comment letters to your firm.^{2,3} My comments below refer to the DEIR, RDEIR, and FEIR collectively as "the EIR."

The FEIR and the City's responses to comments ("RTC") resolve very few of the issues I addressed in my letters; many issues I raised in my prior comments on the DEIR and RDEIR were not addressed at all or the responses were not adequate to resolve the issues; in addition, the responses and other information provided by the City raised new issues. To facilitate review of what has by now become a complex record with information spread out across numerous documents, I incorporate in my

¹ City of Benicia, Valero Benicia Crude by Rail Project, Final Draft Environmental Impact Report, SCH # 2013052074, Use Permit Application 12PLN-00063, January 2016.

² Petra Pless, Pless Environmental, Inc., Letter to Rachael Koss, Adams Broadwell Joseph & Cardozo, Re: Review of Draft Environmental Impact Report for Valero Benicia Crude by Rail Project, September 15, 2014 (hereafter "2014 Pless DEIR Comments") included in the FEIR as Letter B11.

³ Petra Pless, Pless Environmental, Inc., Letter to Rachael Koss, Adams Broadwell Joseph & Cardozo, Re: Review of Draft Environmental Impact Report for Valero Benicia Crude by Rail Project, October 30, 2015 (hereafter "2015 Pless RDEIR Comments") included in the FEIR as Letter J6.

comments below relevant sections from my (and others') prior comment letters and the City's corresponding responses to comments.

All exhibits cited in and not submitted with this letter were previously submitted with my comments on the DEIR (Exhibits 1 through 62); exhibits to this letter on the FEIR are numbered F1 through F21.

I. The Project Description Is Inadequate and the EIR's Analyses Are Not Adequately Supported

I previously commented that neither the DEIR nor the RDEIR provided all information for public review necessary to adequately describe the Project and support the conclusions regarding the Project's impacts. Examples of missing information included:

- A construction schedule specifying the duration and potential overlap of each construction phase (*e.g.*, clearing, grading, terminal construction, paving), the number of equipment on site for each construction phase and their hours of operation of equipment and load factors, the number of construction workers for each phase, etc.;
- A disclosure of baseline crude oil receipts by pipeline, barges, and tanker trucks;
- A disclosure of the currently imported crude oil slate at the Refinery and an adequate description of the Project's potential for changing this crude oil slate (as discussed in detail in the comments submitted by Dr. Phyllis Fox on the DEIR (Comment Letter B11)); and
- Modeling files and spreadsheets supporting the results of the health risk assessment presented in the RDEIR, Tables 4.19, 4.1-10 and 4.1-11. (Your firm obtained some of these files from the City upon request but they were not made available for public review.)⁴

In response, the City, RTC J6-27, claims:

The commenter's opinion regarding the adequacy of the Revised DEIR is acknowledged. Responses to specific comments are provided below.

The City's response is entirely non-responsive as none of the missing information is "provided below" or elsewhere. Neither the City's responses to comments or the

⁴ 2015 Pless RDEIR Comments II.

FEIR nor the revisions to the DEIR and RDEIR contain a detailed construction schedule, disclose the baseline crude oil receipts by pipeline, barges, and tanker trucks, disclose the currently imported crude oil slate, or provide the complete modeling files and spreadsheets supporting the results of the health risk assessment. This information must be made available for public review to verify the EIR's conclusions; without it, it is impossible for any independent expert to determine whether the EIR's conclusions are supported, and the public must, therefore, take the EIR's conclusions at face value.

With respect to the requested modeling files, recently, the South Coast Air Quality Management District ("SCAQMD") commented similarly on the Revised EIR for the crude by rail project proposed by Phillips 66 at its Santa Maria Refinery in San Luis Obispo County:

Electronic versions of all air quality modeling and health risk assessment files were not made available to the public for review. The RDEIR contained emissions calculations, and a health risk assessment with modeled impacts. However, without electronic input files and supporting air quality documentation, SCAQMD staff was unable to complete our review of the air quality analysis.⁵

In that CEQA review process, the lead agency, San Luis Obispo County, provided the modeling files and spreadsheets (in native electronic, unprotected format with working formulas) upon request (including to your firm).

Here, in response to a public records act request for the modeling files supporting the health risk assessment presented in the DEIR, the City provided some files but failed to produce the modeling files supporting the cancer risk and acute and chronic health risk near the Refinery presented in the DEIR, Table 4.1-9. Finally, in September 2014, three months after the initial request and in response to additional requests, the City admitted that it did not have the files and suggested obtaining them from the Bay Area Air Quality Management District ("BAAQMD"):

The City does not have a copy. According to the applicant (Valero), the modeling files that accompanied the BAAQMD ATC [Authority to Construct] Application were large, so they were provided to the BAAQMD via CD. I think the quickest

⁵ Jillian Baker, SCAQMD, Letter to Murry Wilson, San Luis Obispo County Department of Planning and Building, Re: Review of the Recirculated Draft Environmental Impact Report for the Phillips 66 Company Rail Spur Extension Project, November 25, 2014;
http://www.slocounty.ca.gov/Assets/PL/Santa+Maria+Refinery+Rail+Project/FEIR+Phillips+Rail+Spur+Project+Dec+2015/Response+To+Comments/1_Governmental+Agencies/SCAQMD.pdf. (Exhibit F1)

way for you to obtain a copy of the original modeling files would be via records request from the BAAQMD.⁶

On September 1, 2015, your firm submitted another public records act request to the City for the spreadsheets and modeling files supporting the revised health risk assessment presented in the RDEIR.⁷ Initially, the City claimed that it did “not have the raw modeling data,”⁸ but later made available a CD containing an incomplete set of the requested files⁹ lacking the AERMOD input and plot files, which are important for evaluating whether the model was set up correctly and necessary to plot the results contained in the output files.¹⁰ In response to your January 11, 2016 follow-up request for these files,¹¹ the City stated:

The City has not yet heard from Valero in regards to our request for access to the data. Please note, ... the City is not obligated under the Public Records Act to produce documents that are not public records in the City’s possession, and there is no basis to suggest that a project applicant’s consultant’s files are within the City’s “possession.”¹²

I find this response puzzling as a lead agency (and its consultants) should have ready access to all information prepared in support of a CEQA document for a project so it can independently review and verify all analyses to support the conclusions presented in the CEQA document. This includes the AERMOD files the City claims not to have. The City asserts that its “ESA’s environmental experts independently reviewed ERM’s report on the City’s behalf to assure its adequacy and accuracy for the intended

⁶ Amy Million, City of Benicia, Email to Diane Bailey, Natural Resources Defense Council, September 15, 2014 10:19 am. (Exhibit F2)

⁷ Rachael Koss, Adams Broadwell Joseph and Cardozo, Letter to City of Benicia; Re: Request for Documents Referenced or Relied Upon in the Valero Benicia Crude by Rail Project Revised Draft Environmental Impact Report (SCH #2013052074), September 1, 2015. (Exhibit F3)

⁸ Amy Million, City of Benicia, Letter to Rachael Koss, Adams Broadwell Joseph and Cardozo, Re: Public Records Request Dated September 1, 2015, September 2, 2015. (Exhibit F4)

⁹ Amy Million, City of Benicia, Email to Rachael Koss, Adams Broadwell Joseph and Cardozo, Re: AERMOD Data, September 29, 2015. (Exhibit F5).

¹⁰ Personal conversation with Lindsey Sears, air quality modeling specialist, November 8, 2015.

¹¹ Rachael Koss, Adams Broadwell Joseph and Cardozo, Letter to City of Benicia, Re: Request for Documents Related to the Valero Benicia Crude by Rail Project (SCH #2013052074), January 11, 2016 (Exhibit F6).

¹² Heather McLaughlin, City of Benicia, Letter to Rachael Koss, Adams Broadwell Joseph and Cardozo, Re: Public Records Request Dated January 11, 2016, January 20, 2016. (Exhibit F7)

purpose.”¹³ (ESA is the consultant for the City; ERM is the consultant who prepared the health risk assessment for the Applicant.) This claim is not supported.

The following excerpt is from a memorandum by the City’s consultant ESA, dated July 20, 2015 regarding the revised modeling of health risks presented in the RDEIR:¹⁴

This memo summarizes calculations used to verify ERM’s health risk estimates for the Valero Crude by Rail Project. This evaluation was conducted because the AERMOD files used to estimate health risks were not provided to ESA. This memo focuses on results included in the ERM 15 June 2015 Memorandum: *Updated Methodology for Assessment of Health Risk and PM2.5 Concentrations at the Refinery and at Receptors near Location Tracks in Fairfield (11 June 2014) Amended 15 June 2015.*

In other words, the City’s consultant ESA was never provided with the AERMOD modeling files prepared by ERM and, thus, could and did not independently review them. ESA only verified the calculations for health risks for receptors near rail tracks at the Fairfield and Dixon locations based on the maximum PM2.5 concentrations reported by the applicant’s consultant ERM and remodeled PM2.5 concentrations for the Fairfield location. The ESA memorandum did not verify ERM’s revised modeling of PM2.5 concentrations near the Refinery nor did it verify ERM’s health risk calculations for residential receptors, workers, and sensitive receptors near the Refinery.¹⁵

On February 2, 2016, less than a week before the February 8, 2016 Planning Commission hearing to consider the FEIR and Use Permit for the Project, the City forwarded a letter from the law firm Nossaman LLP¹⁶ for the Applicant accompanied by a link to an (incomplete) set of modeling files (identical to those received in 2015) and spreadsheet calculating health risks.¹⁷ The Nossaman Letter presents yet another revised table for maximum cancer and non-cancer risks near the Refinery. Neither the Nossaman Letter nor the accompanying modeling files and spreadsheet were made available on the City’s website for public review as of today. For a discussion of this new information, see Comment IV.B.

¹³ Million Letter to Koss, September 2, 2015, *op. cit.*

¹⁴ Tim Rimpo, ESA, Memorandum to File, Re: Confidence Check on Valero Crude by Rail Project Calculations, July 20, 2015. (Exhibit F8.)

¹⁵ *Ibid.*

¹⁶ Letter from John Flynn, Nossaman LLP, to Bradley Hogin, Woodruff, Spradlin & Smart, Re: Comment on Risk Values presented in Appendix E.6 of the RDEIR, Valero Benicia Crude by Rail Project (SCH #2013052074); Use Permit Application 12PLN-00063, February 1. (Exhibit F9)

¹⁷ Amy Million, City of Benicia, Email to Rachael Koss, Re: Modeling Files for Valero CBR - Adams Broadwell Request, February 2, 2016, 1:24 PM. (Exhibit F10)

In sum, I maintain that the EIR fails to fulfill its mandate as an informational document under CEQA because it fails to provide all information for the public to independently review and verify the EIR's findings and conclusions.

II. The EIR Fails to Identify and Mitigate Significant Impacts on Air Quality due to Project Construction Emissions

Project construction would result in engine exhaust emissions generated by on-site construction equipment, haul trucks, and construction worker commuter vehicles. The EIR finds that impacts associated with Project construction-related engine exhaust emissions would be less than significant.¹⁸ To arrive at this conclusion, the EIR compares estimates of average daily exhaust emissions during construction in pounds per day ("lbs/day") to the BAAQMD's quantitative daily significance thresholds recommended in the air district's 2009 *Revised Draft Options and Justification Report*, and, finding that emission estimates for all criteria pollutants would be less than the respective significance thresholds, determines that Project construction emissions are less than significant.¹⁹

I previously commented that the DEIR and RDEIR relied on an inappropriate methodology to arrive at the daily emission estimates it compares to the BAAQMD's daily significance thresholds and substantially underestimates emissions due to improper assumptions. The FEIR fails to correct these flaws.

A. The EIR's Methodology to Estimate Daily Emissions from Project Construction Is Inappropriate and Fails to Identify Significant Impacts

I previously commented that the methodology employed by the DEIR and RDEIR for estimating construction emissions on a daily basis is flawed.²⁰ My comments discussed that the model recommended by the BAAQMD's 2012 CEQA Guidelines²¹ for estimating construction emissions for comparison with the district's significance thresholds, CalEEMod,²² calculates *maximum daily* emissions rather than *average daily*

¹⁸ Draft EIR, p. 4.1-15.

¹⁹ *Ibid.*

²⁰ 2014 Pless DEIR Comments III.A, and 2015 Pless RDEIR Comments III.A.

²¹ BAAQMD, California Environmental Quality Act Air Quality Guidelines, updated May 2012; http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en. (Exhibit 2)

²² The 2012 BAAQMD CEQA Guidelines recommend the use of the CalEEMod predecessor URBEMIS. URBEMIS like CalEEMod calculates *maximum* daily emissions. CalEEMod was released on July 31, 2013,

emissions as calculated by the DEIR. My comments did not recommend that the EIR use CalEEMod in lieu of the manual calculations presented in DEIR, Appendix E.1, but rather discussed why the EIR's use of average daily emissions is incorrect:

The EIR prepared separate emission calculations for each of the various emission sources vehicle and construction equipment exhaust of reactive organic gases ("ROG"), carbon monoxide ("CO"), nitrogen oxides ("NOx"), sulfur dioxide ("SOx"), particulate matter equal to or smaller than 10 micrometers ("PM10") and equal to or smaller than 2.5 micrometers ("PM2.5") and fugitive ROG emissions from architectural coatings and asphalt paving²³ based on equations developed by the U.S. Environmental Protection Agency in Compilation of Air Pollutant Emission Factors ("AP-42"), which are incorporated into CalEEMod, and relying on factors from CalEEMod²⁴ and the URBEMIS model.²⁵ Specifically, in order to compute construction emissions, the EIR calculates total Project emissions for each criteria pollutant and precursor that would occur over the 25-week construction period and then divided these emissions by the number of days construction would occur (175 days²⁶) to arrive at "average daily" emissions in pounds per day ("lbs/day"). This methodology is inconsistent with the methodology incorporated into CalEEMod and, therefore, contrary to the BAAQMD's CEQA Guidelines, which clearly intend that environmental review documents compare daily construction emissions as determined with the current agency-recommended model to the respective quantitative daily thresholds of significance for construction.

By default, CalEEMod assumes seven construction phases including site preparation, demolition, grading, building construction, architectural coating, and paving; the user can add or delete phases and specify schedules.²⁷ Emission

after adoption of the 2012 BAAQMD CEQA Guidelines, and the district recommends using CalEEMod in lieu of URBEMIS since August 2013. (Exhibit F11) ("CalEEMod Release, Update: August 5, 2013, On July 31, 2013, the California Air Pollution Control Officers Association (CAPCOA) released CalEEMod 2013.2. This land use model can be downloaded from www.caleemod.com. From this point forward, the BAAQMD will no longer support the use of Urbemis. Please perform all future analyses using CalEEMod.")

²³ See Draft EIR, Appendix E.1 "Construction Emissions."

²⁴ See Draft EIR, Appx. E.1, "Soil Density," "Mean Wind Speed," and "Moisture," and "Truck Capacity" for fugitive particulate matter emissions; "Coating Coverage," and "Fugitive VOC Emission Factor" for emissions from architectural coatings; and "Fugitive VOC Emission Factor" for emissions from asphalt paving.

²⁵ Draft EIR, Appx. E.1, "URBEMIS Material Delivery Truck Default Trip Length."

²⁶ (25 weeks) × (7 days/week) = 175 days.

²⁷ CAPCOA, California Emissions Estimator Model, User's Guide, Version 2013.2, July 2013, (hereafter "CalEEMod User's Guide"), p. 25; <http://www.aqmd.gov/docs/default-source/caleemod/usersguide.pdf?sfvrsn=2>. (Exhibit 6)

sources during these phases include off-road construction equipment exhaust; fugitive dust from material movement, demolition, and off-site paved roads; on-road exhaust emissions from worker trips, vendor trips, and haul trucks; and emissions from architectural coatings and asphalt paving.²⁸ For each of these phases, CalEEMod provides maximum daily emissions as follows:

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 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.²⁹

Thus, the EIR's approach to determine average daily construction emissions over the entire construction period is therefore inconsistent with the BAAQMD's guidance to use CalEEMod which determines maximum daily construction emissions. Consequently, the EIR substantially underestimates emissions on a daily basis because it ignores the fact that emissions during the various, potentially overlapping, construction phases vary considerably.

The City, RTC B11-61, provides the following one-paragraph response to this discussion:

The construction emissions analyses uses the same underlying on-road and off-road models used by the CalEEMod model. Consequently, the construction emissions modeling is consistent with the results that can be obtained with CalEEMod. The one problem with using CalEEMod is that it generates estimates of peak daily emissions whereas BAAQMD's CEQA thresholds are in average daily emissions. Consequently, the DEIR conducts the analysis correctly. The commenter is incorrect that BAAQMD's construction thresholds are set as maximum daily emissions. In sum, the DEIR's averaging approach is the proper approach to assess potential impacts from construction activities.

If the City's response were correct, then why would the BAAQMD's 2012 CEQA Guidelines, which were finalized two years *after* the accompanying thresholds of

²⁸ *Ibid*, pp. 25-27.

²⁹ CalEEMod User's Guide, Appendix A, Calculation Details for CalEEMod, revised July 2013, CalEEMod v.2013.2, *emphasis added*; <http://www.aqmd.gov/caleemod/doc/AppendixA.pdf>. (Exhibit 7)

significance were adopted,³⁰ recommend the following specific guidance for determining construction-related impacts:

Construction Schedule:

- *Overlap phases* that will or have the potential to occur simultaneously.

Demolition Phase:

- Demolition fugitive dust is based on *maximum daily* volume of building to be demolished.

Site Grading Phase:

- Site grading construction equipment is based on *maximum daily* acres disturbed.

Other:

- When a specific construction schedule is unknown, *all phases that could potentially overlap should be added to calculate maximum daily emissions.*³¹

Instead, the EIR's approach improperly averages daily construction emissions across all phases, which, as demonstrated in my comments on the RDEIR, avoids finding significant impacts:

This improper averaging approach is of particular concern for ROG and NOx emissions, which are precursors to ground-level ozone formation through a complex series of chemical reactions between these pollutants in the presence of sunlight and particulate matter emissions and are mostly a concern during the daylight hours of summer days. Both the national and state ambient air quality standards ("NAAQS" and "CAAQS") for ozone are therefore set on a short-term basis; the NAAQS is set as an 8-hour average at 0.070 parts per million ("ppm"); the state ozone ambient air quality standards are set as 1-hour average at 0.09 ppm and an 8-hour average at 0.070 ppm.³² (I note that the RDEIR fails to acknowledge the newly promulgated 8-hour ozone NAAQS which reduced permissible ozone levels from 0.075 to 0.070 ppm.) Thus, contributions to ozone

³⁰ BAAQMD, California Environmental Quality Act, <http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa>. ("On June 2, 2010, the Bay Area Air Quality Management District's Board of Directors unanimously adopted thresholds of significance to assist in the review of projects under the California Environmental Quality Act. These Thresholds are designed to establish the level at which the District believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on the Air District's website and included in the Air District's updated CEQA Guidelines (updated May 2012)".)

³¹ See 2012 BAAQMD CEQA Guidelines, Table 8-3, p. 8-5, *emphasis* added.

³² California Air Resources Board, Ambient Air Quality Standards, October 1, 2015; <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>. (Exhibit 9)

formation from ozone precursors that occur on a short-term basis are important to consider. Averaging ozone precursor emissions over an entire construction period therefore severely underestimates the Project's contribution to short-term ozone formation.

The most substantial ozone precursor emissions would be generated by operation of heavy-duty equipment, *e.g.*, scrapers, crawler cranes, track hoes, off-road trucks, track-production tampers, excavators, loaders, etc. For example, assuming operation of 2 track hoes and 3 off-road trucks for 10 hours per day would result in NO_x emissions of **65.85 lbs/day**;³³ operation of 1 track hoe, 1 excavators and 3 loaders would result in NO_x emissions of **56.83 lbs/day**.³⁴ Assuming only 10 hours of construction per day for these equipment combinations is conservative for the earthmoving/grading phase of the Project since the construction would occur in two 10-hour shifts per day;³⁵ both would exceed the BAAQMD's significance threshold for NO_x of **54 lbs/day**. These emissions would contribute substantially to ozone formation in the BAAQMD, which during summer days often exceed health-based ambient air quality standards.

In sum, the EIR's "averaging" approach is improper to assess potential impacts from construction activities on compliance with short-term ambient air quality standards. Consequently, the EIR cannot demonstrate that Project construction emissions would not "[r]esult in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including emissions which exceed quantitative threshold for ozone precursors)" or "[v]iolate any air quality standard or contribute substantially to an existing or projected air quality violation." The EIR should be revised to evaluate maximum daily construction emissions based on an actual construction schedule in compliance with BAAQMD guidance ³⁶

³³ $2 \times [(\text{emission factor for track hoes: } 1.49875 \text{ lbs NO}_x/\text{hour}) \times (10 \text{ hours/day}) = 14.99 \text{ lbs NO}_x/\text{day}] + 3 \times [(\text{emission factor for off-road trucks: } 1.19594 \text{ lbs NO}_x/\text{hour}) \times (10 \text{ hours/day}) = 11.96 \text{ lbs NO}_x/\text{day}] = 65.85 \text{ lbs NO}_x/\text{day}$. (All emission factors from Draft EIR, Appx. E.1, Table 'Equipment and Vehicle Emission Factors (2013)'.)

³⁴ $1 \times [(\text{emission factor for track hoe: } 1.49875 \text{ lbs NO}_x/\text{hour}) \times (10 \text{ hours/day}) = 14.99 \text{ lbs NO}_x/\text{day}] + 1 \times [(\text{emission factor for excavator 345BL/C: } 0.98828 \text{ lbs NO}_x/\text{hour}) = 9.88 \text{ lbs NO}_x/\text{day}] + 1 \times [(\text{emission factor for excavator 320CL: } 0.76051 \text{ lbs NO}_x/\text{hr}) \times (10 \text{ hours/day}) = 7.61 \text{ lbs NO}_x/\text{day}] + 3 \times [(\text{emission factor for loaders 966G/H and 950G/H and front end loader 644: } 0.81170 \text{ lbs NO}_x/\text{hr}) \times (10 \text{ hours/day}) = 8.12 \text{ lbs NO}_x/\text{day}] = 56.83 \text{ lbs NO}_x/\text{day}$. (All emission factors from Draft EIR, Appx. E.1, Table 'Equipment and Vehicle Emission Factors (2013)'.)

³⁵ Draft EIR, p. 3-25.

³⁶ 2015 Pless RDEIR Comments III.A.

I maintain that the EIR fails to identify and mitigate significant impacts on air quality due to emissions of the ozone precursors NO_x during Project construction.

B. Feasible Mitigation Measures for Significant Project Construction Emissions

In my comments on the DEIR and RDEIR, I provided a list of additional feasible mitigation measures from the BAAQMD's CEQA Guidelines and recommended by the BAAQMD for another project to reduce emissions from Project construction. The City rejects my recommendation to require additional mitigation because it finds, based on the above discussed inappropriate methodology, that construction emissions would not be significant.³⁷ To repeat, if calculated correctly based on maximum rather than average daily emissions, construction of the Project would result in significant short-term impacts on air quality due to NO_x emissions from construction equipment and, thus, would contribute to the formation of ozone, a strong irritant that increases susceptibility to respiratory infections. (Ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground level ozone also can reduce lung function and inflame the linings of the lungs and repeated exposure may permanently scar lung tissue.³⁸)

In my experience, mitigation measures beyond those required by the EIR are almost always required in CEQA documents for projects with a construction fleet as large as the one specified for the Project. The following summarizes frequently recommended measures.

³⁷ RTC B11-65 ("The commenter's arguments do not accurately depict the construction emission estimates. Consequently, no justification has been provided for suggested revisions to the construction emissions. Commenter also lists mitigation measures for projects with significant construction emissions. However, the mitigation measures listed by the commenter do not apply to the Project because the Project's construction emissions would not be significant.") and RTC J6-31 ("The BAAQMD has two levels of construction mitigation. The first level includes basic construction mitigation measures recommended for all proposed projects. The second level is additional construction mitigation measures recommended for projects with construction emissions above the threshold. Since the Project's construction emissions would not exceed BAAQMD's thresholds, only the first level of mitigation are used for this Project, as recommended by BAAQMD's guidance.").

³⁸ See, EPA, Ground-level Ozone, Health Effects; <http://www3.epa.gov/ozonepollution/health.html>.

Additional mitigation measures recommended by the BAAQMD for projects with significant construction emissions include the following:

1. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.
2. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
3. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity.
4. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
5. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
6. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
7. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.
8. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
9. Minimizing the idling time of diesel powered construction equipment to two minutes.
10. The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.
11. Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).
12. Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM.

13. Requiring all contractors use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines.³⁹

Further, the BAAQMD recently recommended the following additional mitigation measures to reduce NO_x emissions during construction of the proposed WesPac Pittsburg Energy Infrastructure Project ("WesPac Project"):⁴⁰

- Prohibit diesel generators where access to the electrical grid is available.
- Require electrification of motors, pumps, and other power tools whenever feasible.
- Require the use of biodiesel or other alternative fuels in generators, construction equipment, and/or off-road vehicles.⁴¹

All of the above measures are feasible and must be required for the Rail Project to mitigate its significant impacts on air quality during construction due to significant NO_x I identified above and other potentially significant emissions. I recommend that the City revise the EIR's air quality section. These revisions should a) rely on a detailed construction schedule, b) follow the BAAQMD's recommended 6-step methodology for estimating construction emissions described in the agency's 2012 CEQA Guidelines⁴² using Project-specific assumptions, and c) require adequate mitigation.

III. The EIR Fails to Identify and Mitigate Significant Impacts on Air Quality due to Project Operational Emissions within the BAAQMD and Fails to Require All Feasible Mitigation for Impacts It Finds Unavoidable in Uprail Air Districts

For operational emissions, the EIR assesses impacts on air quality separately for each of the air districts with jurisdiction over the affected air basins in northern California, as summarized in the following brief summary of the EIR's approach and findings.

³⁹ BAAQMD 2012 CEQA Guidelines, *op. cit.*, p. 8-4.

⁴⁰ The WesPac Project application was withdrawn on November 16, 2015 (*see*, for example, RTC B11-71). However, this does not affect the BAAQMD's recommendation for appropriate construction mitigation measures.

⁴¹ Jean Roggenkamp, BAAQMD, Letter to Kristin Vahl Pollot, City of Pittsburg, Re: WesPac Pittsburg Energy Infrastructure Project Recirculated DEIR, September 13, 2013; <http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA%20Letters/WesPac%20Pittsburg%20Energy%20Infrastructure%20Project%20DEIR.ashx>. (Exhibit 14)

⁴² BAAQMD CEQA Guidelines, *op. cit.*, pp. 8-1 and 8-2.

For the BAAQMD: In addition to locomotive emissions within the BAAQMD’s jurisdictional boundary, which include main line haul emissions and switching emissions on site at the Refinery, the EIR quantifies indirect emissions from switching locomotives at the refinery site; direct emissions of fugitive equipment leaks from the new unloading rack and associated piping at the site and subtracts emissions from current deliveries via marine vessels because they allegedly would be displaced by rail transport. The EIR presents total net operational emissions on an annual basis but does not present emissions on a daily basis. Table F1 summarizes the EIR’s estimates for net annual operational emissions for ROG, NO_x, PM₁₀ and PM_{2.5} in the BAAQMD.

Table F1: Annual Project operational emissions in BAAQMD from EIR*

Source	Emissions (tons/year)			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Unloading rack and pipeline fugitive components	1.88	-	-	-
Fugitive tank emissions	-	-	-	-
Locomotives	1.70	33.04	0.83	0.81
Marine vessels (displaced)	-5.18	-91.84	-3.58	-3.40
Total net emissions	-1.60	-58.80	-2.75	-2.59
BAAQMD significance thresholds	10	10	15	10
Significant?	no	no	no	no

* From DEIR, Table 4.1-5

Because the total net emissions of criteria pollutants on an annual basis, *i.e.*, after subtracting marine vessel emissions, are determined to be negative for all analyzed pollutants, the EIR finds that the Project would result in a “beneficial impact” on air quality in the BAAQMD compared to the baseline and, therefore, concludes that the potential for the Project to contribute to an existing or projected air quality violation in the San Francisco Bay Area Air Basin (“SFBAAB”) under the BAAQMD’s jurisdiction would be *less than significant*.⁴³ (For a discussion of the unsupported assumption that marine vessel deliveries would be displaced by the Project and the failure to identify significant impacts on a daily basis, *see* Comment III.B; for a discussion of the EIR’s improper methodology for estimating locomotive emissions and the resulting substantial underestimates, *see* Comment III.C.)

For air districts uprail from BAAQMD in northern California: The EIR quantifies emissions from locomotives hauling crude oil within the jurisdictional boundaries of each of the affected air districts “uprail” from the BAAQMD based on train miles traveled and taking into account fugitive emissions from railcars and compares them to the air districts’ respective significance thresholds. The EIR presents separate estimates for emissions from the BAAQMD to the Roseville Railyard for each

⁴³ Draft EIR, pp. 4.1-17 through 4.1-22.

of the three affected air districts in the Draft EIR, Table 4.1-6, and emissions from the Roseville Railyard to the California border via three potential routes (shown in Figure F1 below) for each affected air district in the RDEIR, Tables 4.1-12 through 4.1-14. The EIR fails to include a summary table identifying the highest potential daily emissions for each uprail air district among the three routes. I prepared such a summary based on the EIR's tables, in Table F2; emissions exceeding the individual air districts' significant are **bolded**.

Table F2: Maximum daily Project operational emissions in uprail air districts from EIR

Air District	Emissions (lbs/day)			
	ROG	NOx	PM10	PM2.5
Yolo Solano AQMD ^a	8.13	170.7	4.6	4.4
Sacramento Metropolitan AQMD ^{b,c,d}	4.1	82.7	2.2	2.1
Placer County APCD ^d	26.6	527.4	13.9	13.5
Siskiyou County APCD ^b	23.5	474.8	12.7	12.3
Shasta County APCD ^b	20.6	416.1	11.1	10.8
Tehama County APCD ^b	10.5	213.4	5.7	5.5
Butte County APCD ^c	14.0	282.8	7.5	7.3
Feather River APCD ^b	6.9	138.7	3.7	3.6
Lassen County APCD ^c	9.5	192.1	5.1	5.0
Northern Sierra AQMD ^c	25.0	506.8	13.5	13.1

Significant emissions **bold**

AQMD = Air Quality Management District; APCD = Air Pollution Control District

a From DEIR, Table 4.1-5

b From RDEIR, Table 4.1-12

c From RDEIR, Table 4.1-13

d From RDEIR, Table 4.1-14

The EIR correctly finds that the Rail Project would result in *significant unavoidable impacts* on air quality due to NOx emissions for all affected uprail air districts. Consequently, the EIR concludes that Rail Project would interfere with each of these air districts' applicable air quality plans.⁴⁴ Table F2 does not change these findings but instead more comprehensively discloses the magnitude of potential emissions in each of the affected air districts summarizing the EIR's estimates. (For a discussion of the EIR's inappropriate methodology to estimate emissions and the resulting substantial underestimates *see* Comment III.C.)

For air districts uprail from BAAQMD in southern California: The EIR does not present any emission estimates for potential routes through southern California. (See Comment III.D.)

⁴⁴ RDEIR, pp. 2-27 and 2-30 through 2-38.

As I discussed in my prior comments on the DEIR and RDEIR and below, the EIR's approach to estimating operational emissions and assessing impacts with respect to air quality and associated health risks are substantially flawed and the EIR fails to identify and/or mitigate significant impacts.

A. Reliance on Displacement of Marine Vessel for Determining Net Project Emissions within BAAQMD's Jurisdictional Boundaries Is neither Enforceable nor Supported by Facts

The EIR's determination that the Project would result in less than significant – or “beneficial” – operational emissions within the BAAQMD rests solely on the assumption that deliveries of crude oil via marine vessels would be displaced on a per-barrel basis by crude oil delivered by trains to the proposed terminal. As shown in DEIR Table 4.1-5 (reproduced in Table F2 above), Project operational emissions of NO_x, 33.0 tons/year, would by far exceed the BAAQMD's threshold of significance of 10 tons/year if it were not for the assumed “displacement” of marine vessel emissions of 91.8 tons/year.⁴⁵ I previously commented that this approach to calculating Project net operational emissions is not supported because there are no enforceable commitments in place that all crude delivered by rail would, in fact, be directly offset by marine deliveries:

The Refinery currently receives crude oil shipments via pipeline and marine vessels.⁴⁶ The Rail Project would add crude oil deliveries of up to 70,000 bbl/day by rail.⁴⁷ The EIR states that “[b]ased on Valero's plans, the crude oil delivered by rail would displace up to 70,000 barrels per day of the crude oil that is presently delivered by marine vessels” but “would not displace crude oil delivered to the Refinery by pipeline.”⁴⁸ Beyond this reference to Valero's “plans,” the EIR provides no enforceable commitments to guarantee that these plans and the assumed emission reductions from displaced marine vessels would, in fact, materialize.⁴⁹

⁴⁵ Draft EIR, p. 4.1-1 (“Using an average vessel capacity of 350,000 barrels during the baseline period, the Project would eliminate approximately 73 vessel trips per year (70,000 barrels per day × 365 days per year/350,000 capacity of one vessel”).

⁴⁶ Draft EIR, p. 3-1.

⁴⁷ *Ibid.*

⁴⁸ *Ibid.*

⁴⁹ 2015 Pless RDEIR Comments IV.A, *see also* 2014 Pless DEIR Comments IV.A.

The City does not directly respond to the enforceability aspect of the EIR's displacement assumption and instead, in response to my and many others' concerns,⁵⁰ simply claims without any support that "it is valid to assume that marine vessel GHG and criteria pollutant emissions would be reduced."⁵¹ I disagree. Absent an enforceable condition requiring that Project emissions related to rail import of crude be offset by an equivalent emission reduction from marine vessels there is no assurance that the claimed emission reductions would, in fact, occur, especially over the remaining life of the Refinery. The mere claim by the EIR that crude delivered by rail would displace an equivalent amount of marine vessel deliveries does not constitute a "valid" assumption.

The City's consultant ESA questioned this very assumption during the preparation of the EIR and requested that the Applicant identify a mechanism to assure that the claimed displacement of marine vessel emissions would actually occur:⁵²

- b. The last sentence on page 13 indicates that no changes are proposed related to the existing air permit limits associated with existing ship and barge delivery emissions estimates. This gives the City no assurance that the proposed crude oil shipments by rail would actually result in a decline in marine vessel deliveries. What mechanism do you propose to assure the City that the CBR project would actually reduce marine vessel deliveries and emissions?

The Applicant's response does not identify such a mechanism but instead discloses that the assumption that any crude delivered by rail would displace marine vessel deliveries was merely predicated on the Refinery operating at its permitted limits on processing capacity in the BAAQMD's Permit to Operate:⁵³

Response 2b. As indicated previously, the refinery's total crude processing capacity is limited by its BAAQMD Permit to Operate, so that any increase in volumes of crude received by rail will necessarily result in a corresponding decrease in volumes received by marine vessel. Valero proposes that the existing constraints on processing capacity in the BAAQMD Permit to Operate are sufficient to ensure that the CBR project will result in reducing marine vessel deliveries and emissions.

In other words, there are no checks in place on marine crude deliveries other than the BAAQMD's permit limits on crude processing capacity or the permit limits on marine dock receipts. Thus, the Refinery could receive *additional* crude by rail up until its limit on crude processing capacity is reached and not replace any current deliveries via marine vessels. What's more, it could also indirectly replace pipeline crude

⁵⁰ For example, 2015 Fox Comments on RDEIR (Letter J6); 2014 Communities for a Better Environment Comments on DEIR (Letter B9).

⁵¹ RTC B10-45, RTC B11-68, and RTC J6-34.

⁵² Susan Gustofson, Valero, Letter to Tim Morgan, ESA, April 2, 2013. (Exhibit F12.)

⁵³ *Ibid.*

deliveries by providing relief for marine deliveries of light crudes instead of delivering increased quantities of heavy crudes. In other words, the crude by rail terminal merely gives the Refinery more flexibility for the receipt of crudes. It does not assure any net reduction in emissions at the marine terminal, as relied on in the FEIR to offset what would otherwise be significant increases in NOx emissions. Thus, absent an enforceable condition on marine deliveries, operational NOx emissions would be significant.

The marine terminal has the ability to receive any type of crude from light to heavy, the pipeline delivers heavy crudes (primarily San Joaquin Valley heavy crude⁵⁴), and the crude by rail terminal could receive any type of crudes from light to heavy.⁵⁵ Suppose the pipeline deliveries – decline in the future, a long-known concern for all refineries in California, which has prompted many refineries to look for other sources and/or permit increases for marine deliveries – the Refinery could increase marine import of heavy crudes and decrease import of light crudes which instead would be delivered by rail.

The City's consultant ESA also raised this issue with the Applicant during preparation of the EIR:⁵⁶

Potential Decline in Crude Oil Feed Stocks by Pipeline

- a. Contra Costa County recently approved a crude tank project for another Bay Area refinery (Shell Martinez). The project allows the refinery to maintain current production levels by increasing marine vessel deliveries, necessary because it was projected that San Joaquin Valley (SJV) crude oil feed stocks now received by pipeline would continue to diminish. While the CBR has not been proposed for this reason, the air permit application and other documentation are silent on whether crude oil supply delivered by pipeline would decline and be replaced by crude oil delivered by rail.

⁵⁴ Draft EIR, p. I-1.

⁵⁵ Draft EIR, pp. I-2 and I-6. ("The North American-sourced crude oil gravity is expected to range from 20° to 43.5°API...") Crude oils are generally characterized as heavy (10-26°API), medium (26-35°API), and light (35-60°API), *see* Draft EIR, Figure 3-7, p. 3-7.

⁵⁶ Valero Letter to ESA April 2, 2013, *op. cit.*

The Applicant's response again provides no assurance, instead stating only that it "does not anticipate a change in the amount of crudes received by pipeline."⁵⁷

Responses 1-a, 1-b, 1-c, 2-b. Valero does not anticipate a change in the amount of crudes received by pipeline. This project was implemented to take advantage of land-locked North American crudes that have recently become available. Valero plans to continue to receive crude at the Benicia refinery via pipeline, and does not anticipate a change in the volume of crudes received by pipeline as a result of this project. The North American sourced crudes proposed to be received by railcar are similar to crudes currently supplied by marine vessel from the Alaskan North Slope (ANS look-alikes).

Pipeline-supplied crudes have different crude characteristics than the ANS look-alikes. The crudes supplied by pipeline require storage in a heated tank. The existing crude storage tanks are located in the crude storage tank field and are configured only to receive crude by pipeline and by marine vessel. These tanks are not configured to receive crude from the proposed railcar unloading rack. The North American sourced crudes proposed by this project will be transported in unheated railcars and will be stored in an unheated storage tank that is in the vicinity of the unloading rack and in a different location than the existing crude storage tank field.

The Applicant's response avoids making a direct connection between all three modes of potential crude deliveries, instead it obfuscates the issue by rationalizing that rail deliveries would not *directly* replace pipeline deliveries due to the crude characteristics delivered via the two transport modes.

Further, the Applicant's argument regarding the difference between crudes delivered via train or pipeline is not entirely correct and inconsistent with other claims. To wit, it is true that the crudes delivered via pipeline, mostly San Joaquin Valley crudes, are very heavy and need to be stored in heated tanks. However, the crudes brought in by rail could also be heavy crudes, most notably tar sands from Canada. These crudes would be delivered as dilbit or synbit – tar sands that are diluted with lighter petroleum products, typically natural-gas condensates such as naphtha – which does not require heating of the rail cars. As claimed over and over, any crudes received must be blended to fall within the parameters appropriate for the refining units at the Benicia Refinery.⁵⁸ In other words, Valero could use lower quantities of pipeline crudes, bring in crude by rail (and especially heavy tar sands), and adjust marine deliveries as needed to have an overall mix that is suitable for the refinery.

In fact, as discussed in Comment III.A.3, the Applicant anticipated the need for flexibility for marine *versus* pipeline crude delivery when it requested a "contingency limit" for the marine terminal during the permitting process for the Valero

⁵⁷ Valero Letter to ESA April 2, 2013, *op. cit.*

⁵⁸ For example, RTC A18-10, RTC A20-11, RTC B3-43, and RTC B8-49.

Improvement Project ("VIP"). In sum, the Applicant's mere assertion that crude receipts by rail would not replace crude receipts by pipeline is not acceptable proof.

As I discussed in my comments on the DEIR and RDEIR, several circumstances strongly indicate that future operations of the Refinery and the marine terminal have the latitude to change substantially, calling into question the EIR's assumption that marine vessel deliveries to the Valero Benicia Refinery would be displaced by the Rail Project on a per-barrel basis. Specifically, these circumstances are:

- 1) The VIP substantially increased the Refinery's capacity and permit limits on crude processing capacity;
- 2) During the baseline period (2010-2012), the Refinery was operating at 65% of the current limits on crude processing capacity; and
- 3) New permit limits for the marine terminal implemented during the BAAQMD's Title V permit review for the Refinery incorporating the VIP include so-called contingency limits for crude oil receipts at the marine terminal to give the Refinery flexibility in its choice between receiving crude by marine vessel or by pipeline.

These comments and the City's responses are discussed in my comments below.

1. *Valero Improvement Project Substantially Increased the Refinery's Limits on Crude Processing Capacity*

My prior comments provided the following summary of the Valero Improvement Project ("VIP") for the Refinery that was previously analyzed under CEQA and permitted by the BAAQMD:

Between 2004 and 2010, Valero made significant modifications to the Refinery's process unit and other equipment, collectively known as the "Valero Improvement Project ("VIP"). The VIP substantially increased the crude processing capacity at the Refinery and enabled Valero to process lower grade (heavier and more sour) crude oils. The City certified the VIP EIR in 2003 and certified an addendum to the VIP EIR in 2008. All elements of the VIP, except for the hydrogen plant, were operational as of 2011.⁵⁹

The first unit in which incoming crude oil is processed at the Refinery is the pipestill or crude unit (S-1007). In the atmospheric fractionation column of the crude unit, the crude oil is heated and distilled or separated into six output

⁵⁹ Draft EIR, pp. 3-12 and 5-6.

streams called fractions.⁶⁰ Pre-VIP, the BAAQMD's permit for the crude unit limited processing to a maximum crude oil feed rate of 135,000 barrels per day ("bbl/day"). The VIP increased the maximum annual average daily crude oil throughput at the crude unit to 165,000 bbl/day, a nominal capacity increase of 25 percent, with a maximum daily crude oil throughput of 180,000 bbl/day.⁶¹ In addition, the Refinery installed two new external floating roof storage tanks for crude oil storage (S-1047 and S-1048)⁶² with a combined capacity of 130,000 barrels.⁶³ These tanks share a combined permitted throughput of 62.6 million barrels per year⁶⁴ ("bbl/year") with tanks S-57 through S-62 at the contiguous Nustar Energy facility (BAAQMD Facility ID# B5574), which was spun off as an independent terminal, storage, and product transportation facility from the Valero Refinery in 2006⁶⁵ and is operated pursuant to a service agreement between NuStar Energy and Valero.⁶⁶

The City, in RTC B11-69, provides the following *non-sequitur* response to this description:

Prior authorization of the Valero Improvement Project is described and analyzed as part of the baseline condition for the Project and as part of the cumulative scenario. Regarding baseline, see Response A20-10.

Since my above comments questioned neither the EIR's description or analysis of the VIP project nor the baseline but merely summarized the VIP, the City's comment is non-responsive.

2. *Baseline Crude Oil Deliveries Demonstrate that Refinery Does Not Operate at Capacity*

I previously commented that the crude oil deliveries during the 3-year period assumed as the baseline for the EIR (2010–2012) demonstrate that the Refinery currently does not operate at capacity.⁶⁷ My comments provided an estimate of the Refinery's operations during the baseline period as a percentage of its total refining capacity based

⁶⁰ VIP Draft EIR, p. 3-12.

⁶¹ Exhibit 15, p. 28.

⁶² *Ibid*, p. 31.

⁶³ $(27,300,000 \text{ gal/tank}) \times (2 \text{ tanks}) / (42 \text{ gal/bbl}) = 130,000 \text{ bbl}$.

⁶⁴ Exhibit 15, p. 31.

⁶⁵ Wikipedia, Valero Energy Corporation; http://en.wikipedia.org/wiki/Valero_Energy_Corporation. (Exhibit 16)

⁶⁶ Draft EIR, Appx. A1 to Appx. A, p. 10.

⁶⁷ 2015 Pless RDEIR Comments IV.A.2.

on the EIR's disclosure that 20 percent of the crude oil is currently delivered via pipeline⁶⁸ (the remainder, 80 percent, is currently delivered via the Refinery's marine terminal⁶⁹), as summarized in Table F3 below.

Table F3: Comparison of Refinery-wide baseline crude import and approximate capacity utilization at crude unit

	Baseline (2010-2012) total crude import		
A	3-year total crude import by marine vessel	93,361,985	bbl/3 years
B	Average annual crude import by marine vessel	31,120,662	bbl/year
C	Average daily crude import by marine vessel (80% of total import)	85,262	bbl/day
D	Average daily crude import by pipeline (20% of total import)	21,316	bbl/day
E	Average total daily crude import by marine vessel and pipeline	106,578	bbl/day
	Crude throughput at crude unit S-1006		
F	Annual average daily throughput limit	165,000	bbl/day
G	Baseline (2010-2012) annual average daily throughput	65%	of capacity
H	Baseline (2010-2012) annual average unused throughput capacity	58,422	bbl/day

A DEIR, Appx. E.2, p. 2.

B (Row-A) / (3 years)

C (Row B) / (365 days/year)

D (Row C) / (0.8) × (0.2)

E (Row C) + (Row D)

F BAAQMD Major Facility Review Permit, Valero Refining Co. – California, Facility #B2626, April 10, 2015 (“Valero Benicia Refinery 2015 Title V Permit”), Condition #50 (Exhibit F13)

G (Row E) / (Row F)

H (Row F) – (Row E)

Table 3 shows that three-year average capacity use at the crude unit during the baseline period was at approximately 65 percent and, thus, the Refinery has substantial remaining capacity for crude oil processing – about 35 percent. Therefore, provided a reliable crude oil supply – in other words, adequate pipeline and marine terminal capacity to accommodate increased raw material deliveries – the Refinery will be able to substantially increase crude oil processing over the baseline. My prior comments questioned the ability of the current infrastructure to support such an increase in production.

In response, the City, RTC B11-71, refers to RTC A20-10 (response to Attorney General on the DEIR) regarding the “analytical baseline relied upon in this EIR...” My comments did not question the analytical baseline relied upon by the EIR, as the reference to RTC A20-10 suggests *viz.* “the EIR does not assert that the proper baseline

⁶⁸ Draft EIR, Appx. K, p. K-10. (“Valero Benicia currently receives about 20% heavy sour crude via pipeline from the San Joaquin Valley of California. It also receives both light sweet and heavy sour crudes via ship.”)

⁶⁹ Draft EIR, p. 3-1. (“The Valero Benicia Refinery (Refinery) presently receives its crude oil by pipeline and marine vessels.”)

for the Project's impact on air emissions is determined by the Refinery's maximum permitted emissions." Rather, my comments relied directly upon the crude oil deliveries during the baseline period the EIR relied upon to determine at which capacity the Refinery was operating during that period. The City's response does not refute the baseline crude throughput I calculated.

3. Marine Terminal Operations

I also commented on current and future marine terminal operations at the Refinery and their constraints:

To accommodate VIP capacity increases and production, the VIP EIR anticipated an additional 12 ships per year delivering crude and gas oil and an additional 12 ships per year for coke exports at its marine terminal for a total of 24 additional ships per year.⁷⁰ While this estimate of 24 additional ships per year at the time represented "Valero's best estimate of the VIP's increase in ship traffic," the 2008 Addendum to the VIP EIR discloses that "it remains possible, whether due to unforeseen effects of the VIP or to other unforeseen circumstances, that Valero may need to increase ship traffic by up to approximately 36 more ships per year, in addition to the VIP increase of 24 ships, to obtain sufficient crude feedstocks."⁷¹

In response to the Applicant's concerns, the BAAQMD included so-called "contingency allowances" in the Title V Permit, Condition IV.24, for the Refinery's marine terminal to accommodate the very shift from crude imports from pipeline to ships the Applicant claims not to anticipate:

To accommodate any unforeseen changes in shipping requirements, the above total annual limits for each pollutant may be further increased to accommodate a shift in crude imports from pipeline to ships... The VOC contingency has been provided as part of Application #5846.⁷²

These contingency allowances are substantial and the total permitted crude and gas oil emissions and, thus, deliveries via the marine terminal almost doubled compared to the pre-VIP baseline, as summarized in Table F4 below.

⁷⁰ VIP Draft EIR, pp. 3-52 and 4-24.

⁷¹ VIP EIR Addendum, p. A-41.

⁷² Valero Benicia Refinery 2015 Title V Permit, Cargo Carrier and Dock, Condition 23, p. 528.

Table F4: Pre- and post-VIP permitted total annual marine terminal emissions*

Pollutant	VIP Baseline	VIP Increase	Emissions (tons/year)		
			Contingency Allowance	Total Increase over VIP Baseline Including Contingency Allowance	Total Increase over VIP Baseline
ROG	7.34	10.56	3.10	13.66	186%
NOx	96.14	136.12	32.95	169.07	176%
PM10	5.43	7.82	2.06	9.88	182%

* From: Valero Benicia Refinery 2015 Title V Permit, Conditions IV Cargo Carrier and Dock Nos. 23 and 24

The about 80% increase in permitted annual marine terminal operations over the pre-VIP baseline by far exceeds the increase of 25% on the permitted limit on crude processing capacity realized by the VIP. This allows the facility to import all of its crude for operating at the maximum permitted processing capacity via marine terminal deliveries without having to depend on the declining supply of California-sourced crude via pipeline and at the same time increase its export of finished products via the marine terminal.

However, there are several constraints to increasing marine imports of crude oil (and exports of finished products) to the Refinery, which indicate that the rail terminal is likely required in addition to, rather than to replace, vessel movements at its marine terminal. Specifically, as explained in my prior comments, it is well known that Bay Area refineries' marine terminals are near capacity and that production of California crude oils, which are delivered via pipeline, has been declining.⁷³ The proposed WesPac Pittsburg Energy Infrastructure Project ("WesPac Project"), an oil transfer facility with a 50,000 barrel/day rail and 192,000 barrel/day marine terminal capacity, was specifically conceived to improve the energy infrastructure of crude oil deliveries to Bay Area refineries, stating:

The project is needed to provide energy infrastructure for local refineries to receive crude oil from sources outside of California to make up for declining oil production in California. *Bay Area marine oil terminals and storage facilities are near capacity and many times ships need to wait in the Bay for a place to berth, adding to local air pollution and congestion in shipping lanes. This project will relieve*

⁷³ WesPac Pittsburg Energy Infrastructure Project, October 2013; <http://www.pittsburgterminalproject.com/WesPac%20Pittsburg%20Terminal%20Project%20for%20Pittsburg%20Citizen%20Advisory%20Committee%2010-21-2013%20rev%206.pdf> (Exhibit 17)

some of that congestion, help reduce local air pollution and help stabilize the supply base of crude oil. Crude oil brought into the rail facility will reduce the amount of crude oil brought into the area by marine vessels and further reduce ship traffic.⁷⁴

I presented two maps that showed how the WesPac project would have tied into rail and existing pipeline connections to Bay Area refineries,⁷⁵ among them the Valero Benicia Project, which the WesPac Draft EIR specifically named as one of the four refineries that would potentially receive crude oil from the new facility.⁷⁶ I noted that while the WesPac Project would have relieved some the maxed-out marine terminals at the Bay Area refineries, it had been substantially delayed and it was uncertain whether the facility would be built, at least in the foreseeable future which leaves the Bay Area refineries to find alternative cost-advantaged crude oil delivery options, at least in the short-term.⁷⁷

In response, the City, RTC B11-71, provides:

The Valero Improvement Project and the WesPac project are evaluated as part of the cumulative effects analysis. See, e.g., Revised DEIR Section 2.17.4 (p. 2-144 et seq.), including Table 5-1 (p. 2-145). The applicant submitted a formal request to withdraw the WesPac project application and to terminate all work on the project on November 16, 2015 (City of Pittsburg, 2015). The commenter's speculation as to Valero's motivation is acknowledged, but no facts, data, or other evidence is provided in this comment that suggests the analysis in the EIR is inadequate or inaccurate.⁷⁸

The withdrawal of the WesPac Project application corroborates my comments questioning the facility's availability in the near future to relieve the congestion at the marine terminals operated by Bay Area refineries, including Valero. My comments also provided other evidence that the crude-by-rail terminal is needed to allow the Refinery to operate closer to its permitted capacity that was facilitated by and permitted under the VIP:

⁷⁴ The Pittsburg Energy Infrastructure Project;
<http://www.pittsburgterminalproject.com/projectoverview.htm>. (Exhibit 18)

⁷⁵ 2015 Pless RDEIR Comments, Figures 1 and 2.

⁷⁶ City of Pittsburg, WesPac Pittsburg Energy Infrastructure Project, Recirculated Draft EIR, p. 2.0-43;
<http://www.ci.pittsburg.ca.us/Modules/ShowDocument.aspx?documentid=5674>. (Exhibit 20)

⁷⁷ 2014 Pless DEIR Comments IV.A.3 and 2015 Pless RDEIR Comments IV.A.3.

⁷⁸ Internal citations omitted.

Further, it appears that the Refinery's marine terminal is at capacity and cannot receive more crude oil without compromising the Refinery's capacity to export finished products (gasoline) from the terminal. Specifically, according to the EIR, the Refinery's marine terminal received 264 ships over the three-year period 2010 through 2012, or an annual average of 88 ships per year delivering about 85,000 bbl/day of crude oil on a three-year annual average⁷⁹, an average of about 353,600 barrels per ship.⁸⁰ Thus, at a typical discharge capacity of 22,707 bbl/hour⁸¹, a ship spends on average about 16 hours to discharge its load.⁸² In addition, the ship spends about 6 hours per trip hotelling at the terminal without discharging and half an hour for maneuvering, mooring, and unmooring.⁸³ Thus, the total time a ship delivering crude oil spends on average at the Refinery's marine terminal is about 22 hours or almost a full day.⁸⁴ Thus, the terminal is in service for receiving crude oil from marine vessels at about a quarter of the year.⁸⁵

Given that Valero's marine terminal also receives other products than crude oil at the marine terminal – gas oil by ship and crude and gas oil by barge – and functions as an export terminal for finished products,⁸⁶ it becomes clear that the terminal cannot accommodate much of an increase in crude oil imports and at the same time accommodate the company's stated plans to increase export of gasoline via marine vessels in step with other West Coast refineries *viz.* "We would like to be able to export more to the Pacific Coast of Mexico or further down to South America."⁸⁷ Thus, the Refinery's marine terminal may have to yield some of the import capacity to enable Valero's plans to increase exports of gasoline, which, while reducing marine vessel emissions from importing crude oil would not reduce total marine vessel movements or emissions. As noted previously:

⁷⁹ $(93,361,985 \text{ barrels}/3 \text{ years})/(365 \text{ days}/\text{year}) = 85,263 \text{ barrels per day.}$

⁸⁰ $(93,361,985 \text{ barrels}/3 \text{ years})/(264 \text{ ships}/3 \text{ years}) = 353,644 \text{ barrels}/\text{ship.}$

⁸¹ Draft EIR, Appx. E.2, p. 3.

⁸² $(353,644/\text{ship})/(22,707 \text{ bbl}/\text{hour}) = 15.6 \text{ hours.}$

⁸³ Draft EIR, Appx. E.2, "Ocean Going Vessels Activity Data."

⁸⁴ $(15.6 \text{ hours discharge}) + (0.5 \text{ hours maneuvering}/\text{mooring}/\text{unmooring}) + (6 \text{ hours hotelling without discharge}) = 22.1 \text{ hours.}$

⁸⁵ $(88 \text{ ships}/\text{year})(22.1 \text{ hours}/\text{ship}) = 81 \text{ days}; (81 \text{ days}/365 \text{ days}) = 0.22.$

⁸⁶ Valero, Benicia, Overview;

<http://www.valero.com/ourbusiness/ourlocations/refineries/pages/benicia.aspx>. ("Products shipped via pipeline, truck, rail, barge and ship.")

⁸⁷ Amy Harder, National Journal, Amid Oil Boom, Petroleum Exports Surge, October 17, 2013; <http://www.nationaljournal.com/s/68353/amid-oil-boom-petroleum-exports-surge?mref=scroll>.

Third, Valero's plans for future substantial marine exports of finished products (gasoline) may severely restrict its ability to receive crude oil deliveries via ship. To facilitate these increased exports, specifically to non-domestic markets (South America), Valero submitted a bid to create a Foreign Trade Zone ("FTZ") at the Benicia marine terminal. A Valero spokesman explained the motive for establishing a Foreign Trade Zone:

"It is something that would help the refinery be more competitive," Valero Energy Corp. spokesman Bill Day said. Day added that he is prohibited from releasing detailed information about the company's business plans. But he said the move could "assist with exporting of finished fuels" to other countries, where demand is rising.⁸⁸

Valero's bid to establish a Foreign Trade Zone was approved by the San Francisco Port Commission in December 2010⁸⁹ and the company's subsequent bid to the U.S. Department of Commerce in January 2011⁹⁰ was approved in November 2011.⁹¹

Thus, in addition to gaining better access to cost-advantaged crude oils, as explained in detail in the Fox IS/MND and Draft EIR Comments, additional drivers behind Valero's plans to import crude oil via rail to take advantage of the Refinery's currently underutilized refining capacity are likely the above-described lack of adequate marine terminal capacity for imports and exports; the restriction on crude oil imports due to the BAAQMD permit limits for the marine terminal; the postponement of the WesPac Project; and Valero's plans to substantially increase its gasoline exports. Thus it is likely that the delivery of crude oil via the Rail Project would not displace or reduce marine vessel movements to and from the Refinery but instead would allow the Refinery to increase production and at the same time permit more exports from the marine

⁸⁸ Tony Burchyns, Inside Bay Area News, Benicia's Valero Refinery Seeks Free Trade Status, December 22, 2010; http://www.insidebayarea.com/news/ci_16923738http://www.insidebayarea.com/news/ci_16923738. (Exhibit 24)

⁸⁹ Tony Burchyns, Vallejo Times-Herald, S.F. Port Commission Approves Valero's Bid to Create a Trade Zone at its Benicia Refinery, December 24, 2010; http://www.timesheraldonline.com/news/ci_16935911. (Exhibit 25)

⁹⁰ U.S. Department of Commerce, Foreign-Trade Zones Board, Foreign Trade Zone 3-San Francisco, California; Application for Subzone; Valero Refining Company-California (Oil Refinery), Benicia, California, 76 FR 10329, February 24, 2011; <http://www.gpo.gov/fdsys/pkg/FR-2011-02-24/pdf/2011-4208.pdf>. (Exhibit 26)

⁹¹ U.S. Department of Commerce, Foreign-Trade Zones Board, Order No. 1797, Grant of Authority for Subzone Status, Valero Refining Company - California (Oil Refinery), Benicia, California, 76 FR 72675, November 25, 2011; <https://federalregister.gov/a/2011-30315>. (Exhibit 27)

terminal. Thus, the EIR's assumption of a reduction in marine vessels as "displaced baseline" is not supported.

This discussion supports that crude deliveries via rail would not displace, but would facilitate more marine vessel calls. In fact, correspondence between the Applicant and the City's consultant during development of the EIR⁹² indicates that the assumption that crude delivered by rail would displace marine vessel deliveries was merely predicated on the Refinery operating at its permitted limits on processing capacity (as opposed to operating at baseline levels), as discussed in Comment III.A.2 above. Thus, since the Refinery currently operates below its permitted constraints on capacity, which was facilitated by the VIP (*see* Comment III.A.1), it seems very likely that the claimed "displacement of marine vessels" would not occur until the Refinery operates at or close to its permitted limits on processing capacity.

If the City truly believes, and the Applicant supports, the assumption that there will be no increase of crude oil deliveries to the Refinery as a result of building the crude-by-rail terminal at the Benicia Refinery, surely there would be no harm in laying this issue to rest by requiring an enforceable permit condition to that effect; for example, by requiring that the permitted emissions associated with marine terminal receipts are reduced by an equivalent amount. The repeated refusal to make such a condition part of the EIR process casts severe doubts on the validity of the EIR's "displacement" theory.

B. The EIR's Exclusive Reliance on the BAAQMD's Annual Significance Threshold Is Inadequate and Fails to Identify Significant Air Quality Impacts

I previously commented that the BAAQMD established two sets of thresholds for assessing the significance of a project's operational emissions: on a daily basis (in lbs/day) and on an annual basis (in tons/year):⁹³

The step-by-step guidance provided by the BAAQMD's CEQA Guidelines clearly illustrate the agency's intent that both daily and annual thresholds be used to determine the significance of a project's operational emissions:

⁹² Valero Letter to ESA, April 2, 2013, *op. cit.*

⁹³ BAAQMD, Proposed Air Quality CEQA Thresholds of Significance, May 3, 2010; http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Summary_Table_Proposed_BAAQMD_CEQA_Thresholds_May_3_2010.ashx?la=en. (Exhibit 28)

Step 2: Comparison of Unmitigated Emissions with Thresholds of Significance

Sum 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...

Step 4: Comparison of Mitigated Emissions with Thresholds of Significance

Compare the total average daily and annual amounts of mitigated criteria air pollutants and precursors with the project thresholds.⁹⁴

Yet, despite this explicit guidance by the BAAQMD, the EIR compares emission estimates only to annual thresholds, ignoring significant impacts the Project may have on a short-term basis. The Project's significant increase of NO_x and ROG emissions, which are ozone precursors, are the most critical to evaluate on a daily basis. The state and federal ozone ambient air quality standards for ozone are based on 1-hour and 8-hour averages. Thus, short-term emission increases of these pollutants are much more important than long-term, annual averages. As I discussed previously:

As discussed in Comment IV.A.3, the Valero marine terminal currently receives about 88 crude oil deliveries via marine vessel per year. Based on information provided by the EIR, the total roundtrip time for marine vessels (from and to the Pilot Sea Buoy to the marine terminal, maneuvering/mooring/unmooring, hotelling without discharge, and hotelling with discharge at the marine terminal) can be calculated at about thirty hours.⁹⁵ Thus, crude oil ship movements from and out to the Pilot Sea Buoy occur on about 2,612 hours of the year or about 109 days of the year and there are 256 days of the year when no marine vessel deliveries of crude oil occur within the SFBAAB. On those days, marine vessel emissions would be zero. (While there may be overlap of vessels moving through the Bay, this would only further increase the number of days when no emissions occur.) On these days, increases in emissions from other operational sources, such as fugitives and tanks, would not be offset, resulting in significant impacts.

Table 4 below summarizes Project daily operational emissions for those days when no marine vessel emissions would occur within the San Francisco Bay Area Air Basin. Table 4 incorporates increases in fugitive ROG emissions from storage tanks and rail cars from the Fox Draft EIR Comments; all other emission estimates are based on the EIR's annual emission estimates.

⁹⁴ BAAQMD 2012 CEQA Guidelines, p. 4-3, *emphasis added*.

⁹⁵ From Draft EIR, Appx. E.1: (Maneuvering/Mooring/Unmooring + hotelling without discharge + hotelling with discharge = 22.1 hours) + (Slow Cruise/Maneuvering: 0.56 hours) + (Slow Cruise 2: 2.60 hours) + (Slow Cruise 1: 4.42 hours) = 29.86 hours.

Table 4: Significance of daily net operational emissions within the SFBAAB on days without crude oil deliveries via marine vessels

Source	ROG (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Unloading rack and pipeline fugitive components ^a	10.3	-	-	-
Tank fugitive emissions ^b	64.6	-	-	-
Locomotives ^a	9.3	181.0	4.5	4.4
Marine vessels ^a	-	-	-	-
Total net emissions	84.2	181.0	4.5	4.4
BAAQMD significance thresholds	54	54	82	82
Significant?	YES	YES	no	no

a (annual emissions from Draft EIR, Table 4.1-19) / (365 days/year) × (2000 lbs/ton)

b From Fox Draft EIR Comments

Table 4 demonstrates that 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 other air basins affected by pollutant transport, as discussed in Comment IV.C.1. This is of particular concern during the ozone season as the SFBAAB and several downwind air basins are in nonattainment of ambient air quality standards. The increase in ROG and NOx, ozone precursors, would therefore contribute to existing violations of federal and state ozone ambient air quality standards. This a new significant impact that the EIR fails to identify and fails to mitigate.⁹⁶

In response, the City, RTC B11-72, provides:

The commenter has prepared a Table 6 [sic] showing the daily net operational emissions within the SFBAAB on days without crude oil deliveries via marine vessels. Although that table represents worst case daily emissions, it is inappropriate for an accurate CEQA analysis. BAAQMD's CEQA thresholds are designed to compare a project's average daily emissions to the CEQA thresholds.

The City in RTC J6-35 elaborates:

The commenter suggests "Table 4" as an alternative to the way emissions in the San Francisco Bay Area Air Basin are evaluated in the EIR. Table 4 purports to show the daily net operational emissions within the SFBAAB on days without crude oil deliveries via marine vessels. Although that table represents worst-case daily emissions, it is inappropriate for an accurate CEQA analysis because BAAQMD's CEQA thresholds are designed to compare a project's average daily emissions to the CEQA thresholds - not their worst case. Consequently, commenter's Table 4 reports impact conclusions that are not derived in a manner consistent with applicable District guidance or thresholds. The City is not persuaded that this would be a correct approach and did not revise the EIR in

⁹⁶ 2015 Pless RDEIR Comments IV.B, see also 2014 Pless DEIR Comments IV.B

accordance with the commenter's Table 4.

The City is wrong. If the City's claim regarding BAAQMD's intent for establishing daily thresholds was correct, why would the district establish separate daily significance thresholds at all since the daily thresholds in pounds per day are merely conversions of the annual thresholds in tons per year?⁹⁷ Or why would the agency set daily permit limits when they directly correspond to annual permit limits? The purpose for such daily limits is to protect short-term impacts on air quality. Thus, averaging daily marine vessel emissions over an entire year even though the ships that allegedly would be displaced would have come in on only 73 days of the year,⁹⁸ *i.e., not contemporaneously with daily rail deliveries*, does not disclose impacts on air quality on a short-term, *i.e., daily* basis.

C. The EIR's Methodology for Estimating Locomotive Emissions Based on Fuel Consumption Index Is Not Supported and Substantially Underestimates Emissions

Rail operations are typically categorized as switch and line-haul due to different activity patterns and equipment configurations. Line-haul operations refer to the movement over long distances, generally with newer and more powerful locomotives than switch operations, and tend to idle less. Switch activities refer to the assembling and disassembling of trains at railyards, sorting of rail cars, and delivery of empty rail cars to terminals. Switch operations involve short-distance movements, significant idling, and often older equipment.⁹⁹

The EIR estimates locomotive emissions from three types of rail operations: 1) line haul between the Roseville Railyard and the Refinery in the BAAQMD and within air districts uprail of the Roseville Railyard; 2) line haul at the Refinery; and 3) switching at the Refinery and the Roseville Railyard. Emission estimates assume two daily train roundtrips with 50 tank cars per train (or 1 daily roundtrip of a 100-tank car train¹⁰⁰) on 365 days per year and assume transportation exclusively by Union Pacific Railroad ("UPRR" or "UP").¹⁰¹ My review of the methodology developed by the EIR (*see* DEIR, Appendix E.3 Air Permit Application to the BAAQMD, Attachment B-4 'Cargo Carrier Emissions') shows it is not appropriate and substantially underestimates

⁹⁷ $(10 \text{ tons/year}) \times (2000 \text{ lbs/ton}) / (365 \text{ days/year}) = 54.8 \text{ lbs/day}$;
 $(15 \text{ tons/year}) \times (2000 \text{ lbs/day}) / (365 \text{ days/year}) = 82.2 \text{ lbs/day}$.

⁹⁸ Draft EIR, p. 4.1-1. ("... the Project would eliminate approximately 73 vessel trips per year...").

⁹⁹ NCFRP Report 4 *op. cit.*, p. 63.

¹⁰⁰ Emission calculations in Draft EIR, Appx. E.3., Att. B-4, are based on 1 roundtrip for a 100-tank car train.

¹⁰¹ Draft EIR, p. 4.1-18.

locomotive emissions within the BAAQMD and even more so within the uprail air districts.

1. *EIR Assumptions and Methodology*

The EIR relies on the following assumptions and calculations to estimate emissions from line haul and switching locomotives onsite at the Refinery and within the BAAQMD:

Weight Transported

- **(A) Daily crude freight weight** = 10,580 tons/day based on Project Description;¹⁰²
- **(B) Daily number of tank cars** = 100 tank cars/day based on Project Description;¹⁰³
- **(C) Weight of empty tank car** = 37.2 tons based on American Railroads TRN Spec Sheet-1;¹⁰⁴ and
- **(D1) Maximum daily gross freight weight hauled** = $(A) + (B) \times (C) = 14,300$ tons/day; and
- **(D2) maximum daily weight of empty cars hauled** = $(B) \times (C) = 3,720$ tons/day.

Locomotives

- **Haul locomotive roundtrip travel distance offsite in BAAQMD (E1)** = 22 miles based on Google Earth; **haul locomotive roundtrip travel distance on site at Refinery (E2)** = 2 miles based on Google Earth;
- **(F) Switching locomotive roundtrip travel distance** = 2 miles onsite at Refinery based on Google Earth;

¹⁰² Draft EIR, Appx. E.3, Att. B-4, p. 3, Table 'Year 2014 Daily Locomotive Criteria Pollutant Emissions - 100 Railcars per Day,' Line 3.

¹⁰³ Draft EIR, Appx. E.3, Att. B-4, p. 3, Table 'Year 2014 Daily Locomotive Criteria Pollutant Emissions - 100 Railcars per Day,' Line 1.

¹⁰⁴ Draft EIR, Appx. E.3, Att. B-4, p. 3, Table 'Year 2014 Daily Locomotive Criteria Pollutant Emissions - 100 Railcars per Day,' Line 4. (Line 4 shows 37 tons/tank car; however, Line 5 shows 3,720 tons for 100 tank cars; thus, empty tank car weight is 37.2 tons).

- **Year 2014 emission factors for large line haul locomotives (G1), small haul locomotives (G2), and switching locomotives (G3)** in grams per gallon fuel (“g/gal”) from a 2009 report by EPA (EPA-420-F-09-025¹⁰⁵);¹⁰⁶
- **(H) Year 2011 system-wide fuel consumption index** (or fuel efficiency) for UPRR in gross ton-miles per gallon diesel fuel (“gross ton-mile/gal”) based on methodology described in a 1992 report by EPA (EPA-420-R-92-009 Procedures for Inventory Preparation Volume IV: Mobile Sources), which is calculated as the annual system-wide gross-ton miles **(I)** divided by the annual system-wide gallon of fuel for a rail carrier **(J)**;¹⁰⁷
- **(K) Number of switching locomotives on site = 1**;¹⁰⁸
- **(L) Number of tank cars in train switched by switching locomotive at one time = 25 tank cars**;¹⁰⁹
- **(M) Average locomotive power over switching cycle = 177 bhp** based on a 1998 report by EPA (EPA-420-R-98-101 Locomotive Emission Standards, Regulatory Support Document, Appendix B);¹¹⁰ and
- **(N) Power to fuel consumption conversion factor = 15.2 bhp-hr/gal** based on a 2009 report by EPA (EPA-420-F-09-025 Emission Factors for Locomotives Table 3).¹¹¹

Emissions

- **(O) Daily haul locomotive emissions off-site in BAAQMD (lbs/day)** = (year 2014 large line haul locomotive emission factors) / (year 2011 system-wide fuel consumption index) × (maximum daily gross freight weight + maximum total daily weight of empty cars) × (haul locomotive roundtrip travel distance offsite in BAAQMD) / (453.6 g/lb) = **(G1) / (H) × (D1 + D2) × (E1) / (453.6 g/lb)**;
- **(P) Daily haul locomotive emissions onsite at Refinery (lbs/day)** = (year 2014 small haul locomotive emission factors) / (year 2011 fuel system-wide consumption index) × (maximum daily gross freight weight + maximum total

¹⁰⁵ EPA, Emission Factors for Locomotives, April 2009, (EPA-420-F-09-025. (Exhibit F14.)

¹⁰⁶ Draft EIR, Appx. E.3, Att. B-4, p. 4, Footnote 1 to Table ‘Year 2014 Locomotive Emission Factors.’

¹⁰⁷ Draft EIR, Appx. E.3, Att. B-4, p. 2, Footnote to Table ‘Fuel Consumption Index (for year 2011).’

¹⁰⁸ Draft EIR, Appx. E.3, Att. B-4, p. 3, Table ‘Year 2014 Daily Locomotive Criteria Pollutants – 100 Railcars per Day.’

¹⁰⁹ *Ibid.*

¹¹⁰ *Ibid.*

¹¹¹ *Ibid.*

- daily weight of empty cars) \times (haul locomotive roundtrip travel distance on site at Refinery) / (453.6 g/lb) = **(G2) / (H) \times (D1 + D2) \times (E2) / (453.6 g/lb)**;
- **(Q) Daily switching emissions onsite at Refinery (lbs/day)** = (year 2014 switching emission factors) \times (average locomotive power over switching cycle) / (power to fuel consumption conversion factor) \times (number of switching locomotives on site) \times (daily number of tank cars) / (number of 25-tank car trains) \times (switching locomotive roundtrip travel distance) / (453.6 g/lb) = **(G3) \times (M) / (N) \times (K) \times (L) \times (E2) / (453.6 g/lb)**;
 - **(R1) Total daily emissions onsite at Refinery (lbs/day)** = (daily haul locomotive emissions onsite at Refinery) + (daily switching emissions onsite at Refinery) = **(P) + (Q)**; **(R2) total annual emissions onsite at Refinery (tons/year)** = (total daily emissions onsite at Refinery) \times (365 days/year) / (2000 lbs/ton); and
 - **Total daily emissions in BAAQMD (lbs/day)**: (daily haul locomotive emissions off-site in BAAQMD) + (total daily emissions onsite at Refinery) = **(O) + (R1)**; **total annual emissions in BAAQMD (tons/year)** = (total daily emissions in BAAQMD) \times (365 days/year) / (2000 lbs/ton) = **(O) + (R2)**.

For line haul traveling through air districts uprail of the BAAQMD, the EIR follows the same methodology based on the number of miles traveled within each air district.¹¹²

2. Determination of System-wide Fuel Consumption Index for Rail Carriers

In the calculations above, estimated emissions for line haul locomotives are directly inversely proportional to the fuel consumption index **(H)**, also called fuel efficiency, in units of gross ton-miles traveled per gallon of fuel consumed ("gross ton-mile/gal" or "GTM/gal"). (The terms 'fuel consumption index' and 'fuel efficiency' are interchangeable and I use both in my comments.) The EIR's determination of this parameter follows a methodology described in a 1992 report by EPA (EPA-420-R-92-009, Procedures for Inventory Preparation).¹¹³ The EPA developed this report to assist states in preparing state-wide emission inventories for mobile sources, for example, for preparation of State Implementation Plans ("SIPs").

¹¹² See DEIR Appendix E.3, Attachment B-4, and RDEIR, Appendix A.

¹¹³ EPA, Procedures for Inventory Preparation, Volume IV: Mobile Sources, December 1992, EPA-420-R-92-009; <http://www3.epa.gov/otaq/models/nonrdmdl/r92009.pdf>. (Exhibit F15.)

For Class I rail carriers,¹¹⁴ such as UPRR, the EPA's inventory methodology for calculating the fuel consumption index relies on information provided annually by each Class I rail carrier to the federal Surface Transportation Board ("STB") in a report entitled "R-1," specifically, information on traffic density, *i.e.*, annual system-wide gross ton-miles traveled (**I**) and annual system-wide fuel consumption (**J**).

The system-wide fuel consumption index may be derived in one of two ways. The first way is *with the weight of the locomotives* included; the second way is *without the weight of the locomotives* included.¹¹⁵ For any emissions estimates, it is important to match the units of the fuel consumption index and the traffic density. If traffic density is supplied without the weight of the locomotives included, then the fuel consumption index should be determined without the weight of the locomotives included in the calculation. If traffic density is supplied with the weight of the locomotives included, then the fuel consumption index should be determined with the weight of the locomotives included in the calculation. The 1992 EPA report provides the following methodology for estimating the fuel consumption index with and without the weight of the locomotives included:

- 1) **Fuel consumption index with locomotives (H_{with}) =**
(R-1, Schedule 755, line 104: total gross ton miles) (**J_{with}**) /
(R-1, Schedule 750, line 1: total fuel consumed) (**I**)

- 2) **Fuel consumption index without locomotives ($H_{without}$) =**
(R-1, Schedule 755, line 104: total gross ton miles) (**J_{with}**) -
(R-1, Schedule 755, line 98: road locomotives gross ton miles) (**J_{without}**) /
(R-1, Schedule 750, line 1: total fuel consumed) (**I**)¹¹⁶

The EIR relies on the latter approach and determines the fuel consumption index for BNSF Railway ("BNSF") and UPRR without locomotives ($H_{without}$) based on R-1 reports for 2011, as shown in the excerpt in Table F5 from the EIR's Appendix E.3, Attachment B-4.

¹¹⁴ EPA-420-R-92-009, *op. cit.*, p. 200, footnote 251 ("Class I railroads are classified by the Interstate Commerce Commission as having annual revenues greater than \$93.5 million.")

¹¹⁵ EPA-420-R-92-009, *op. cit.*, pp. 203-204.

¹¹⁶ EPA-420-R-92-009, *op. cit.* ("The R-1 report should be used, for each carrier, to obtain information on annual fuel consumption (Schedule 750: line 1), total gross ton miles including locomotives (Schedule 755: line 104), and, when needed, total gross ton miles excluding locomotives (Schedule 755: line 104 minus line 98).")

Table F5: Fuel consumption index without locomotives determined by EIR

	I	J with	J without	H without
Fuel Consumption Index* Calculation (for year 2011)				
Railroads Operating in CA	Fuel Consumption (gallons)	Gross-Ton Miles w/ Locomotive (1000 ton-miles)	Gross-Ton Miles w/o Locomotive (1000 ton-miles)	Fuel Consumption Index (gross ton-miles/gal)
BNSF	1,291,164,605	1,200,654,478	101,512,077	851
UP	980,687,454	1,072,705,764	86,678,504	1005
Average	-	-	-	928
Data Source	Form R-1 schedule 750 Line 1	Form R-1 schedule 755 Line 104	Form R-1 schedule 755 Line 98	-

* Based on methodology described in *Procedures for Emission Inventory Preparation Volume IV: Mobile Sources*, EPA420-R-92-009, December 1992

From: DEIR, Appendix E.3, Attachment B-4

The EIR then plugs the annual average system-wide fuel consumption index for UPRR (1005 GTM/gal) into the above equations for estimating daily emissions from line haul locomotives off-site in the BAAQMD (O) and onsite at the Refinery (P) (as well as for estimating emissions for uprail air districts). This methodology is not appropriate for estimating Project-specific locomotive emissions.

3. *System-wide Fuel Consumption Index Is Not Appropriate for Estimating Regional or Local Emissions from Line Haul Locomotives*

The EIR's emission calculations rest on the assumption that a system-wide fuel consumption factor (in GTM/gal) determined via the EPA method for emission inventories is appropriate to use for estimating Project locomotive emissions. This is not the case. While a system-wide fuel consumption index may be appropriate for developing nation- or statewide emissions inventories for rail operations, it is a very poor indicator to use for estimating project-specific emissions on a regional or local basis. The system-wide fuel consumption index for UPRR determined by the EIR represents a nation-wide annual average determined for all types of locomotives, all types of freight, and across all types of terrain in various duty cycles. Clearly, hauling a load of grains across the Great Plains is a lot more fuel-efficient than hauling heavy crude tank cars across the rugged mountains of the Sierra Nevada. In fact, the 1992 EPA report "recognizes that railroad operations may vary significantly from the national average..."¹¹⁷

In 2010, the Transportation Research Board, National Cooperative Freight Research Program ("NCFRP"), prepared a report which discusses the suitability of system-wide fuel efficiencies to generate emission estimates for purposes such as health and climate risk assessments. The report expressly cautions against using a system-wide fuel consumption index to estimate regional or project-level emissions, particularly within California:

¹¹⁷ EPA-420-R-92-009, *op. cit.*, p. 208.

Using a constant fuel consumption index, which is equivalent to apportioning fuel use by GTM [gross ton-miles], is an inaccurate method for most regional and project-level emission applications because it ignores key local factors such as grade, equipment type (which influences aerodynamic coefficients, and payload to tare ratios), and possibly congestion. All of these factors can have a substantial effect on fuel consumption per ton-mile, as indicated in a recent study from FRA [Federal Railroad Administration].

...

As indicated by a previous study, a good example of the potential shortcomings of such an approach is its application in California. The two Class I railroads that operate in California, Union Pacific and Burlington Northern Santa Fe, primarily offer intermodal service over relatively hilly terrain in the Sierra Nevada Mountains. Their national operations however, are dominated by coal trains operating at relatively level terrain. Because coal trains are much more fuel efficient than intermodal trains, system fuel consumption index is a very poor indicator of regional fuel consumption index in California.¹¹⁸

In sum, the approach taken by the EIR to calculate project-level locomotive emissions based on a rail carrier-specific, system-wide fuel consumption index is not supported and, as discussed in more detail below, substantially underestimates emissions.

4. *Fuel Consumption and Fuel Consumption Index for Line Haul Locomotives in California*

A recent study by Gould & Niemeier at the University of California Davis ("UC Davis" or "UCD")¹¹⁹ notes that "[e]stimates of fuel use and air pollutant emissions from freight rail currently rely highly on aggregate methods and largely obsolete data which offer little insight into contemporary air quality problems."¹²⁰ To address this problem for California, the UC Davis study developed a detailed approach for estimating locomotive emissions by estimating emission factors and fuel efficiency for individual track segments within the state based on local factors that impact fuel consumption. The supporting data, provided by BNSF and UPRR, included aggregate route-specific throttle profiles (cumulative amount of time a locomotive operates in each throttle position) for each type of train with the corresponding traffic density, average consist size (number of locomotives per train), annual number of train trips and locomotive fleet inventory (model and EPA certification level), as well as annual traffic

¹¹⁸ Transportation Research Board, National Cooperative Freight Research Program, Representing Freight in Air Quality and Greenhouse Gas Models, NCFRP Report 4, 2010, p. 64; http://onlinepubs.trb.org/onlinepubs/ncfrp/ncfrp_rpt_004.pdf. (Exhibit F16.)

¹¹⁹ Gregory M. Gould and Deb A. Niemeier, Spatial Assignment of Emissions Using a New Locomotive Emissions Model, Environ. Sci. Technol. 2011, 45, 5846–5852. (Exhibits F17a and F17b.)

¹²⁰ *Ibid.*

density (gross ton-miles) for all UP and BNSF operations in California, which were provided for travel in each direction for each track segment (0.1 to 25 miles, providing good spatial resolution).

The UC Davis study results indicate that, on average, BNSF's and UPRR's freight rail operations in California are cleaner, *i.e.*, have lower emission factors, than the national fleet assumed in EPA's emission factors. However, the UC Davis study demonstrates that on average, freight rail operations in California are considerably more fuel-intensive than the system-wide average operations within the U.S., partly due to the fact that most major rail corridors in the state transect high mountain passes.

Table F6 summarizes the annual fuel consumption ("FC") in gallons ("gal"), annual emissions, and annual fuel consumption index or fuel efficiency ("FE") in gross ton-miles per gallon (GTM/gal) for three of the busiest rail corridors in California as determined in the UC Davis study and compared to the corresponding estimates based on the above-discussed EPA methodology (EPA-420-F-09-025), *i.e.*, the methodology the EIR relied upon.

Table F6: Annual fuel consumption, annual emissions, and fuel consumption index for line haul via three corridors in California determined by UC Davis study and determined per EPA methodology

method	FC ^a gal	HC tons	CO tons	NO _x tons	PM ₁₀ tons	SO ₂ tons	CO ₂ tons	FE ^b GTM/gal
Corridor 1: Oakland, CA to CA/NV Board near Reno, NV								
UCD ^c	1 022 800	7.56	28.1	137	3.64	2.40	11 390	436
EPA ^d	560 000	5.21	15.3	98	3.53	1.31	6240	791
Corridor 2: Los Angeles, CA to Needles, CA								
UCD	1 464 400	13.72	40.3	246	7.06	3.44	16 300	435
EPA	833 800	7.75	22.9	146	5.25	1.96	9280	764
Corridor 3: Bakersfield, CA to Stockton, CA								
UCD	717 800	5.30	19.8	96	2.55	1.68	7990	769
EPA	696 100	6.47	19.1	122	4.39	1.63	7750	793

^a Fuel consumption. ^b Fuel efficiency. ^c The model developed by the authors at the University of California, Davis described in this paper. ^d Results estimated following the procedures recommended by EPA¹⁷ with EPA emission factors⁹ for the year 2007.

Excerpted from: Gould & Niemeier, *op. cit.*

HC = hydrocarbon, a term equivalent to ROG

The results of the UC Davis study clearly demonstrate that using a constant, system-wide fuel efficiency (fuel consumption index) and EPA's national average locomotive emission factors can lead to large errors in air pollutant emission estimates for California. On the hillier Corridors 1 and 2, the UC Davis study found almost twice the fuel consumption (FC) as the EPA method, while on the flatter Corridor 3 the fuel consumption values were similar. Because emissions in Table F6 are calculated based on fuel consumption, the UC Davis emissions estimates are higher for the hilly corridors, but by a smaller margin due to the larger EPA emission factors. For the flatter

Corridor 3, the UC Davis and EPA estimates are closer given the similar fuel consumption estimates, but vary due to differences in the emission factors. On average, the fuel efficiency (FE) for trains traveling along Corridors 1 or 2 across the Sierra Nevada was 43% lower than trains traveling along the largely level Corridor 3 through the Central Valley from Bakersfield to Stockton.¹²¹ Corridor 1 is comparable to the route from Benicia to the California/Nevada border via the northern and southern route (see Figure F2b).

Figure F2a illustrates the average fuel efficiency in California for various track segments determined by the UC Davis study based on data provided by UPRR.¹²² Figure F2b shows the likely routes crude oil deliveries to Benicia would take through northern California according to the EIR.

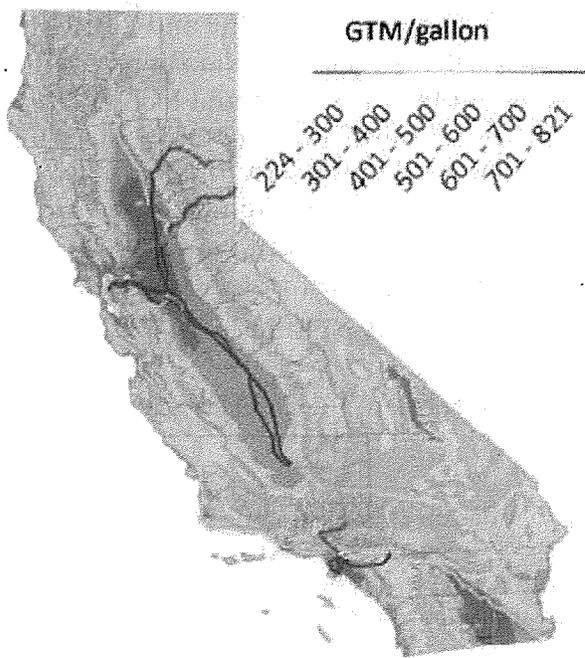


Figure F2a: Average track segment fuel efficiency for UPRR in California
 (from: Gould & Niemeier, supporting documentation)

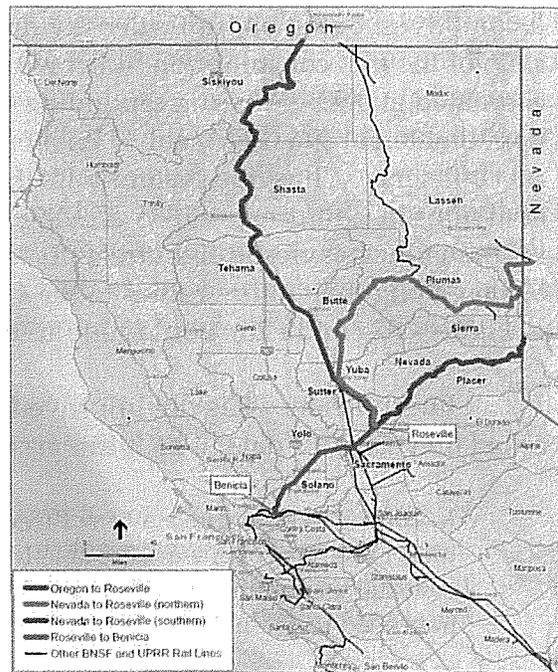


Figure F2b: Project rail routes through Northern California
 (from RDEIR, Figure 1-3)

Two of the uprail routes identified as the most likely for delivery of crude oils to the Roseville Railyard in Figure F2b — Nevada to Roseville (northern), identified in blue, and Nevada to Roseville (southern) identified in purple — include long stretches

¹²¹ Gould & Niemeier, *op. cit.*

¹²² Gould & Niemeier, *op. cit.* (“We estimate fuel efficiency by regressing track grade and train type on fuel intensity which is calculated from the detailed train operating data provided by UP.”)

with the lowest average track segment fuel efficiency within the state (see Figure F2a red: 224-300 GTM/gal). The route from Oregon to Roseville, identified in red in Figure F2b, also contains a segment with very low fuel efficiency (see Figure F2a orange: 301-400 GTM/gal) and a long stretch with only average fuel efficiency (see Figure F2a turquoise: 501-600 GTM/gal). The route from the Roseville Railyard to the Refinery, identified in Figure F2b in green, is more fuel-efficient due to its relatively flat terrain (see Figure F2a medium blue: 601-700 GTM/gal).

It is important to note that the fuel efficiencies in Figure F2a represent average values across all types of trains (bulk, manifest, intermodal, etc.) operated by UPRR. The UC Davis study also determined a range of fuel efficiencies for bulk trains of 239 to 1536 GTM/gal for the range of track grades and train types observed in California; the *average* fuel efficiency for bulk trains carrying all kinds of freight on *level* tracks in California was estimated at 1061 GTM/gal.¹²³ These values include the weight of the locomotives. Based on traffic density data (in GTM) reported by BNSF and UPRR, the ratio of the fuel consumption index without locomotives *versus* with locomotives can be estimated at 0.92;¹²⁴ the corresponding fuel consumption index without locomotives can be estimated at 976 GTM/gal.¹²⁵ Higher weight and/or hillier terrain lower the average fuel efficiency. Thus, the system-wide fuel efficiency used by the EIR to determine emissions in California — 1005 GTM/gal for UPRR — is much too high because crude oil is among the heaviest freight transported *and* the Project trains would not travel on flat terrain along their entire routes to the California state border but instead, as illustrated in Figures F2a and F2b, would require travel over very steep grades.

Fuel efficiency has not improved much compared to the UC Davis study which relied on year 2007 data. UPRR discusses:

In 2000, we could move a ton of freight 375 miles on average on one gallon of diesel fuel. By 2010, we were able to move it 495 miles. Due to changing business conditions, our efficiency rate declined to 471 miles per gallon in 2013, then increased to 475 miles in 2014 as multiple initiatives brought improved results.¹²⁶

¹²³ Gould & Niemeier, *op. cit.*

¹²⁴ BNSF: (fuel consumption index without locomotive: 851 GTM/gal) / (fuel consumption index with locomotive: (1,200,654,478,000 GTM) / (1,291,164,605 gal) = 930 GTM/gal) = 0.92; and

UPRR: (fuel consumption index without locomotive: 1005 GTM/gal) / (fuel consumption index with locomotive: (1,072,705,764,000 GTM) / (980,687,454 gal) = 1094 GTM/gal) = 0.92.

¹²⁵ (1,061 GTM/gal) × (0.92) = 976.1 GTM/gal.

¹²⁶ Union Pacific, 2014 Sustainability and Citizenship Report, https://www.up.com/cs/groups/public/@uprr/documents/up_pdf_natedocs/pdf_up_sustain_2014.pdf.

(I note that these estimates of fuel efficiency are calculated for revenue freight weight hauled, and, thus, are lower than the estimates for total gross weight hauled presented above, which includes the weight of the locomotives, rail cars, and accounts for non-revenue trips.). This translates to a marginal system-wide fuel efficiency increase from 2007 to 2014 of about 3 percent;¹²⁷ of course, this fuel efficiency increase may be different in California, however, given the already higher fuel efficiency, increases higher than the system-wide average may be harder to achieve.

In sum, the system-wide average fuel consumption index without locomotives for UPRR of 1,005 GTM/gal used by the EIR across the entire distance traveled by crude oil trains within California is not supported and far too high. Emissions are directly inversely proportional to the fuel consumption index (*see* equations (O) and (P) in Comment III.C.1 above):

Higher fuel consumption index (fuel efficiency) → lower emissions
 Lower fuel consumption index (fuel efficiency) → higher emissions

Thus, by assuming a very high system-wide fuel consumption index, the EIR underestimates line haul emissions in California by a substantial amount.

The emission factors determined by the UC Davis study for locomotives in California do not materially affect this conclusion as they are almost identical to those used by the EIR for 2014, as shown in Table F7.

Table F7: Emission factors for year 2007 from EPA and determined by UC Davis study compared to emission factors for year 2014 from EPA used by EIR

Source	Emission Factors (g/gal)			
	CO	VOC	NOx	PM10
UC Davis (2007) ^a	25.0	7.7	138	3.8
EIR based on EPA (2014) ^b	26.6	6.4	135	3.6

a Gould & Niemeier, *op. cit.*

b DEIR, Appendix E.3, Attachment B-4

¹²⁷ UPRR fuel efficiency for 2007 interpolated: [(UPRR fuel efficiency in 2000: 375 GTM/gal) - (UPRR fuel efficiency in 2010: 495 GTM/gal)] / (10 years) × (7 years) + [(UPRR fuel efficiency in 2000: 375 GTM/gal)] = 459 GTM/gal; and

Fuel efficiency increase from 2007 to 2014: (UPRR fuel efficiency in 2014: 475 GTM/gal) / (UPRR fuel efficiency in 2007: 459 GTM/gal) = 1.03.

5. *Revised Emission Estimates for Line Haul Emissions within BAAQMD Using the EIR's Methodology but Assuming Terrain-specific Fuel Efficiency in California Determined in UC Davis Study*

Below, I provide revised emission estimates based on California terrain-specific fuel efficiency. I caution that these revised emission estimates, while somewhat more realistic than the EIR's emission estimates, nevertheless do not capture the full magnitude of emissions because they still rely on aggregated data and not on Project-specific information and routing, as discussed in more detail in Comment III.C.6. They are provided to show the effect of terrain-specific fuel efficiency as determined by the UC Davis study on emissions as opposed to relying on system-wide fuel efficiency for the entire U.S.

Specifically, I prepared a revised estimate of ROG, NO_x, and PM₁₀ emission estimates for line haul locomotives hauling crude oil on site at the Refinery and within the BAAQMD using the same methodology as the EIR but I replaced the system-wide average fuel consumption index for UPRR used by the EIR with the average fuel efficiency determined by the UC Davis study for Corridor 3 (Bakersfield to Stockton) and otherwise relied on the EIR's assumptions. The average fuel efficiency for Corridor 3 is a conservative choice for line haul fuel efficiency within the BAAQMD, as Corridor 3 goes through the entirely flat Central Valley and therefore has a higher average fuel efficiency (769 GTM/gal, *see* Table F6) than the route between the Roseville Railyard and the Refinery (601-700 GTM/gal, *see* Figure F2a.) (The higher the fuel efficiency, the lower the emissions, all other factors being the same.)

As discussed above, the fuel efficiencies determined by the UC Davis study were based on UPRR data from 2007. I adjusted the fuel efficiency for Corridor 3 by a factor of 1.03 to account for UPRR's fuel efficiency increase between the years 2007 and 2014. Since the EIR's methodology calculates emissions based on the fuel consumption index for gross weight transported *without* the weight of the locomotives and the fuel efficiencies reported in the UC Davis study *include* the weight of locomotives, I also adjusted the fuel efficiency for Corridor 3 by a factor of 0.92, which reflects the ratio of the fuel consumption index *without* locomotives versus *with* locomotives. This results in a total fuel efficiency of 728.7 GTM/mile.

Tables F8a and F8b compare the results of this exercise for the pollutants of most concern for this Project, *i.e.*, ROG, NO_x, PM₁₀, and PM_{2.5} on a daily and annual basis. The supporting calculations and assumptions are provided in Attachment F-1 to this letter.

**Table F8a: Revised daily line haul emissions in BAAQMD
 based on terrain-specific UPRR data in California
 compared to EIR daily emissions based on system-wide UPRR data**

Revised^a	Daily Emissions (lbs/day)			
	ROG	NOx	PM10	PM2.5
Segment				
Onsite at Valero Refinery	1.3	26.3	0.6	0.6
BAAQMD border to Valero Refinery	7.7	161.3	4.3	4.2
Total line haul emissions in BAAQMD	9.0	187.6	4.9	4.8
EIR^b	Daily Emissions (lbs/day)			
Segment	ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	1.0	19.1	0.4	0.4
BAAQMD border to Valero Refinery	5.6	117.4	3.1	3.0
Total line haul emissions in BAAQMD	6.6	136.5	3.6	3.5
Difference (Revised - EIR)^a	Daily Emissions (lbs/day)			
Segment	ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	+0.4	+7.2	+0.2	+0.2
BAAQMD border to Valero Refinery	+2.1	+43.9	+1.2	+1.1
Total line haul emissions in BAAQMD	+2.5	+51.1	+1.3	+1.3

Values for segments may not add up due to rounding

a See Attachment F-1

b DEIR, Appx. E.3, Att. B-4, Table 'Year 2014 Daily Line Haul Emissions (Within BAAQMD)'

**Table F8b: Revised annual line haul emissions in BAAQMD
 based on terrain-specific UPRR data in California
 compared to EIR annual emissions based on system-wide UPRR data**

Revised	Annual Emissions (tons/year)			
	ROG	NOx	PM10	PM2.5
Segment				
Onsite at Valero Refinery	0.24	4.80	0.11	0.11
BAAQMD border to Valero Refinery	1.40	29.44	0.78	0.76
Total line haul emissions in BAAQMD	1.64	34.23	0.90	0.87
EIR	Annual Emissions (tons/year)			
Segment	ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	0.18	3.49	0.08	0.08
BAAQMD border to Valero Refinery	1.02	21.42	0.57	0.55
Total line haul emissions in BAAQMD	1.20	24.91	0.65	0.63
Difference (Revised - EIR)	Annual Emissions (tons/year)			
Segment	ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	+0.07	+1.31	+0.03	+0.03
BAAQMD border to Valero Refinery	+0.38	+8.02	+0.21	+0.21
Total line haul emissions in BAAQMD	+0.45	+9.33	+0.24	+0.24

Values for segments may not add up due to rounding

a See Attachment F-1

b DEIR, Appx. E.3, Att. B-4, Table 'Year 2014 Annual Line Haul Emissions (Within BAAQMD for Criteria Pollutants and Within California for CO2e)'

As shown, the EIR, by assuming a system-wide fuel consumption index for UPRR for the entire U.S., substantially underestimates emissions that would be generated by line haul operations within the BAAQMD when assuming a terrain-specific fuel efficiency (by about 38%¹²⁸).

This discrepancy between average system-wide and California terrain-specific fuel efficiencies discussed above for the BAAQMD is even greater for some of the uprail districts through which the crude trains will travel due to the much lower fuel efficiency over steep grades. As shown in Figure F2a above, line haul trains traveling the southern and northern routes from Nevada to Roseville through Placer County and other Mountain counties have the lowest average fuel efficiencies (red) because of the steep grades through the Sierra Nevada, about 60% lower than when traveling from Roseville to the Refinery (medium blue) based on the range of reported fuel efficiencies in the UC Davis study.¹²⁹

6. *Improved Revised Emission Estimates in the BAAQMD Based on Project-specific Information Instead of Fuel Efficiency*

Determining emissions based on a system-wide fuel efficiency factor, or even a terrain-specific fuel efficiency factor such as that determined by the UC Davis study, is not adequate to estimate localized emissions because the methodology in both cases relies on aggregate data *e.g.*, fuel consumption is averaged across the UPRR-specific dispatch of various train types (train bulk, manifest, intermodal, etc.), all types of freight, all types and number of locomotives per train, etc. Terrain-specific fuel efficiency for crude oil trains is not available and, thus, localized and regional emissions must be based on project-specific information. This includes typical specifications for the line haul locomotives pulling crude tank cars while traveling across the state and while accessing the site, including, for example, engine power, average line haul speed, average speed on site, load factors for hauling and switching, switching time per engine, idling time per engine, etc. Some of these parameters, for example the number of hours a locomotive spends switching or idling, can only be determined via detailed and project-specific locomotive timing calculations, which the EIR lacks.

The Phillips 66 Santa Maria Refinery EIR prepared such a project-specific analysis. Below is a comparison of normalized emission rates per million barrels delivered per mile for the Phillips 66 Santa Maria Refinery and the Valero Benicia Refinery based on the annual emissions, annual barrels of crude oil delivered, and miles traveled presented in the respective EIRs.

¹²⁸ (EIR fuel efficiency for UPRR: 1005 GTM/gal) / (UC Davis fuel efficiency for Corridor 3: 769 GTM/gal × 1.03 × 0.92) = 1.379.

¹²⁹ $1 - [(224/601) + (300/700)] / 2 = 0.60$.

**Comparison of normalized emission rates
 for Phillips 66 Santa Maria Refinery and Valero Benicia Refinery**

	Emissions (tons/year)	Annual crude oil delivered (barrels/year)	Distance traveled within air district and on site (miles)	Normalized emission rate (lbs/million bbls/mile)
Phillips 66 Santa Maria Refinery				
ROG	3.51	2,600,000	134	20.15
NOx	67.20			385.76
PM10	1.99			11.42
Valero Benicia Refinery				
ROG	1.77	25,500,000	24	5.78
NOx	33.04			107.97
PM10	0.83			2.71

For sources see Attachment F-2

As shown, the normalized emission rates determined for the Valero Benicia Refinery are three to four times lower than those for determined for the Phillips 66 Santa Maria Refinery. This effect is due to the use of the system-wide fuel efficiency approach as opposed to a project-specific approach.

The operating plan for the Valero Benicia Refinery for incoming crude trains discloses that once the trains are positioned at the unloading racks at Refinery, their operation would be turned over to Valero personnel.¹³⁰ The UPRR locomotives would stay with each 25-tank car string¹³¹ and would be used for switching the tank cars at the Refinery site.¹³² When not in switching service, these very large locomotives (typically over 4000 horsepower) are typically not shut off but idle on site. For example, the EIR for the proposed Phillips 66 Santa Maria Refinery crude-by-rail project assumed 8.92 hours of idling time and 2.58 hours of switching time per locomotive for unloading of 80 tank cars per day based on detailed locomotive timing calculations.¹³³ While the EIR

¹³⁰ DEIR, p. 3-21. ("UPRR would turn over operation of the trains to Valero for offloading.")

¹³¹ RDEIR p. 2-21 ("UPRR would leave its locomotives attached to each 25 tank car train.")

¹³² For example, DEIR, Appx. E.4, p. 6. ("The locomotive(s) would remain with the rail cars while at the refinery. All trains would enter and exit along the southern refinery boundary, near the intersection of Park Road and Bayshore Road ... After the 50 rail cars are emptied at the unloading rack, the locomotive(s) would move the empty rail cars to the adjacent storage and departure track where they would be reassembled into one 50-car train. The UP locomotive(s) would then transport them off site. This unloading cycle would then be repeated for the remaining 50 loaded rail cars.")

¹³³ San Luis Obispo County, Phillips 66 Company Rail Spur Extension Project, Final Environmental Impact Report and Vertical Coastal Access Project Assessment, December 2015, SCH # 2013071028, (hereafter "SMR FEIR"), pp. 2-25 through 2-27, and Appx. B.1, p. B.1-9, B.1-10, and B.1-12;

recognizes that locomotive idling would occur on site,¹³⁴ its estimates of criteria pollutant emissions fail to account for idling emissions.

I prepared revised emission estimates for the Project based on information for the Phillips 66 Santa Maria Refinery crude-by-rail project. (Attachment F-2 provides a comparison of the proposed crude-by-rail projects at the Santa Maria Refinery and the Valero Benicia Refinery.) Rather than relying on average fuel efficiency, this methodology is based on the typical engine power of line haul locomotives used for hauling trains with crude tank cars and while switching the trains on site at the Refinery. Information for locomotive horse-power, load factors, and idling fuel use is based on information provided for the Santa Maria Refinery crude-by-rail project and the average line haul speed is based on information provided by UPRR; otherwise my revised estimates rely on information specified by the EIR including the emission factors, the hours each train spends on the Refinery site, and the switching time per train. Tables F9a and F9b summarize daily and annual emissions, respectively, and detailed calculations are provided in Attachment F-3 to this letter.

Table F9a: Project-specific revised daily locomotive emissions in BAAQMD compared to EIR daily emissions based on system-wide UPRR data

Project-specific Revised ^a	Daily Emissions (lbs/day)			
	ROG	NOx	PM10	PM2.5
Segment				
Onsite at Valero Refinery	9.6	158.3	3.7	3.6
BAAQMD border to Valero Refinery	11.0	187.4	4.4	4.3
Total locomotive emissions in BAAQMD	20.7	345.7	8.1	7.9
EIR^b	Daily Emissions (lbs/day)			
Segment	ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	5.6	117.4	3.1	3.0
BAAQMD border to Valero Refinery	1.0	19.1	0.4	0.4
Total locomotive emissions in BAAQMD	6.6	136.5	3.6	3.5
Difference (Project-specific Revised- EIR)^a	Daily Emissions (lbs/day)			
Segment	ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	+4.1	++40.9	+0.5	+0.5
BAAQMD border to Valero Refinery	+10.1	+168.3	+4.0	+3.9
Total locomotive emissions in BAAQMD	+14.1	+209.2	+4.5	+4.4

Values for segments may not add up due to rounding

a See Attachment F-3

b DEIR, Appx. E.3, Att. B-4, Table 'Year 2014 Daily Line Haul Emissions (Within BAAQMD)'

<http://www.slocounty.ca.gov/planning/environmental/EnvironmentalNotices/railproject.htm#>
 (Exhibit F18.)

¹³⁴ For example, DEIR, 4.1-24.

Table F9b: Project-specific revised annual locomotive emissions in BAAQMD compared to EIR daily emissions based on system-wide UPRR data

Project-specific Revised^a	Annual Emissions			
	(tons/year)			
Segment	ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	1.76	28.89	0.67	0.65
BAAQMD border to Valero Refinery	2.01	34.20	0.81	0.79
Total locomotive emissions in BAAQMD	3.77	63.09	1.48	1.44
EIR^b	Annual Emissions			
	(tons/year)			
Segment	ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	1.02	21.42	0.57	0.55
BAAQMD border to Valero Refinery	0.68	11.62	0.26	0.25
Total locomotive emissions in BAAQMD	1.70	33.04	0.83	0.81
Difference (Project-specific Revised- EIR)^a	Annual Emissions			
	(tons/year)			
Segment	ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	+0.74	+7.47	+0.10	+0.10
BAAQMD border to Valero Refinery	+1.33	+22.58	+0.55	+0.54
Total locomotive emissions in BAAQMD	+2.07	+30.05	+0.65	+0.63

Values for segments may not add up due to rounding

a See Attachment F-3

b DEIR, Appx. E.3, Att. B-4, Table 'Year 2014 Annual Line Haul Emissions (Within BAAQMD for Criteria Pollutants and Within California for CO₂e)'

As shown, the EIR's reliance on system-wide data substantially underestimates daily and annual locomotive emissions in the BAAQMD. Of particular concern are the emissions of NO_x, which as ozone precursors would contribute to the BAAQMD's ozone pollution problems and attendant health impacts, particularly in summer. These substantial additional emissions would contribute to the San Francisco Bay Area Air Basin's continued noncompliance with the state and federal ambient air quality standards for this pollutant and, consequently, hamper the air basin's progress towards achieving attainment.

The EIR similarly underestimates emissions for all uprail air districts by relying on the UPRR system-wide fuel consumption index instead of Project-specific information.

D. Revised Emission Estimates for Project within BAAQMD Are Significant

Tables F10 and F10b summarize revised Project operational emissions based on the above discussion and emission estimates for fugitive ROG from tank cars estimated by Dr. Phyllis Fox in her comments on the FEIR. As shown, the Project would by far exceed the BAAQMD's daily and annual thresholds of significance.

Table F10a: Revised daily Project operational emissions within the BAAQMD

Source	Daily Emissions (lbs/day)			
	ROG	NOx	PM10	PM2.5
Unloading rack and pipeline fugitive components ^a	10.3	-	-	-
Tank breathing losses ^b	54	-	-	-
Railcar fugitive emissions ^b	92	-	-	-
Locomotives ^c	20.7	345.7	8.1	7.9
Total Project emissions	177.0	345.7	8.1	7.9
BAAQMD significance thresholds	54	54	82	82
Significant?	YES	YES	no	no

- a (annual emissions from Draft EIR, Table 4.1-19) / (365 days/year) × (2000 lbs/ton)
- b From 2015 Fox FEIR Comments
- c From Table F9a

Table F10b: Revised annual Project operational emissions within the BAAQMD

Source	Annual Emissions (tons/year)			
	ROG	NOx	PM10	PM2.5
Unloading rack and pipeline fugitive components ^a	1.88	-	-	-
Tank breathing losses ^b	9.86	-	-	-
Railcar fugitive emissions ^c	16.79	-	-	-
Locomotives ^c	3.77	63.09	1.48	1.44
Total Project emissions	32.30	63.09	1.48	1.44
BAAQMD significance thresholds	10	10	15	15
Significant?	YES	YES	no	no

- a from Draft EIR, Table 4.1-5
- b From 2015 Fox FEIR Comments (in lbs/day) × (365 days/year) / (2000 lbs/ton)
- c From Table F9b

E. The EIR Fails to Analyze All Feasible Routes for Delivering Crude by Rail and, thus, Fails to Disclose Potential Significant Impacts for all Potentially Affected Air Districts

Crude oil may be delivered via a number of different routes through California, as shown in RDEIR Figure 1-2 'Union Pacific Crude Network.' Yet, as discussed above, the EIR analyzes only three routes through northern California, as shown in Figure F2b above (RDEIR Figure 1-3) — Oregon to Roseville and Nevada to Roseville crossing the California side of the Sierra Nevada via a northern and southern route. The EIR did not provide emission estimates for air districts along the southern route through the Central Valley towards the California border with Nevada or Arizona. The EIR makes a

“substantially similar” argument for not analyzing impacts along the southern route,¹³⁵ which is exhaustively rebutted in Dr. Phyllis Fox’s comments on the FEIR.

By neglecting to estimate emissions along the southern routes, the EIR fails to disclose air quality impacts on the air basins that trains would pass through on their way to the California border, most of which suffer from severe air pollution problems. For example, the heavily polluted Central Valley experiences some of the worst air quality in the country; similarly, the Mojave Desert, and eastern San Bernardino County and Imperial County, through which trains may travel, are in nonattainment of state and federal ambient air quality standards. Additional emissions from the locomotives delivering crude for the Project would contribute to the already severely impacted air quality and associated health impacts and may hinder the respective air basins’ progress towards attainment.

During the CEQA process for the Phillips 66 Santa Maria Refinery crude-by-rail project, which analyzed both northern and southern routes, almost all affected air districts commented on the significant impacts within their jurisdiction and strongly requested that the County of San Luis Obispo require the project proponent to implement mitigation within their airshed. The EIR for the Santa Maria Refinery crude-by-rail project required extensive mitigation for all affected air districts. (See Comment III.G.3.) Here, the City received similar comments from the affected uprail air districts along the northern routes; however, the affected air districts along the southern routes did not submit comments, likely because they are unaware of the Project and its adverse impacts on the airsheds under their jurisdiction.

F. The EIR Fails to Correlate the Project’s Significant Impacts on Air Quality with Impacts on Human Health

The EIR estimates NO_x emissions from locomotives in excess of significance thresholds developed by the YSAQMD, the BAAQMD¹³⁶ and each of the air districts uprail of Roseville,¹³⁷ and finds significant and unavoidable impacts on air quality for these air districts, which could conflict with the implementation of applicable air quality plans.¹³⁸ The EIR simply presents this information without putting the significant and

¹³⁵ RDEIR, pp. 1-5 and 2-41. (“... potential direct, indirect, and cumulative impacts of crude oil transport by rail approaching the Refinery from the south are expected to be substantially similar to the type and severity of impacts that could result between the Refinery and the State border via any of the northern routes.”)

¹³⁶ DEIR, Table 4.1-6.

¹³⁷ RDEIR, Tables 4.1-11 through 4.1-14.

¹³⁸ RDEIR, pp. 2-27 through 2-41.

unavoidable emissions of NO_x it identifies into context. Specifically, the EIR only presents emission estimates of NO_x, which are potent ozone precursors, but fails to quantify their contribution to increased ozone concentrations within the affected airsheds and makes no attempt to correlate the significant impacts it identifies to resultant health effects, as required by CEQA.¹³⁹

The EIR for the Santa Maria Refinery crude-by-rail project provides such an analysis and correlates increased ozone concentrations resulting from locomotive emissions of the ozone precursors ROG and NO_x with increased incidences of mortality and morbidity for each affected air district.¹⁴⁰ The EIR is deficient in not disclosing the health impacts associated with Project emissions and should be revised to include such an analysis.

G. The EIR Fails to Require Mitigation to Reduce Significant Operational Impacts on Air Quality

As discussed in Comment III.A.D, daily and annual ROG and NO_x emissions in the San Francisco Bay Area Air Basin would be significant. Further, the EIR concludes that the increase in NO_x emissions from locomotives passing through all uprail air districts are significant.¹⁴¹ Yet, the EIR declines to mitigate these significant impacts, arguing that the City has no jurisdiction to impose emission controls on locomotives or require the Applicant to pay a mitigation fee or purchase emission offsets. Instead, the EIR concludes that these impacts are “significant and unavoidable.”¹⁴²

Setting aside the legal issue of jurisdiction over locomotive emissions, I previously commented that the City has at least three non-jurisdictional options to address the significant NO_x emissions: a) it can deny the Project, b) it can require Valero to reduce emissions on site, and c) it can require Valero to enter into Voluntary Emission Reduction Agreements (“VERAs”) with all affected air districts.¹⁴³ These comments are amended below.

1. The Unmitigated Project Should Be Denied

Most of the affected airsheds currently violate California’s 8-hour ozone ambient air quality standard as shown in Figure 3 (nonattainment areas are crosshatched).

¹³⁹ *Sierra Club v. County of Fresno* (2014) 226 Cal.App. 4th 704.

¹⁴⁰ SMR FEIR, pp. 4.3-62 through 4.3-64.

¹⁴¹ RDEIR, Table 4.1-12, 4.1-13, 4.1-14.

¹⁴² Draft EIR, p. 4.1-20, and RDEIR, pp. 2-38 and 2-39.

¹⁴³ 2015 Pless RDEIR Comments IV.C.

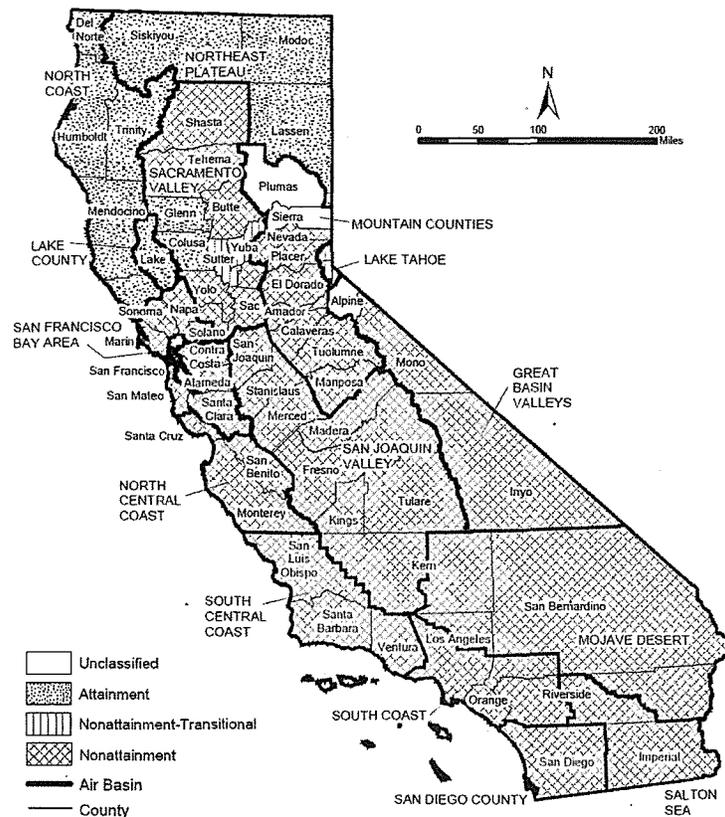


Figure 3: 2013 area designations for State ambient air quality standards for ozone
 (from: http://www.arb.ca.gov/design/adm/2013/state_o3.pdf (Exhibit 31))

Most of the population in the affected airsheds currently live in areas that also violate the federal 8-hour ozone ambient air quality standard, as shown in Figure 4.



Figure 4: 2013 area designations for federal 8-hour ambient air quality standard for ozone
 (from: http://www.arb.ca.gov/desig/adm/2013/fed_o3.pdf (Exhibit 32))

Emissions of ROG and NO_x contribute to atmospheric ozone formation. Thus, the increase in exhaust and fugitive emissions from locomotives and Refinery sources (fugitive emissions from tanks, components, rail cars and increased operational emissions due to processing increase) will increase ozone concentrations, aggravating existing exceedances of ozone standards, set to protect public health. The short-term emission increases in the BAAQMD are very large: one and a half times the daily ROG significance threshold and more than three times higher than the daily NO_x significance threshold even without accounting for increased Refinery throughput. 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.

2. *ROG and NOx Emission Increases Can Be Mitigated by Reducing Emissions from the Valero Refinery*

The control of NOx (and ROG) at the Valero Refinery would not only reduce emissions of these pollutants in the SFBAAB but would also help mitigate significant impacts from locomotives in adjacent air districts as it is well known that ozone precursors generated in one air basin contribute to ozone formation in other adjacent basins. (See Figure 4.)

NOx Emissions

The Valero Refinery is a major source of NOx emissions. Emission inventory data provided by the BAAQMD indicates that it emitted 10,297 lbs/day of NOx in 2011, 5,642 lbs/day of NOx in 2012, and 6,504 lbs/day of NOx in 2013. Most of these emissions arise from burning refinery fuel gas in various heaters and boilers.¹⁴⁴ The increase in NOx emissions from locomotives could be reduced to less than daily and annual NOx significance thresholds by installing updated low or ultra-low NOx burners and/or selective catalytic reduction (“SCR”) on one or more combustion sources.

SCR has been widely used to control NOx emissions from refinery heaters and boilers and is frequently required in federal Consent Decrees settling New Source Review issues. The combination of low-NOx burner technology and SCR has been demonstrated to achieve very low emissions of NOx in refinery applications. In the South Coast Air Quality Management District (“SCAQMD”), a large refinery heater, operational since 1995, is equipped with low-NOx burners and an SCR¹⁴⁵ Source tests have verified NOx emissions of 7 ppm or less.¹⁴⁶ Large and small process heaters have also been demonstrated in the SCAQMD to achieve NOx emissions in the 5 to 9 ppm

¹⁴⁴ Source: BAAQMD Emissions Inventory Data, downloaded from EmitLook, transmitted from BAAQMD to NRDC via Public Records Request on August 28, 2014 for years 2011 through 2013 and to the International Council on Clean Transportation on September 30th, 2011 for the year 2010. (Exhibit 33)

¹⁴⁵ SCAQMD, AQMD BACT Determinations, Equipment Category Heater - Refinery, Application No. 326118, TOSCO Refining Company; <http://www.aqmd.gov/docs/default-source/bact/laer-bact-determinations/aqmd-laer-bact/heater-refinery-an-326118-tosco.doc?sfvrsn=2>. (Exhibit 34)

¹⁴⁶ *Ibid.*

range using low-NOx burners and SCR.^{147,148} Installation of SCR plus low NOx burners plus flue gas recirculation ("FGR") or installation of ultra-low-NOx burners plus FGR has been determined to be a typical technology for control for NOx emissions from refinery boilers by the BAAQMD.¹⁴⁹

ROG Emissions

A substantial portion (42 percent¹⁵⁰) of the increase in ROG emissions from the Project is due to sources at the Refinery itself and its adjacent tank farm, owned by Nustar - fugitive equipment leaks from the new loading rack and fugitive emissions from storage tanks. These emissions can be mitigated at the source. Fugitive emissions can be reduced by installing state-of-the-art leakless or low-leak fugitive components such as valves, pumps, connectors, etc. throughout the Refinery. Storage tank fugitive emissions can be mitigated by installing geodesic domes on the currently uncovered external floating roof tanks that would store the imported crude oil. The additional increase in ROG emissions due to the Project can be mitigated by installing geodesic domes on additional, non-Project storage tanks, such as floating roof tanks used to store gasoline.

ROG and NOx Emissions

In addition, Refinery emissions of ROG and NOx can be reduced by dock electrification of the marine terminal, as recently recommended by the BAAQMD in its comments on the Recirculated Draft EIR for the proposed WesPac Pittsburg Energy Infrastructure Project:

Staff supports the inclusion of Mitigation Measure AQ-3 which requires NOx and ROG emissions from operational activities to be fully offset. However, staff

¹⁴⁷ CARB, Best Available Control Technology Determination Data Submitted to the California Air Pollution Control Officers Association BACT Clearinghouse, CENCO Refining Company, A/C # 352869, 50 MMBtu/hr Tulsa Heaters Inc. Process Heater, John Zink Low-NOx Burners with SCR, January 2001; <http://www.arb.ca.gov/bact/bact2to3.htm>. (Exhibit 35)

¹⁴⁸ SCAQMD, AQMD BACT Determinations, Equipment Category Heater - Refinery, Application No., 337979, Air Products and Chemicals, Inc., 764 MMBtu/hr Kinetics Technology International Process Heater, John Zink Low-NOx burners and SCR, June 1999; <http://www.aqmd.gov/docs/default-source/bact/laer-bact-determinations/aqmd-laer-bact/heater-refinery-an-337979-air-products.doc?sfvrsn=2>. (Exhibit 36)

¹⁴⁹ BAAQMD, Best Available Control Technology (BACT) Guideline, August 4, 2010; <http://www.baaqmd.gov/~media/Files/Engineering/BACT%20TACT%20Workshop/Combustion/94-3-1.ashx>. (Exhibit 37)

¹⁵⁰ $(10.3 \text{ lbs/day} + 64.6 \text{ lbs/day}) / (178.5 \text{ lbs/day}) = 0.42$.

recommends that the City require the project proponent to seek emission reductions on-site prior to purchasing emission reduction credits. This could include dock electrification of the marine terminal to further reduce emissions from ships running auxiliary engines for power generation. This would also service to reduce PM2.5 concentrations and TAC [toxic air contaminant] exposure to nearby sensitive receptors.¹⁵¹

This mitigation measure is equally feasible for the Project.

3. *ROG and NOx Emissions Can Be Reduced by Requiring Valero to Enter into Voluntary Emission Reduction Agreements with the Air Districts*

I previously commented that The City can require Valero to enter into a so-called Voluntary Emission Reduction Agreement (“VERA”) with the affected air districts:

This offsite measure has been required, for example, for the Hydrogen Energy California Project, a proposed power generation and fertilizer production facility in the San Joaquin Valley which has 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 NOx emissions.¹⁵² The funding provided under the VERA was required by the SJVAPCD to satisfy CEQA mitigation requirements and will support the air district’s Emission Reduction Incentive Program which, for example, provides assistance to replace older agricultural equipment. Similarly, the EIR for the Bay Delta Conservation Plan requires that the Department Water Resources enter into VERAs with several affected air districts.¹⁵³ A similar requirement could be developed with assistance from the affected air districts to address emission reductions from mobile and/or stationary pollution sources in the affected air basins.

In response, the City, RTC J6-36, claims:

Additional control of NOx and ROG at the Valero Refinery could mitigate significant impacts from locomotives occurring within the BAAQMD. However,

¹⁵¹ Letter Roggencamp to Pollot, *op. cit.* Exhibit 14.

¹⁵² SJVAPCD, Hydrogen Energy California Power Plant Project, Mitigation Agreement 20130092 and Voluntary Emission Reduction Agreement 20130026; available at http://www.energy.ca.gov/sitingcases/hydrogen_energy/documents/others/2013-04-26_SJVUAPCD_Mitigation_Agreement_TN-70496.pdf. (Exhibit 38)

¹⁵³ U.S. Department of the Interior, Bureau of Reclamation, U.S. Department of Fish and Wildlife Service, U.S. Department of Commerce, National Oceanographic and Atmospheric Administration, National Marine Fisheries Service, and California Department of Water Resources, Partially Recirculated Draft Environmental Impact Report/Supplemental Environmental Impact Statement, Bay Delta Conservation Plan/California Water Fix, August 19, 2015, Appx. 22, Chapter 22; http://baydeltaconservationplan.com/2015PublicReview/PublicReviewRDEIRSDEIS/PublicReviewRDEIRSDEIS_Links.aspx.

Project ROG and NOx emissions are not significant within the BAAQMD. Consequently, emissions cannot be mitigated if they do not constitute a significant impact. Secondly, the City does not have authority to require mitigation for locomotive emissions. Consequently, the mitigation suggested by the commenter cannot legally be implemented by the City. Similarly, ROG and NOx mitigation at the dock (cold ironing), while technically feasible, cannot legally be implemented by the City because the Project's impacts are less than significant.

This response is not adequate. *First*, as discussed in Comments III.A through III.D, operational emissions within the BAAQMD are significant. *Second*, the response does not address my comment explaining that emissions reduced at the Refinery or elsewhere within the San Francisco Bay Area Air Basin would have a beneficial effect on ozone concentration in downwind air basins, specifically, the Sacramento Valley Air Basin which is designated a state and federal nonattainment area for ozone. *Third*, the City's claim that it does not have authority to require locomotive emissions appears to be predicated on the federal preemption argument for rail traffic. However, my comments did not propose that the City require UPRR to reduce emissions from locomotives (although this would be the preferred approach). Instead, I suggested that the City require the Applicant to enter into VERAs to assist the affected air districts in reducing emissions within their jurisdiction by other means. The City has full authority to request such mitigation from the Applicant and has received several letters from the affected air districts to that effect discussing such alternative means:

From the Yolo Solano AQMD:

- As pointed out in the DEIR, because the City of Benicia has no authority to impose emission controls on tanker car locomotives it is likely not feasible to mitigate the Project's emissions directly. However, the City should also look at the possibility of offsetting the Project's emissions by obtaining emissions reductions from elsewhere in the SFNA. Several regional programs are implemented in the SFNA to incentivize cleaner technologies that can accrue reductions of ozone precursor emissions. These programs could provide opportunities for the City to mitigate the overall impact of the Project in the SFNA.

A3-2

From the Sacramento Metropolitan AQMD:

Mitigation

The DEIR asserts that there is no available feasible mitigation for air quality impacts in the SFNA because the City of Benicia has no authority to impose emission controls on the tanker car locomotives.¹⁰ While regulating the tanker car locomotives may be federally preempted, mitigating the emissions of the project is not. The District has existing programs that provide off-site mitigation for CEQA purposes, and the City can require the project proponents to fund cost-effective mitigation to reduce the impact of the project to less than significant levels. The District routinely collects mitigation fees from projects and uses the fees to fund mitigation projects throughout the entire SFNA. These projects involve promoting clean technology for use in locomotive engines, on-road heavy-duty trucks, farm equipment and wood stoves. We also promote other cost-effective mitigation projects, and all of these efforts reduce ROG and NO_x.

A7-4

From the Feather River AQMD:

While the regulation of railroad locomotives may be federally preempted, mitigating the emissions of the project is not, and the District would recommend that the lead agency consider all forms of mitigation to reduce the impacts of the project including off-site mitigation, especially in areas already not meeting state and federal air quality standards.

A14-5

From the Shasta County AQMD:

The DEIR describes the case law on the preemption of CEQA by federal law that is very compelling to the fact that these air quality impacts appear to be inevitable and in fact mandated by the conflicting federal policies on air quality. Nevertheless, the alternative of pipeline transport of crude oil over rail transport should be considered in the DEIR, and mitigation measures including the mandatory use of tier 4 powered locomotives should be included. The DEIR documents substantial increases in NO_x emissions resulting in significant air quality impacts in Shasta County and must include appropriate mitigation measures with or without potential preemption.

I3-2

This approach has been taken by the County of San Luis Obispo in the EIR for the Phillips 66 Santa Maria Refinery crude-by-rail project which requires that Phillips 66 investigate whether it can secure contracting arrangements with UPRR to only use Tier 4 locomotives, and that Phillips 66 enter into agreements with the uprail air districts to secure emission reductions in case to offset all emissions above the respective air districts' significance thresholds:¹⁵⁴

¹⁵⁴ SMR FEIR, p. IST-2.

Mitigation Measures

AQ-3 Prior to issuance of the Notice to Proceed, the Applicant shall provide a mitigation, monitoring and reporting plan. The plan shall investigate methods for reducing the locomotive emissions through contracting arrangements that require the use of Tier 4 locomotives or equivalent emission levels. The plan shall indicate that, on an annual basis, if the mainline rail emissions of ROG+NO_x with the above mitigations still exceed the applicable Air District thresholds, the Applicant shall secure emission reductions in ROG + NO_x emissions or contribute to new or existing programs within each applicable Air District, similar to the emission reduction program utilized by the SLOCAPCD, to ensure that the main line rail ROG + NO_x emissions do not exceed the Air District thresholds for the life of the project. The Applicant shall provide documentation from each Air District to the San Luis Obispo County Planning and Building Department that emissions reductions have been secured for the life of the project prior to issuance of the Notice to Proceed.

The County of San Luis Obispo received letters from the affected uprail air districts supporting such a mitigation measure and offered their assistance in its implementation; including, most recently, the BAAQMD:¹⁵⁵

Air District staff supports the revised MM AQ.3, and is prepared to assist the County, Applicant, San Luis Obispo County Air Pollution Control District and any other affected air districts with the implementation of MM AQ.3 by:

- Assisting in the tracking and documenting of locomotive emissions in all air basins.
- Identifying potential offsite mitigation projects that can be funded by the Applicant.
- Accepting funding from the Applicant and assisting with the administration of an off-site mitigation program to achieve emission reductions in the Bay Area.
- Providing documentation to the County and the Applicant that emission reductions have been secured for the Project per MM AQ.3 requirements.
- Assisting in the development of the mitigation, monitoring and reporting plan.

There is no reason why this mitigation measure should be feasible for the Santa Maria Refinery crude by rail project but not for the Valero Benicia Refinery crude by rail project.

IV. The EIR's Health Risk Assessments Are Substantially Flawed and Fail to Identify Significant Impacts

The EIR presents the results of revised health risk assessments for maximum cancer, acute and chronic non-cancer risks, and PM_{2.5} concentrations for Project impacts within the San Francisco Bay Area and Sacramento Valley air basins¹⁵⁶ based on

¹⁵⁵ Jean Roggenkamp, BAAQMD, Letter to Ryan Hostetter, Re: Final EIR for Phillips 66 Company Rail Spur Extension and Crude Unloading Project, February 1, 2016. (Exhibit F19.)

¹⁵⁶ RDEIR, Tables 4.1-9 and 4.1-10.

modeling of toxic air contaminant emissions with AERMOD and based on OEHHA's 2015 Guidance Manual.¹⁵⁷ The EIR finds that all results are below the applicable significance thresholds and, therefore, are less than significant.¹⁵⁸

A. The EIR Fails to Provide Adequate Information for Health Risks

The public and decision makers must be able to understand an EIR in order to comment on it and make effective use of it. The presentation of the health risk assessment results fails this fundamental test.

Specifically, the EIR's health risk assessments for impacts near the Refinery and uprill quantify cancer and non-cancer chronic and acute health risks for the maximum exposed individual receptor ("MEIR"), the maximum exposed individual worker ("MEIW"), and the maximum sensitive receptor ("MSR").¹⁵⁹ I previously commented that the EIR fails to provide isopleth maps.¹⁶⁰ An isopleth map provides contour lines of equal or constant cancer risk (or other parameter such as concentration) on a map. This allows interested parties to determine the geographic location and extent of impacts and identify the location of the maximum exposed receptors. The City, in RTC J6-39, responds:

The commenter is correct that isopleths are not included. Instead, in the dispersion modeling, receptors were used to represent the location of sensitive receptors. The location of sensitive receptors was used to estimate health risks.

This response is not adequate.

As discussed in my comments on the RDEIR¹⁶¹ and in Comment IV.B below, the EIR fails to identify the receptors at the location with the highest concentrations determined by the AERMOD dispersion modeling. This would have been immediately obvious if isopleths had been generated. Obviously the EIR's approach to determine receptors with the highest health risk, the methodology of which was never explained in any of the supporting documents, failed to produce the correct results. Isopleth maps

¹⁵⁷ OEHHA, Air Toxics Hot Spots Program, Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments, February 2015 ("2015 OEHHA Guidelines"); http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf. (Exhibit F20)

¹⁵⁸ Draft EIR, p. 4.1-25.

¹⁵⁹ For example, for near-Refinery impacts: RDEIR, Appx. B, Table 4 and Figure 1.

¹⁶⁰ 2015 Pless RDEIR Comments V.B.

¹⁶¹ 2015 Pless RDEIR Comments V.B.

are routinely provided in CEQA and are required by the 2015 OEHHA Guidelines¹⁶² on which the EIR purportedly relies.¹⁶³

Further the revised health risk assessment presented in the RDEIR does not identify the point of maximum impact (“PMI”)¹⁶⁴ as required by the 2015 OEHHA Guidelines¹⁶⁵ (The PMI is defined as the receptor point(s) with the highest acute, 8-hour, chronic, or cancer health impact outside the facility boundary.¹⁶⁶) The revised health risk assessment also does not adequately describe the location of the MEIW and the MSR at locations at the Day Care Center and Elementary School,¹⁶⁷ which it simply

¹⁶² 2015 OEHHA Guidelines, for example: p. 9-10 (“Separate maps for the cancer risk zone of impact and the hazard index (noncancer) zone of impact(s). The cancer zone of impact should include isopleths down to at least the 1/1,000,000 risk level. Because some districts use a level below 1/1,000,000 to define the zone of impact, the District should be consulted. For the noncancer zone of impact, three separate isopleths (to represent chronic, 8-hour, and acute HI) should be created to define the zone of impact for the hazard index from both inhalation and noninhalation pathways greater than or equal to 0.5. The point of maximum impact (PMI), maximum exposed individual at a residential receptor (MEIR), and maximum exposed individual worker (MEIW) for both cancer and noncancer risks should be located on the maps.”).

¹⁶³ For example, RDEIR, Appx. B and Appx. C.

¹⁶⁴ RDEIR, Appx. B, Att. 1, p. 1.

¹⁶⁵ 2015 OEHHA Guidelines, for example: p. 4-21 (“All of these locations (i.e., PMI, MEIR, and MEIW) must be identified for potential multipathway carcinogenic and noncarcinogenic effects.”), p. 8-1 (“The locations of the point of maximum impact (PMI), the MEIR, and the maximum exposed individual worker (MEIW) are to be identified. The PMI, MEIW, and MEIR for cancer risk and for noncancer hazard indices (averaging times for acute 1-hour, repeated 8-hour, and chronic hazard indices) may not be the same location; all should be identified.”), p. 9-4 (“Identify and describe the location(s) of known or anticipated potential sensitive receptors, the point of maximum impact (PMI), the maximum exposed individual residential (MEIR), and worker (MEIW) receptors.”), p. 9-5 (“Provide a map of the facility and surroundings and identify the location of the MEIR, MEIW, PMI, and other locations or receptors of interest.”), p. 9-13 (“Include tables of the estimated dose for each substance by each exposure pathway at the PMI, MEIR, MEIW, and at any sensitive receptor locations (required by the District).”), p. 9-13 (“NOTE: The cancer risk for the PMI, MEIR, and sensitive receptors of interest must be presented in the HRA’s text, tables, and maps.”), and p. 9-14 (“Table and text presenting the potential multipathway cancer risk by substance, by pathway, and total, at the PMI, MEIR, MEIW, and sensitive receptor locations (required by the District).”)

¹⁶⁶ 2015 OEHHA Guidelines, p. 5-1.

¹⁶⁷ 2015 OEHHA Guidelines, for example: p. 4-21 (“In addition to actual UTM coordinates, the block/street locations (i.e., north side of 3,000 block of Smith Street) should be provided in the HRA for the PMI, MEIR, and MEIW for carcinogenic and noncarcinogenic health effects.”), p. 4-61 (“Tables identifying population units and sensitive receptors (UTM coordinates, receptor IDs, and street addresses of specified receptors.)” and p. 9-6 (“Location (block/street location; e.g., north side of 3,000 block of Smith Street) and description of the off-site point of maximum impact (PMI), maximum exposed individual resident (MEIR), and maximum exposed individual worker (MEIW).”)

reports with Universal Transverse Mercator (“UTM”) coordinates.¹⁶⁸ This presentation is meaningless to the general public who wishes to understand the potential health risks they would experience due to Project construction emissions. Specifically, a location in UTM coordinates without a graphical presentation on a map (or listing of an address) means nothing to affected sensitive receptors and the general public cannot be expected to translate these coordinates to a location on a map to find out whether they would be affected or not.

B. The EIR Fails to Identify the Highest Cancer Risks near the Refinery

The RDEIR’s revised health risk assessment for near-Refinery impacts determined cancer risks of 2.2 in one million at the MEIR, 7.4 in one million at the MEIW and 0.25 in one million at the MSR (Day Care Center).¹⁶⁹ I previously demonstrated, based on my review of the supporting modeling files and spreadsheets, that the RDEIR’s findings did not identify the highest health risks for the MEIW and MEIR. The following comment summarizes this discussion and the City and the Applicant’s response. This comment is somewhat academic at this point as the health risk assessments, which rely on the same emissions determined with the system-wide fuel consumption index discussed in Comment III.C, substantially underestimates health risks, as discussed in Comment IV.C. However, the following discussion illustrates the extent of the EIR’s efforts throughout the various revisions to the health risk assessment to adjust modeling results to keep health risks (specifically cancer risks) below the thresholds of significance, including withholding supporting modeling files required to evaluate the analyses.

I previously demonstrated that the RDEIR incorrectly determined the dispersion factors used to calculate cancer risks from the AERMOD output files and, consequently, failed to identify maximum exposed individual worker (“MEIR”) and the maximum exposed individual resident (“MEIR”) with the highest cancer risks.¹⁷⁰ As a result, the RDEIR failed to identify significant carcinogenic health risks for the MEIR.¹⁷¹

The MEIW is typically defined as the existing offsite workplace with the highest acute, 8-hour, chronic, or cancer health impact.¹⁷²

For example, the RDEIR’s health risk assessment for the MEIW identifies “dispersion factors,” which were determined for a unit emission rate of 1 grams

¹⁶⁸ RDEIR, Table 4.1-9.

¹⁶⁹ RDEIR, Appx. B, Tables 1 and 4.

¹⁷⁰ 2015 Pless RDEIR Comments V.C.

¹⁷¹ 2015 Pless RDEIR Comments V.B.

¹⁷² 2015 OEHHA Guidelines, p. 5-1.

per second ("g/s"), as shown in the screenshot from the provided Excel spreadsheet below. These dispersion factors, which have units of micrograms per cubic meter per g/s (" $\mu\text{g}/\text{m}^3/\text{g}/\text{s}$ "), are multiplied with the source-specific emission rates (in g/s) to determine concentrations (in $\mu\text{g}/\text{m}^3$) for each of the sources and toxic air contaminants (chemicals).

Population	UTM X (m)	UTM Y (m)	Source	Chemical	Emission Rate (g/s)	Dispersion Factor	Concentration	Cancer Potency Factor	Cancer Risk
Worker	576044	4214195	Line Haul	DPM	2.82E-03	1.70526	4.81E-03	1.1	4.73E-07
Worker	576044	4214195	Switching	DPM	5.18E-03	7.51489	3.89E-02	1.1	3.82E-06
Worker	576044	4214195	Idling	DPM	6.49E-04	48.3544	3.14E-02	1.1	3.08E-06
Worker	576044	4214195	Fugitive	Benzene	3.24E-04	7.52814	2.44E-03	0.1	2.18E-08
Worker	576044	4214195	Fugitive	Ethylbenzene	2.16E-04	7.52814	1.63E-03	0.0087	1.26E-09
Worker	Overall Cancer Risk								7.4E-06

From file 'Refinery Health Calculation June 2015 for Attachment.xlsx' (not all columns shown)

However, review of the AERMOD output files shows that these dispersion factors are not supported. Specifically, the dispersion factor for diesel particulate matter ("DPM") emissions from idling locomotives at this receptor location [] is 100.02199 $\mu\text{g}/\text{m}^3/\text{g}/\text{s}$, not 48.3544 $\mu\text{g}/\text{m}^3/\text{g}/\text{s}$, as shown in the excerpt from the AERMOD output file below. In fact, the 48.3544 $\mu\text{g}/\text{m}^3/\text{g}/\text{s}$ value used by the DEIR is nowhere to be found in the AERMOD output file.

```

*** THE PERIOD ( 43824 HRS) AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: LOCOIDL ***
INCLUDING SOURCE(S):
LOCO_IDL

*** DISCRETE

CARTESIAN RECEPTOR POINTS ***

** CONC OF CAN_RISK IN
**
MICROGRAMS/M**3

X-COORD (M) Y-COORD (M) CONC
-----
576093.60 4214144.50 34.34802
576143.60 4214144.50 36.76177
576193.60 4214144.50 32.16045
574393.60 4214194.50 0.05813
574443.60 4214194.50 0.05510
574493.60 4214194.50 0.05634
574543.60 4214194.50 0.06941
574593.60 4214194.50 0.07022
575043.60 4214194.50 0.24608
575993.60 4214194.50 76.41474
576043.60 4214194.50 100.02199
576093.60 4214194.50 68.28742
576143.60 4214194.50 46.00180
576193.60 4214194.50 32.57914
    
```

From AERMOD file 'Valero ceqa chronic_5yrs_CAN_RISK.LST'

Correcting this value in the RDEIR's health risk assessment and otherwise accepting all of the RDEIR's assumptions, I calculated a revised total cancer risk at the MEIW using the spreadsheet provided by the City (which was prepared by the City's consultant) and determined that the cancer risk for this location, 11 in one million, exceeds the significance threshold of 10 in one million. Thus, I concluded that the RDEIR failed to identify significant cancer risks at the MEIW.¹⁷³ I noted that the other dispersion factors used by the RDEIR for this receptor were also incorrect.

With respect to cancer risks at the MEIR, I noted that the RDEIR also failed to identify residential receptors with the highest health risk:

Review of the RDEIR's health risk assessment for near-Refinery impacts shows that not one of the dispersion factors used by the RDEIR's health risk assessment is supported by the AERMOD output files... I identified several residential receptors with higher cancer risks closer to the Refinery than identified by the RDEIR. These include a residence at 488 Smith Court in Benicia (575300, 4215600N). Revised cancer risk calculations using the dispersion factors for these locations from the AERMOD modeling files and otherwise relying on the RDEIR's assumptions results in incremental cancer risks of 2.8 in one million in one million [...] Clearly, the RDEIR's identification of the MEIR is incorrect.

The City, RTC J6-40, provides the following puzzling response:

The results of the revised HRA are summarized in Appendix B of the Revised DEIR. This discussion does not refer to "dispersion factors" so it is unclear where the commenter is obtaining this information. Consequently, the dispersion factors referred to by commenter do not appear to be supported and the commenter's conclusions cannot be verified with the information provided. The commenter makes similar statements about residential receptors, stating that the conclusions are based on AERMOD output files. Again, the AERMOD output files were not provided in the Revised DEIR. Consequently, the commenter's statement that residential health risks would be significant cannot be verified with the information supplied.

This statement is entirely non-responsive to my comments. I concur with the City that it did not make the AERMOD output files publicly available; in fact, as discussed in detail in Comment I, these files should have been made available publicly to support the EIR's presented health risks but were not. However, when, after repeated requests, the City finally provided the some of the modeling files via email and on a compact

¹⁷³ My comments on the RDEIR, Comment V.C, mistakenly referred to MEIR in this paragraph even though the rest of the comment clearly refers to the MEIW.

disc,¹⁷⁴ I discovered that the EIR does not disclose the highest cancer risks near the Refinery.¹⁷⁵ My comments directly excerpted from and fully cited to the files provided by the City; for example, the two screenshots above clearly identify the sources as a spreadsheet titled 'Refinery Health Calculation June 2015 for Attachment.xlsx' and the AERMOD output file 'Valero ceqa chronic_5yrs_CAN_RISK.LST'. The dispersion factor is clearly identified within the red rings and in the headers of the tables above. I don't know how much more obvious I could have demonstrated this information.

The City's and its consultant's inability to verify my conclusions "with the information supplied" confirms my concern that the City and its consultant never reviewed the revised health risk assessment modeling files provided by the Applicant. Thus, there is no way that the City could address the issue raised in my comments: that the EIR does not identify the highest cancer risks based on the AERMOD files. It is the City's obligation to independently analyze the Project's potentially significant impacts. Here, the City did not. The City simply relied on the Applicant's data without verifying them. As a result, the City failed to identify the magnitude of the Project's significant health risks.

The Nossaman Letter Fails to Resolve the EIR's Failure to Identify the Highest Health Risks and Resulting Significant Impacts

On February 2, 2015, the City forwarded a letter by the law firm Nossaman LLP,¹⁷⁶ which attempts to explain the discrepancy between the less-than-significant cancer risks presented in the RDEIR for the MEIW and the significant cancer risks for the MEIW I determined based on the previously provided set of modeling files in my comments on the RDEIR:

¹⁷⁴ Million Email to Koss, September 29, 2015, *op. cit.*

¹⁷⁵ 2015 Pless RDEIR Comments V.C.

¹⁷⁶ See Comment I.

This letter provides updates to risk values presented in Appendix E.6 of the RDEIR (memo date 15 June 2015), upon review related to Comment response J6-9 in the FEIR.

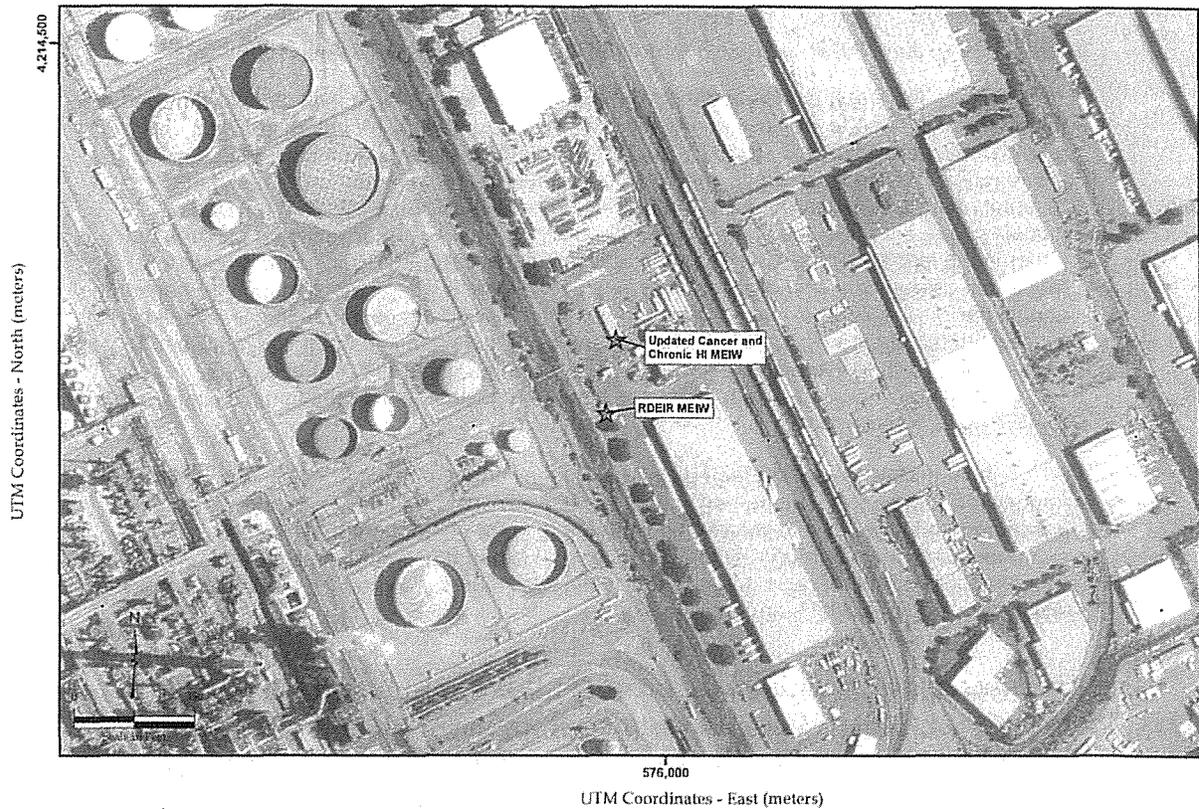
The commenter questioned the risk reported for the maximum exposed individual worker (MEIW) and referred to a dispersion factor at a location for the MEIW in the modeling files referenced by the RDEIR. The MEIW location was verified to have been incorrectly reported in the RDEIR modeling files, due to a shift of coordinates in the basemap used to plot the receptors for the results reported in the RDEIR, Appendix E.6. That MEIW in the RDEIR modeling files is not located at a commercial building where a worker would be present, but rather in the landscaping near a driveway of a commercial property. It is not appropriate to report risk values for a worker receptor at a location where a worker would not be present on an annual basis. The original modeling for the 2014 DEIR used the basemap that is included in the file set with this memo. This basemap shows the correct placement of sources relative to the aerial photograph. In this basemap, the MEIW is located at receptor UTM 576,044E, 4,214,245N, which coincides with a commercial building. Note that the basemap is in the NAD27 Zone 10 projection.

The modeling results affected by the basemap shift are those in Table 1 of the RDEIR, Appendix E.6 memorandum dated 15 June 2015. A revision to Table 1 is presented as an attachment to this letter with values in bold italics that are updated from the 15 June 2015 memorandum. Only the MEIW risk, MEIW Chronic Hazard Index, and the MEIW PM2.5 concentration values of Table 1 were slightly affected. There was no effect on the risk modeling results for the MEIR, MSR, or uprill locations.

The Nossaman Letter now reports the MEIW at a building (NAD 27,¹⁷⁷ Zone 10, UTM 576044E, 4214245N)¹⁷⁸ a short distance from the original location and presents revised, slightly higher, health risks for this receptor (cancer risk of 7.6 in one million instead of 7.4 in one million). This “shift” in location for the MEIW from the location reported in the RDEIR is shown in the excerpted map from the Nossaman Letter below.

¹⁷⁷ From Wikipedia (https://en.wikipedia.org/wiki/North_American_Datum): The North American Datum (“NAD”) is the datum now used to define the geodetic network in North America. A datum is a formal description of the shape of the Earth along with an “anchor” point for the coordinate system. In surveying, cartography, and land-use planning, two North American Datums are in use: the North American Datum of 1927 (“NAD27”) and the North American Datum of 1983 (“NAD83”). Both are geodetic reference systems based on slightly different assumptions and measurements.

¹⁷⁸ See Nossaman Letter, Table 1.



Updated Cancer and Chronic HI MEIW and RDEIR MEIW
From: Nossaman Letter, Figure 1

I verified the updated location for the MEIW (NAD27, Zone 10, UTM 576044E, 4214245N) identified by the Nossaman Letter Table 1 (Updated Cancer and Chronic HI MEIW). I also identified the location of the highest locomotive idling emissions and highest cancer risk (NAD27, Zone 10, UTM 576043.6E, 4214194.5N) taking into account the same identified baseline map shift. The two locations, determined with the AERMOD output file provided with the Nossaman Letter, are about 150 feet apart, are shown in Figure F3. The previously identified location with the highest cancer risk (NAD27, Zone 10, UTM 576043.6E, 4214194.5N) coincides with the location of the RDEIR MEIW.



Figure F3: Location of MEIW identified by Nossaman Letter and location of highest cancer risk

The Nossaman Letter does not resolve the issues I raised and does not change my conclusion that the EIR fails to identify significant health risks at the MEIW.

First, the Nossaman Letter provides no explanation whatsoever why the RDEIR correctly identified the location of the receptor with the highest dispersion factor for idling (NAD27, Zone 10, UTM 576044E, 4214195N) out of the 4675 individual receptors in the modeling files but then used dispersion factors for line haul, switching, and idling to calculate health risks that were not found in the AERMOD output file. In fact, if only a “shift” in the basemap had been involved, the risk calculations should have stayed the same and only the location of the MEIW should have changed. This is not the case, as the Nossaman Letter now presents revised health risk values for the MEIW.

Second, the Nossaman Letter neither addresses nor disputes the considerably higher dispersion factor for locomotive idling and associated significant cancer risk I identified in the Applicant’s modeling files (*see* Figure F3: NAD27, Zone 10, UTM 576043.6E, 4214194.5N), but instead sidesteps this finding, claiming that it is “not

appropriate to report risk values for a worker receptor at a location where a worker would not be present on an annual basis." I note that the Applicant's consultant was not concerned about placing the MEIW "in the landscaping near a driveway" when it previously calculated a cancer risk below the significance threshold for this location (see "RDEIR MEIW" in map above). Only after I pointed out the discrepancy between the dispersion factors reported in the RDEIR and the modeling files did this become an issue. This argument is not supported.

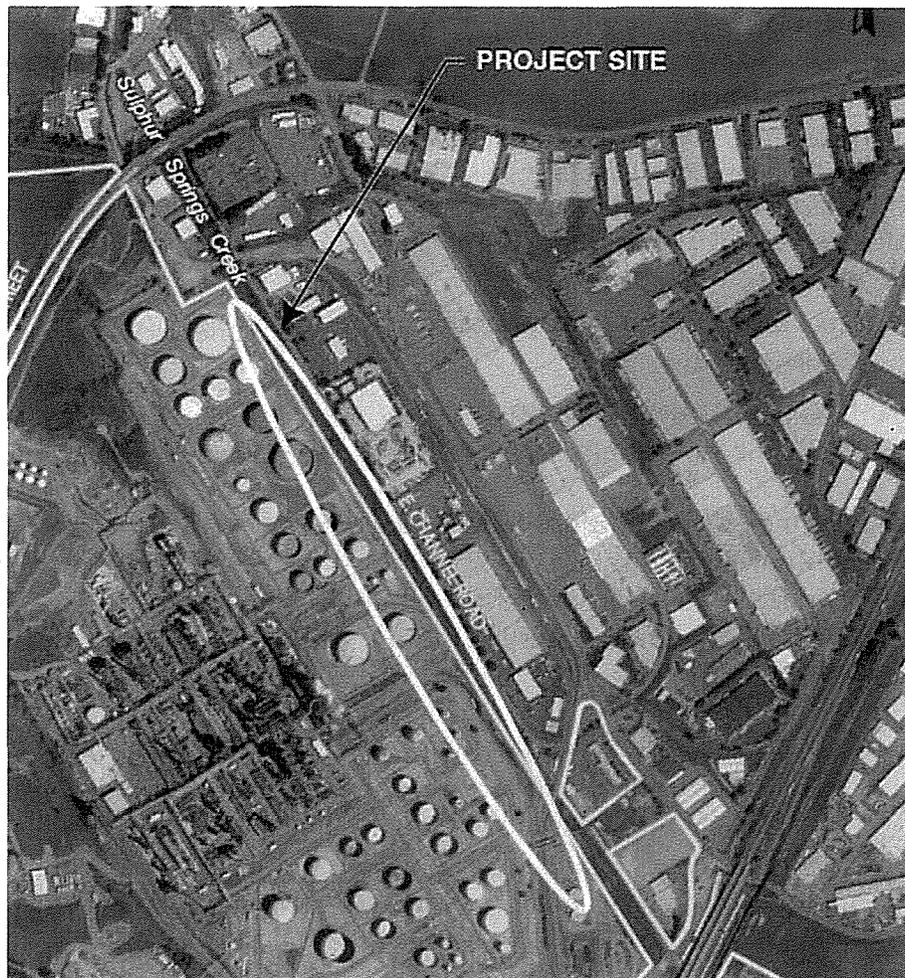
Table F11 below compares the cancer risk calculations for both locations based on the dispersion factors for diesel particulate matter ("DPM") emissions from locomotive line haul, switching, and idling from the AERMOD output file 'Valero ceqa chronic_5yrs_CAN_RISK.LST' and spreadsheet 'Updated Refinery HRA Calculation Jan 2016.xlsx' provided by the Nossaman Letter (the modeling file is the same as the one previously provided for the RDEIR.) I omitted other air toxics (benzene, ethylbenzene) for this presentation as they do not materially contribute to total cancer risk (< 1E-07 or less than one tenth in one million).

Table F11: Comparison of cancer risks for MEIW identified in Nossaman Letter and highest cancer risk based on RDEIR AERMOD files

Nossaman MEIW																
UTM X (m)	UTM Y (m)	Source	Chemical	Emission Rate (g/s)	Dispersion Factor	Concentration	Age bin	ED	DBR	EF	CF	FAH	ASF	AT	Cancer Potency Factor	Cancer Risk
576044	4214245	Line Haul	DPM	2.82E-03	1.77906	5.02E-03	16-70	40	230	0.7	1E-06	1	1	70	1.1	4.93E-07
576044	4214245	Switching	DPM	5.18E-03	8.08052	4.18E-02	16-70	40	230	0.7	1E-06	1	1	70	1.1	4.11E-06
576044	4214245	Idling	DPM	6.49E-04	46.8720	3.04E-02	16-70	40	230	0.7	1E-06	1	1	70	1.1	2.99E-06
Total cancer risk															7.6E-06	
															7.6 in one million	
Highest Cancer Risk																
UTM X (m)	UTM Y (m)	Source	Chemical	Emission Rate (g/s)	Dispersion Factor	Concentration	Age bin	ED	DBR	EF	CF	FAH	ASF	AT	Cancer Potency Factor	Cancer Risk
576044	4214195	Line Haul	DPM	2.82E-03	1.70467	4.81E-03	16-70	40	230	0.7	1E-06	1	1	70	1.1	4.73E-07
576044	4214195	Switching	DPM	5.18E-03	7.52732	3.90E-02	16-70	40	230	0.7	1E-06	1	1	70	1.1	3.83E-06
576044	4214195	Idling	DPM	6.49E-04	100.02199	6.49E-02	16-70	40	230	0.7	1E-06	1	1	70	1.1	6.38E-06
Total cancer risk															1.1E-05	
															11 in one million	

The substantial difference in cancer risk at these two locations (more than three in one million) that are only about 150 feet apart – which I previously identified in my comments on the RDEIR – should have given the Applicant's consultant pause about the validity of its presentation and conclusions regarding health risks.

Exhaust stacks on locomotives are relatively low to the ground (compared to, for example, a power plant stack) and result in low level plumes with little and uneven dispersion in the immediate vicinity. Here, the proposed rail spur is located directly adjacent to the industrial properties along East Channel Road, as shown in the excerpted map below from the DEIR, Figure 3-2.



From: DEIR, Figure 3-2.

In situations like this – emissions from short stacks with low plume rise and immediately adjacent receptors – the OEHHA Guidelines recommend using a spatial averaging method with a finer receptor grid rather than basing risk estimates on a single highest point:

... basing risk estimates on a single highest point (PMI, MEIR, or MEIW) does not take into account that a person does not remain at one location on their property, or in one location at the workplace over an extended period of time. Therefore, the average air concentration over a small area is likely to be more representative than using the air concentration at a single point, particularly in those situations where concentrations fall off rapidly around that single point. The concept of averaging air concentrations over a small area is known as spatial averaging.¹⁷⁹

¹⁷⁹ 2015 OEHHA Guidelines, pp. 4-22 and 4-23.

... sources with low plume rise that result in a PMI, MEIW, or MEIR located at or near the property fence line are most sensitive to spatial averaging. Source types with high plume rise (e.g., tall stacks) show a PMI far downwind where the concentration gradient is more gradual and therefore spatial averaging has a lesser effect. While spatial averaging can be used regardless of source size or the location of the PMI, the following conditions generally apply when a source is a good candidate for spatial averaging:

- The MEIR, MEIW, or PMI is located at the fence line or close to the emission source.
- The concentration gradient is high near the PMI. This is more associated with low level plumes such as fugitive, volume, area, or short stacks.¹⁸⁰

These are the exact conditions here. The locomotives are sources with low plume rise and the resulting concentration gradient is high near the point of maximum impact and the MEIR which are both located close to the emission source. The OEHHA Guidelines provide the following reasons to support the inclusion of spatially averaged modeled concentrations in risk assessments:

- Averaging results over a small domain will give a more representative picture of individual exposure and risk than an estimate based on one single location within their property.
- Spatial averaging will allow air dispersion modeling and risk assessment results to be characterized as the estimated concentration and risk in a discrete area of interest, rather than an exact value for a single location.
- From a risk communication standpoint, the ARB and OEHHA feel it is more appropriate to present the modeling output and the calculated health impacts as the potential impacts within a small or discrete area, rather than an exact value at a specific point on a grid or map.
- Spatial averaging is the recommended procedure in ARB's Lead Risk Management Guidelines (2001) and has been used in several complex source HRAs [e.g., Roseville Railyard (2004), Ports of LA/LB (2006), Port of Oakland (2008)].¹⁸¹

For workers, the extent of the spatial analysis depends on where they spend most of their work shift. On industrial sites such as the Praxair facility at 331 East Channel Road, which the Nossaman Letter identifies as the MEIW, this can be anywhere on the site and is not limited to the office building on site identified by the Nossaman Letter. The property at 471 East Channel Road immediately to the south, a few feet from the

¹⁸⁰ *Ibid.*

¹⁸¹ *Ibid.*

maximum cancer risk identified above and from the Praxair property line is currently occupied by Movers & Shakers Worldwide Relocation, a full service moving, packing and storage service. The loading docks for this firm are located at the backside of the building only a few feet from the above-identified location with the highest impacts and directly adjacent to the proposed rail spur. Workers at a full service moving, packing and storage service spend a lot of time moving around on the site moving goods with forklifts and with open loading docks. They are far less likely to stay inside a building than, for example, office workers or assembly line workers. Thus, I disagree with the Nossaman Letter and find that the previously identified location - which is actually not "in the landscaping" but rather a parking spot next to a tree - should be identified as MEIW. Thus, I maintain that cancer risks at the MEIW (11 in one million) are significant.

Third, if the entire basemap shifted, as claimed by the Nossaman Letter, it is not credible that this shift would only affect the location of the MEIW but not the location of the MEIR and MSR as all receptors would shift by the same distance south/north and east/west.

Fourth, the Nossaman Letter entirely fails to address my comments that the EIR does not identify the highest cancer risk for the residential receptors (MEIR).

In sum, the repeated revisions to the health risk assessment results and the persistent refusal to provide the complete modeling files including the plot files do not inspire confidence in the presented health risk results and I find the last minute effort to invalidate my comments less than convincing. I maintain that the EIR fails to identify significant cancer risks at the MEIW. Further, as discussed below, the health risk assessments rely on substantially underestimated locomotive emissions and fail to include all sources of toxic air contaminants.

C. The EIR's Health Risk Assessments Are Based on Incorrect Assumptions and Fail to Include Emissions of Toxic Air Contaminants and, thus, Fail to Identify Significant Health Risks

As discussed below, the EIR's health risk assessments for near-Refinery and uprail air districts are substantially flawed and fail to identify significant health risks.

1. The EIR's Assumptions for Locomotive Emissions Are Incorrect and Underestimate Risks

The EIR's health risk assessments for diesel particulate matter emissions from locomotives are based on a number of incorrect assumption and, consequently substantially underestimate risk:

- All health risk assessments, both uprail and near-Refinery, rely on the same system-wide fuel efficiency of 1005 GMT/gal used for calculating

emission estimates within the various air districts, as discussed in Comment III.C.¹⁸² Onsite emissions of particulate matter from locomotives are underestimated by a factor of at least 17%.¹⁸³

- The health risk assessment for near-Refinery impacts assumes that only one locomotive would idle on site (at NAD 27, Zone 10, UTM 575947.2E, 4214223.4N).¹⁸⁴ This is incorrect, each 50-tank car train would have two UPRR locomotives; one locomotive would remain attached to each of the 25-tank car strings during unloading. Thus, the health risk assessment for near-Refinery impacts underestimates health risks from idling of the UPRR locomotives by a factor of 2. The doubling of idling emissions alone is sufficient to raise the cancer risk at the MEIW identified by the Nossaman Letter above the cancer risk threshold of 10 in one million.¹⁸⁵ (This is an approximation as the idling locomotives would be a few yards apart at the unloading rack, which accommodates up to 25 tank cars on each side at one time.¹⁸⁶)
- The health risk assessment for near-Refinery impacts assumes an exit velocity from the locomotive stack while idling of 5.11 meters per second ("m/s"); this is considerably higher than typically assumed for the exit velocity from idling locomotives. For example, the environmental assessment for the Tesoro Savage Petroleum Terminal in Vancouver Washington, assumed an exit velocity for idling locomotives of 1.85 m/s.¹⁸⁷ The assumption of a higher exit velocity results in greater dispersion of diesel particulate matter concentrations and, thus, lower impacts at nearby receptors.

¹⁸² See RDEIR, Appx. B, Attachment 2, Table "Crude by Rail Project, Locomotive DPM Emissions for CEQA Modeling."

¹⁸³ Onsite locomotive emissions: (Table F9a: 3.7 lbs/day) / (DEIR, Appx. E.3, Att. B-4, Table 'Year 2014 Daily Line Haul Emissions (Within BAAQMD)': 3.1 lbs/day) = 1.17.

¹⁸⁴ From AERMOD output file 'Valero ceqa chronic_5yrs_CAN_RISK.LST'.

¹⁸⁵ Cancer risk (Line Haul: 4.93E-07) + (Switching: 4.11E-06) + (Idling: $2 \times 2.99E-06$) = 1.1E-05 or 11 in one million.

¹⁸⁶ RDEIR, p. 2-20.

¹⁸⁷ Washington Energy Facility Site Evaluation Council, Tesoro Savage Vancouver Energy Distribution Terminal Facility, Draft Environmental Impact Statement, November 2015, Appendix F, Table 5, p. 13. (Exhibit F21)

2. *The EIR Fails to Account for All Toxic Air Contaminant Emissions from Rail Cars*

The EIR's health risk assessments did not account for toxic air contaminants released with fugitive emissions from railcars even though the RDEIR's revised air quality section for uprail air districts recognizes tank cars as sources of fugitive emissions.¹⁸⁸ These emissions are substantial as Dr. Phyllis Fox demonstrates in her comments on the FEIR and amount to about 92 lbs/day in the BAAQMD and between 65 lbs/day and 399 lbs/day in uprail air districts. These emissions must be accounted for in the health risk assessments for the Project but were not.

3. *The EIR Fails to Account for Toxic Air Contaminant Emissions from Increased Breathing Losses from Storage Tanks*

I previously summarized information discussed in more detail in the Fox IS/MND and Fox Draft EIR Comments to provide a clear picture of the various shortcomings of the EIR's health risk assessments in one place:

According to Dr. Fox as well as the Goodman IS/MND Comments, the Project will likely receive, store and process cost-advantaged heavy sour Canadian tar sands (as Dilbits) and light sweet crudes likely originating from the Bakken oil fields. The EIR failed include any emissions from the change in physical and chemical properties of the crudes that would be stored in the Project's six storage tanks. Dr. Fox, in her comments on the Draft EIR, estimated increase in tank breathing losses emissions to be at least 64.6 lbs/day and 11.79 tons/year of ROG.¹⁸⁹ Dr. Fox also identified several other sources of emissions from these tanks that she did not quantify. Because these fugitive emissions also contain toxic air contaminants ("TACs"), TAC emissions for the EIR's health risk assessment were underestimated as the EIR only included TAC emissions from fugitive components, valves, pumps, flanges, which are a tiny fraction of the total potential ROG emissions.

Further, the Fox Draft EIR Comments criticized the Draft EIR's failure to adequately quantify TAC emissions for fugitive emissions from these crude oils by relying on a "default speciation profile" for crude oil from the EPA's TANKS 4.09d program. The Fox Draft EIR comments provide a comparison of the weight percentage of five TACs in the default crude oil relied upon by the Draft EIR and the maximum weight percentage for these TACs from a number of Material Safety Data Sheets ("MSDS") recently submitted in the context of other applications to import cost-advantaged North American crudes. The values in Table 5 are excerpted from the Fox Draft EIR Comments.

¹⁸⁸ RDEIR, Appx. A, p. A-3.

¹⁸⁹ Personal communication with Phyllis Fox, September 29, 2015.

Table 5: Weight percentages of TAC components in crude oil relied upon by Draft EIR compared to reported maxima in MSDSs for Bakken crude oils

TAC	Weight Percent		Difference (B/A)
	A Default Crude Draft EIR	B Maximum from MSDS	
Benzene	0.6	7	11.7
Ethyl Benzene	0.4	7	17.5
Hexane	0.4	11	27.5
Toluene	1.0	7	7.0
Xylenes	1.4	7	5.0

A Draft EIR, Appx. E.4, Table 3-5; B Fox Draft EIR Comments

As shown, the EIR's emission estimates for TACs, based on a default crude oil, underestimate emissions by factors ranging from 5 to almost 28. Thus, the EIR's TAC emissions are substantially underestimated.

In response, the City, RTC J6-41 claims:

This comment infers that the Project would add six storage tanks. However, no new tanks are being added and existing tanks would be used to store crude oil from train deliveries, marine deliveries, and pipeline deliveries. The Project does not propose any changes to air permits for these tanks. As explained in DEIR Section 3.5 and illustrated in DEIR Figure 3-11, the blended crude Valero processes is constrained by Valero's operational restrictions and BAAQMD permits and regulations. These same limitations constrain Valero in the procurement of the individual crudes it stores for processing. Further, the DEIR shows that crudes available by rail have already been processed at the Refinery. Therefore, it follows that the Project will not result in an increase in tank emissions.

The City is incorrect. My comments on the RDEIR, Comment V.D, did *not* infer that "the Project would add six storage tanks;" instead, my comments discussed an *increase in emissions from the Refinery's existing six storage tanks* which has been conclusively demonstrated by Dr. Phyllis Fox in her comments on the RDEIR. The City's response is entirely non-responsive to her comments regarding *increased* fugitive emissions from storage tanks and my comments regarding the resulting increase in toxic air contaminant ("TAC") emissions. The increase in fugitive emissions from these tanks must be evaluated against baseline emissions and cannot be based on permit limits. I maintain that the City's revised health risk assessment for the Project substantially underestimates health risks because it fails to account for the increase in fugitive TAC emissions from the existing six tanks due to the change in crude oil receipts.

Further, the City's response entirely fails to address the second point in my comment, *i.e.*, the increase in BTEX emissions due to a change in crude oil composition delivered to the Refinery.

V. Recommendation

Based on the above discussion, I find that the EIR for Valero's Rail Project remains substantially deficient as an informational document for purposes of compliance with CEQA and recommend that the City prepare and recirculate a second revised Draft EIR that addresses the issues outlined above.

Please note that referenced exhibits numbered 1 through 62 were submitted previously with my September 15, 2014 comments on the Draft EIR. Attached to this document are Exhibits F1 through F21.

Please call me at (415) 492-2131 or e-mail at petra.pless@gmail.com if you have any questions.

Best regards,

A handwritten signature in black ink, appearing to read 'Petra Pless', written in a cursive style.

Petra Pless, D.Env.

Attachment F-1

REVISED ASSUMPTIONS FOR Year 2014 Daily Line Haul Locomotive Criteria Pollutant Emissions - 100 Railcars per Day per EIR Methodology

Parameter	Value	Units	Reference
Maximum Additional Daily Tank Car due to Project	100	Cars/day	DEIR, Appx. E.3, Att. B-4
Maximum Freight Weight	106	short tons/car	DEIR, Appx. E.3, Att. B-4
Daily Freight Transported due to Project	10,580	short tons/day	DEIR, Appx. E.3, Att. B-4
Weight of Empty Tank Car	37	short tons/car	DEIR, Appx. E.3, Att. B-4
Maximum Total Daily Weight of Empty Tank Cars	3,720	short tons/day	DEIR, Appx. E.3, Att. B-4
Maximum Daily Gross Weight Hauled	14,300	short tons/day	DEIR, Appx. E.3, Att. B-4
Assuming the Facility is Serviced Once daily	1	train/day	DEIR, Appx. E.3, Att. B-4
Therefore Daily Number of Railcars per Train	100	Cars/train	DEIR, Appx. E.3, Att. B-4
Total Siding Track Length within Valero Facility	2	miles	DEIR, Appx. E.3, Att. B-4
Total Mainline Track Length in BAAQMD	22	miles	DEIR, Appx. E.3, Att. B-4

Conversion Factors			
UPRR Fuel Consumption Index (Gross Weight)	769	gross ton- miles/gal	Based on UC Davis study (Gould & Niemeyer) for Corridor 3
UPRR Fuel Efficiency Increase	1.03	-	See Comments
Adjustment of UPRR Fuel Consumption Index for Locomotive Weight	0.92	-	See Comments
Adjusted UPRR Fuel Consumption Index (Gross Weight)	728.7	gross ton- miles/gal	See Comments

Attachment F-1

Year 2014 Locomotive Emission Factors

Operation Type	Emission Factor (g/gal fuel) ¹			
	POC	NOx	PM10	PM2.5
Large Line Haul	6.42	135	3.6	3.5
Small Line Haul	12.32	242	5.6	5.4
Switch	13.37	217	4.8	4.7

From DEIR, Appx. E.3, Att. B-4, Table 'Year 2014 Locomotive Emission Factors (Emission Factors for Locomotives, EPA-420-F-09-025, April 2009)

REVISED Year 2014 Daily Line Haul Emissions (Within BAAQMD)

Segment	Operation Type	Emissions (lb/day)			
		ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	Small Line Haul	1.3	26.3	0.6	0.6
BAAQMD border to Valero Refinery	Large Line Haul	7.7	161.3	4.3	4.2
Total REVISED Line Haul Emissions		9.0	187.6	4.9	4.8

EIR Year 2014 Daily Line Haul Emissions (Within BAAQMD)

Segment	Operation Type	Emissions (lb/day)			
		ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	Small Line Haul	1.0	19.1	0.4	0.4
BAAQMD border to Valero Refinery	Large Line Haul	5.6	117.4	3.1	3.0
Total EIR Line Haul Emissions		6.6	136.5	3.6	3.5

REVISED - EIR Year 2014 Daily Line Haul Emissions (Within BAAQMD)

Segment	Operation Type	Emissions (lb/day)			
		ROG	NOx	PM10	PM2.5
Onsite at Valero Refinery	Small Line Haul	0.4	7.2	0.2	0.2
BAAQMD border to Valero Refinery	Large Line Haul	2.1	43.9	1.2	1.1
Total REVISED - EIR Line Haul Emissions		2.5	51.1	1.3	1.3

Attachment F-1

Year 2014 Locomotive Emission Factors

Operation Type	Emission Factor (g/gal fuel) ¹			
	POC	NO _x	PM ₁₀	PM _{2.5}
Large Line Haul	6.42	135	3.6	3.5
Small Line Haul	12.32	242	5.6	5.4
Switch	13.37	217	4.8	4.7

From DEIR, Appx. E.3, Att. B-4, Table Year 2014 Locomotive Emission Factors (Emission Factors for Locomotives, EPA-420-F-09-025, April 2009)

REVISED Year 2014 Annual Line Haul Emissions (Within BAAQMD)

Segment	Operation Type	Emissions (tons/day)			
		ROG	NO _x	PM ₁₀	PM _{2.5}
Onsite at Valero Refinery	Small Line Haul	0.24	4.80	0.11	0.11
BAAQMD border to Valero Refinery	Large Line Haul	1.40	29.44	0.78	0.76
Total REVISED Line Haul Emissions		1.64	34.23	0.90	0.87

EIR Year 2014 Annual Line Haul Emissions (Within BAAQMD)

Segment	Operation Type	Emissions (tons/day)			
		ROG	NO _x	PM ₁₀	PM _{2.5}
Onsite at Valero Refinery	Small Line Haul	0.18	3.49	0.08	0.08
BAAQMD border to Valero Refinery	Large Line Haul	1.02	21.42	0.57	0.55
Total EIR Line Haul Emissions		1.20	24.91	0.65	0.63

REVISED - EIR Year 2014 Annual Line Haul Emissions (Within BAAQMD)

Segment	Operation Type	Emissions (tons/day)			
		ROG	NO _x	PM ₁₀	PM _{2.5}
Onsite at Valero Refinery	Small Line Haul	0.07	1.31	0.03	0.03
BAAQMD border to Valero Refinery	Large Line Haul	0.38	8.02	0.21	0.21
Total REVISED - EIR Line Haul Emissions		0.45	9.33	0.24	0.24

**Attachment F-2 Project characteristics, assumptions, and locomotive emissions
according to Phillips 66 SMR CBR FEIR and Valero Benicia CBR FEIR**

	Phillips 66 Santa Maria Refinery^a	Valero Benicia Refinery^b
Location	Arroyo Grande	Benicia
Air district	SLOCAPCD	BAAQMD
Lead agency	San Luis Obispo County	City of Benicia
Air district permit limit	48,950 bpd maximum (incl. Throughput Project) 17,866,750 bpy (rolling 12-month)	180,000 bpd maximum 165,000 bpd annual average
Crude characteristics	heavy sour (high sulfur) crudes including Canadian tar sands	light sweet (low sulfur) crudes "Alaskan North Slope look-alikes or sweeter" including Bakken
Tank cars	owned by Phillips 66 non-jacketed CPC-1232 tank cars 31,808 gal capacity (~757 bbl) 210,700 lbs gross rail limit ^c ~27,300 gal heavy crude/tank car	owned or leased by Valero non-jacketed CPC-1232 tank cars ~700 bbl capacity (~29,400 gal ^d) 286,000 lbs gross rail limit 106 tons/tank car (212,000 lbs/tank car) 29,400 gal light crude/tank car (70,000 bpd / 100 tank cars/day × 42 gal/bbl)
Locomotives	3 × 4,300-bhp UP mainline haul + 2 × 4,300-bhp UP mainline haul over Cuesta Grade	2 × locomotives/50 tank car train 4 × locomotives/100 tank car train
Switching	2 × 4,300-bhp UP mainline haul engines/80-tank car train 2.58 hours switching/engine unloading 80-tank car train 5.16 hours switching time for unloading 80-tank car train 8.92 hours idling/engine unloading 80-tank car train 17.84 hours idling time for unloading 80-tank car train 0.206 switching load factor = 885.8 bhp locomotive power/engine over switch cycle	1 UP mainline haul engine/25-tank car string 2 hours switching/engine unloading 25-tank car string 4 hours switching time for unloading 50-tank car train 0 hours idling 9.4 gal/hr/locomotive 15.2 bhp-hr/gal 177 bhp locomotive power/engine over switch cycle
Idling	1 × 4,300-bhp UP mainline haul/80-tank car train 1.08 hours idling for 80-tank car train 3.3 gal/hour fuel use	none (for criteria pollutant emission estimates)
Crude deliveries	mainline turnout ≤ 80 tank cars/train ≤ 2 trains/day ≤ 5 trains/week ≤ 50 trains/year ≤ 52,000 bbl/80-tank car train	mainline turnout 50 or 100 tank cars/train ≤ 2 × 50-tank car trains/day or ≤ 1 × 100-tank car trains/day or ≤ 730 trains/year (365 days/year × 2 × 50-tank car trains/day) ≤ 35,000 bbl/50-tank car train ≤ 70,000 bbl/100-tank car train

	Phillips 66 Santa Maria Refinery^a	Valero Benicia Refinery^b
	≤ 104,000 bpd (2 × 80-tank car trains/day maximum) 37,142 bpd annual average 2,600,000 bpy (104,000 bpd × 50 trains/year)	≤ 70,000 bpd (2 × 50-tank car trains/day or 1×100 tank car train/day max) ≤ 25,550,000 bpy (70,000 bpd × 365 days/year)
Unloading	10 to 12 hours unloading for 80-tank car train 20 tank cars at one time bottom unloading with flexible hose	~12 hours unloading for 50-tank car train 50 tank cars at one time bottom unloading with flexible hose
Air pollution control system for unloading rack	1 air eliminator with 2 carbon beds	none
Idling restriction	no more than 15 consecutive minutes during train unloading	none
Emissions	<i>Annual locomotive emissions in SLOAPCD and on site</i> 3.51 tpy ROG 67.20 tpy NOx 1.99 tpy PM10 based on 2,600,000 bpy and 134 miles within SLOAPCD and on site <i>Locomotive emission rates in SLOAPCD and on site^f</i> 20.15 lbs ROG/million bbl/mile 385.76 lbs NOx/million bbl/mile 11.42 lbs PM10/million bbl/mile	<i>Annual locomotives^e in BAAQMD and on site</i> 1.77 tpy ROG 33.04 tpy NOx 0.83 tpy PM10 based on 25,500,000 bpy and 22 miles within BAAQMD + 2 miles on site <i>Locomotive emission rates in BAAQMD and on site^f</i> 5.78 lbs ROG/million bbl/mile 107.97 lbs NOx/million bbl/mile 2.71 lbs PM10/million bbl/mile

bbl = barrels; bhp = brake-horsepower; bpd = barrels per day; bpy = barrels per year; gal = gallons; lbs = pounds; tpy = tons per year;

- a From: SMR Final EIR, Section 2 Project Description, Section 4.3 Air Quality and Greenhouse Gases, and Appendix B.1
- b From: Valero Draft EIR, Section 2 Project Description, Section 4.1 Air Quality, and Appendix E.1, Attachment B-4 Cargo Carrier Emissions; and Valero Revised Draft EIR Section 2.4 DEIR Section 3 Project Description and Section 2.6 DEIR Section 4.1, Air Quality
- c According to Pipeline and Hazardous Materials Safety Administration ("PHMSA") 286,000 lbs gross rail load ("GRL") for DOT-117, previously 263,000 lbs GRL; see 80 FR 26643, Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains; <https://www.federalregister.gov/articles/2015/05/08/2015-10670/hazardous-materials-enhanced-tank-car-standards-and-operational-controls-for-high-hazard-flammable>
- d The capacity of jacketed and non-jacketed CPC-1232 tank cars is 29,200 gallons and 31,800 gallons, respectively; see, for example, Northeast Association of Rail Shippers, The Tank Car Story: The Builder Perspective, October 1, 2014; https://www.nears.org/oct2014/PRESENTATIONS/04_Bob_Pickel_National_Steel_Car_Company.pdf
- e Valero Draft EIR, Appx. E.3 Air Permit Application, February 2013, Attachment B-4 Cargo Carrier Emissions
- f Locomotive emission rates = (annual emissions in tpy for ROG, NOx, and PM10) / (miles within District + miles on site) / (annual crude oil delivery in bpy) / (miles traveled within District and on site) × (1,000,000 bbl/million bbl) × (2000 lbs/ton)

Attachment F-3

LOCOMOTIVE EMISSIONS

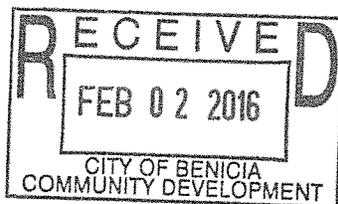
Valero Benicia Crude by Rail Project

		Source
Locomotive Information		
Tank cars/train	50	RDEIR, p. 2-19
Trains/day	2	RDEIR, p. 2-19
Trains/year	730	RDEIR, p. 2-91
Line haul locomotives/train	2	RDEIR, p. 2-20
Line haul locomotive engine power (HP)	4300	SMR FEIR, Appx. B.1
Average line haul load factor	0.28	SMR FEIR, Appx. B.1
Mainline Information		
Roundtrip distance from Refinery to BAAQMD boundary (miles)	22	DEIR, Appx. E.3, Att. B-4 Union Pacific system-wide average train speed for crude shipments (23 to 26 mph) per Form EP 724 for Week 1/23/2016-1/29/2016
Average line haul speed (miles/hour)	26	Calculated as (average line haul speed) x (roundtrip distance from Refinery to BAAQMD border)
Roundtrip duration to BAAQMD boundary (hours)	0.85	
Refinery Onsite Information		
Total time for unloading 50-car train (hours)	12	RDEIR, p. 2-22
Switching number of locomotives/50-car train	2	RDEIR, p. 4 ("UPRR would leave its locomotives attached to each 25 tank car train.")
Switching time per engine unloading (hours)	2	DEIR, Appx. E.3, Att. B-4 calculated as: (total time for unloading 50-car train) - (switching number of locomotives) x (switching time per locomotive unloading)
Idling time per engine unloading (hr)	10	
Switching load factor	0.206	SMR FEIR, Appx. B.1
Idling fuel use, gal/hr	3.32	SMR FEIR, Appx. B.1
Conversion Factor (bhp-hr/gal)		
Large line haul	20.8	EPA-420-F-09-025, Table 3
Switching	15.2	EPA-420-F-09-025, Table 4

Locomotive activity	Emission Factor (g/gal) for Year 2014					
	CO	ROG	NOx	SOx	PM10	PM2.5
Line Haul	26.62	6.42	135.00	0.096	3.60	3.50
Switching	27.82	13.37	217.00	0.096	4.80	4.70
Locomotive activity	Emission Factor (g/bhp-hr/engine)					
	CO	ROG	NOx	SOx	PM10	PM2.5
Line Haul	1.28	0.31	6.49	0.00	0.17	0.17
Switching	1.83	0.88	14.28	0.01	0.32	0.31
Locomotive activity	Emission Factor (g/hr/engine)					
	CO	ROG	NOx	SOx	PM10	PM2.5
Idling	80	63	1064	56	27	26

Source	Daily emissions (lbs/day)					
	CO	ROG	NOx	SOx	PM10	PM2.5
Within BAAQMD						
Line haul	5.7	1.4	29.1	0.0	0.8	0.8
Switching	14.3	6.9	111.4	0.0	2.5	2.4
Idling	3.5	2.8	46.9	2.5	1.2	1.2
Onsite emissions at Refinery	17.8	9.6	158.3	2.5	3.7	3.6
Offsite emissions within BAAQMD	23.6	11.0	187.4	2.5	4.4	4.3
Total emissions within BAAQMD	41.4	20.7	345.7	5.1	8.1	7.9

Source	Annual Emissions (tons/year)					
	CO	ROG	NOx	SOx	PM10	PM2.5
Within BAAQMD						
Line haul	1.05	0.25	5.32	0.00	0.14	0.14
Switching	2.61	1.25	20.33	0.01	0.45	0.44
Idling	0.64	0.51	8.55	0.45	0.22	0.21
Onsite emissions at Refinery	3.25	1.76	28.89	0.46	0.67	0.65
Offsite emissions within BAAQMD	4.30	2.01	34.20	0.46	0.81	0.79
Total emissions within BAAQMD	7.55	3.77	63.09	0.92	1.48	1.44



ATTORNEYS AT LAW

18101 Von Karman Avenue
Suite 1800
Irvine, CA 92612
T 949.833.7800
F 949.833.7878

John J. Flynn III
D 949.477.7634
jflynn@nossaman.com

Refer To File #: 290396-0017

February 1, 2016

Bradley R. Hogin, Esq.
Woodruff, Spradlin & Smart
555 Anton Blvd., Suite 1200
Costa Mesa, CA 92626-7670

Re: Comment on Risk Values presented in Appendix E.6 of the RDEIR, Valero Benicia Crude by Rail Project (SCH #2013052074); Use Permit Application 12PLN-00063

Dear Mr. Hogin:

This letter provides updates to risk values presented in Appendix E.6 of the RDEIR (memo date 15 June 2015), upon review related to Comment response J6-9 in the FEIR.

The commenter questioned the risk reported for the maximum exposed individual worker (MEIW) and referred to a dispersion factor at a location for the MEIW in the modeling files referenced by the RDEIR. The MEIW location was verified to have been incorrectly reported in the RDEIR modeling files, due to a shift of coordinates in the basemap used to plot the receptors for the results reported in the RDEIR, Appendix E.6. That MEIW in the RDEIR modeling files is not located at a commercial building where a worker would be present, but rather in the landscaping near a driveway of a commercial property. It is not appropriate to report risk values for a worker receptor at a location where a worker would not be present on an annual basis. The original modeling for the 2014 DEIR used the basemap that is included in the file set with this memo. This basemap shows the correct placement of sources relative to the aerial photograph. In this basemap, the MEIW is located at receptor UTM 576,044E, 4,214,245N, which coincides with a commercial building. Note that the basemap is in the NAD27 Zone 10 projection.

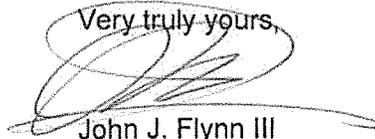
The modeling results affected by the basemap shift are those in Table 1 of the RDEIR, Appendix E.6 memorandum dated 15 June 2015. A revision to Table 1 is presented as an attachment to this letter with values in bold italics that are updated from the 15 June 2015 memorandum. Only the MEIW risk, MEIW Chronic Hazard Index, and the MEIW PM2.5 concentration values of Table 1 were slightly affected. There was no effect on the risk modeling results for the MEIR, MSR, or uprill locations.

The updated health risk calculations using accurate basemap coordinates are shown as an attachment to this letter. Figure 1 shows the location of the MEIW. Table 1 modeling results will be provided in a separate file.

Bradley R. Hugin, Esq.
February 1, 2016
Page 2

Thank you very much for the opportunity to provide this clarification.

Very truly yours,

A handwritten signature in black ink, appearing to read "John J. Flynn III", written over the typed name below.

John J. Flynn III
of Nossaman LLP

JJF:rrg

Attachment

Table 1 Maximum Cancer and Non-Cancer Risk

Type of Estimated Health Impact	Cancer Risk per million (Receptor Location)	Chronic Hazard Index (Receptor Location)	Acute Hazard Index (Receptor Location)	PM _{2.5} Annual Concentration (µg/m ³) (Receptor Location)
Maximum Exposed Residential (MEIR)	4.0 Worst case risk at 90 feet northwest of train tracks in Fairfield (585145E, 4234384N)	0.004 Worst case risk at 90 feet northwest of train tracks in Fairfield (585145E, 4234384N)	0.0024 Near E. 5 th Street, Benicia (575444E, 4212595N)	0.004 Worst case risk at 90 feet northwest of train tracks in Fairfield (585145E, 4234384N)
Maximum Exposed Individual Worker (MEIW)	7.4 7.6 (576044E, 4214245N)	0.014 0.017 (576044E, 4214245N)	0.048 (576144E, 4213045N)	0.075 0.077 (576044E, 4214245N)
Maximum Sensitive Receptor (MSR)	0.25 Day-Care Center (574594E, 4212895N)	0.0003 Elementary School (574900E, 4212500N)	0.001 Elementary School (574900E, 4212500N)	0.001 Elementary School (574900E, 4212500N)

Attachment 1

Updates to Health Risk Calculations

Attachment 2

Figure 1

UTM Coordinates - North (meters)

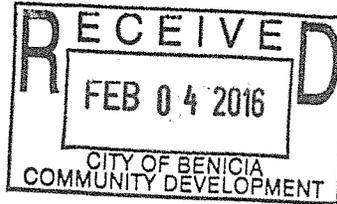
4,214,500



576,000

UTM Coordinates - East (meters)

Figure 1
MEIW Locations
Valero - Crude by Rail Project
Benicia, California



ATTORNEYS AT LAW

18101 Von Karman Avenue
Suite 1800
Irvine, CA 92612
T 949.833.7800
F 949.833.7878

John J. Flynn III
D 949.477.7634
jflynn@nossaman.com

Refer To File #: 290396-0017

February 4, 2016

Don Dean, Chair, and Members of the Planning Commission
City of Benicia
250 East L Street
Benicia, CA 94510

Re: Valero Letter in Support of Certification of Final Environmental Impact Report for the Valero Benicia Crude-by-Rail Project (SCH #2013052074); and Approval of Use Permit Application 12PLN-00063

Dear Chair Dean and Members of the Commission:

I am writing again on behalf of Valero Refining Company – California (“Valero”), to supplement our previous letter to you of January 25, 2016.

In our previous letter, we addressed in detail the merits of the Project, and the numerous benefits that will flow to the City, the region and the state from approval and implementation of the Project, not the least of which is a significant net decrease in greenhouse gas emissions, a benefit of extraordinary importance that is not, in our view, sufficiently acknowledged in the Staff Report. Our purpose in writing again is not merely to repeat those merits and benefits, but to highlight very succinctly a few aspects of the Staff Report to the Planning Commission.

1. The Staff-Recommended Statements of Overriding Considerations.

As discussed in the Staff Report, a statement of overriding considerations is required by the California Environmental Quality Act (“CEQA”) only where the Final Environmental Impact Report (“FEIR”) identifies significant unmitigated project-related environmental impacts. While the FEIR identifies impacts resulting from rail operations, those impacts are legally irrelevant because the regulation of rail impacts is preempted by federal law. In other words, the regulation of rail operations is committed by law to the judgment, discretion and enforcement of the federal government. That has been the law of the land for many decades. The City nevertheless undertook a review of the impacts of rail operations apparently in an excess of caution, but the Staff has correctly acknowledged that the City has no legal authority to impose mitigation measures or conditions of approval that are intended to mitigate for any impacts of rail operations. The *only* “significant impacts” disclosed by the FEIR are related to rail operations. Because of federal preemption, such impacts are legally irrelevant. Therefore, it is not necessary to adopt a statement of overriding considerations for rail-related impacts. Further, even if there were a lack of such overriding considerations, because of federal preemption, Valero's use permit application may not be denied on that basis. Nevertheless, you

may, in an abundance of caution, adopt a statement of overriding considerations, and the Staff has provided to you two such statements. However, in addition to those overriding considerations that have been provided to you by Staff, the law of federal preemption itself provides an overriding consideration: Our national system of federal rail regulation was established many decades ago, and for the positive and overriding purpose of providing a system that would ensure the seamless movement of our citizens and goods around the country. That fact by itself, as stated, provides an overriding consideration that should be listed among those in both statements of overriding considerations presented by the Staff in their report, a principle that appears to be at least impliedly acknowledged in both statements. (Exhibits A1 and A2 to the Staff Report.)

A great deal of attention has been paid to impacts of uprail operations, despite federal preemption. As we have stated previously, the preemption extends to rail operations "on-site," that is, rail operations taking place on Valero's property related to unloading and movement of rail cars. (*City of Alexandria v. Norfolk S. Ry. Co.* (2010) 608 F.3d 150; *Boston and Maine Corp. and Springfield Term. R. R. Co. – Petition for Declaratory Order*, FD 35749, slip op. at 5 (STB served July 19, 2013) (local zoning regulation of and prohibition on rail delivery to shipper's private track preempted).)

2. The Risk Analysis Has Not Revealed Any Significant Risk of Accident-Related Hazards.

As already stated, rail operations are irrelevant to CEQA review. Nevertheless, the City commissioned a risk analysis prepared by Dr. Christopher Barkan ("Barkan Report"). It is essential in connection with the Barkan Report to note a fundamental point of law about environmental review undertaken pursuant to CEQA: Only indirect effects that are reasonably foreseeable lie within the scope of CEQA review. (CEQA Guidelines, § 15358, subd. (a)(2).) Given the exceedingly low level of probability of an accident, as established by the Barkan Report itself, such an occurrence cannot fairly or reasonably be termed "reasonably foreseeable," and therefore cannot lawfully be considered as a significant impact. So, in addition to the fact that rail operations are committed exclusively to the judgment and care of the federal government, preempting state and local regulation, there is no substantial evidence in the record to support the conclusion that the risk of an accident is reasonably foreseeable, and therefore a proper subject of CEQA review.

3. Valero's Crude by Rail ("CBR") Project Cannot Be Legitimately Compared to the Phillips 66 Project Now Pending Before the County of San Luis Obispo.

It seems highly likely that some of the project opponents will compare the Valero CBR project with the Phillips 66 project now pending before the County of San Luis Obispo, for which the County Staff has recommended denial of the project application. The comparison, however, simply does not hold water: The County of San Luis Obispo staff report for the County's Planning Commission hearing on Phillips 66's application identifies **13** different **non-rail** "significant impacts." The Staff Report for the Valero CBR Project identifies **no** non-rail significant impacts. Valero's project complies, as demonstrated conclusively by the Staff in its report to you, with the City's General Plan and Zoning Ordinance in every respect, a dramatic contrast with the Phillips 66 project as analyzed by the County Staff.

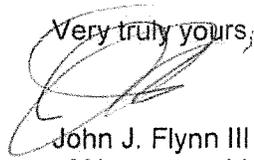
4. Conclusion.

It bears repeating here also the extraordinary time and expense devoted by the City to the CEQA review of Valero's CBR Project. No stone has been unturned, and that understates the matter significantly. Neither the City nor any other government agency can make decisions on fears alone. If it were otherwise, every community desiring to promote the advancement and well-being of the community would simply be paralyzed. Instead, we have to make important decisions about how we live our lives on the basis of reason, fact and the law. Though you have been encouraged directly and indirectly, and in a number of various ways, to ignore the federal law that governs rail operations, it is a system of laws that is intended for the good of the whole nation, and which is binding on the City. The Staff Report very clearly and correctly affirms that bedrock principle.

The Project FEIR, the product of protracted, painstaking analysis, fully satisfies the requirements of CEQA, and the Project application complies in every respect with the requirements of the City's General Plan and Zoning Ordinance. When the FEIR and the Project are considered in the full light of day, the facts and the law compel certification of the FEIR and approval of Valero's application for a use permit.

Thank you again for your consideration of our correspondence, all of which of course we ask be included in the administrative record of these proceedings. We look forward to presenting our case to you the week of February 8, and to answering any questions that you might have.

Very truly yours,

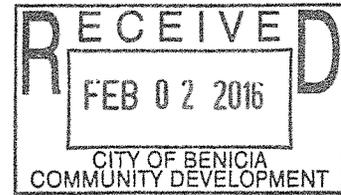


John J. Flynn III
of Nossaman LLP

JJF:rrg

Amy Million

From: Felicia Bander <feliciabander@gmail.com>
Sent: Sunday, January 31, 2016 5:27 AM
To: Amy Million
Subject: DENY THE VALERO CRUDE BY RAIL PERMIT



Dear Ms. Million :

This is your 15 Minutes of Fame; your time in the spotlight; the eyes of the world are upon you. This decision will affect more people, world-wide, than probably any other decision in your lifetime.

Please deny the VALERO Crude by Rail permit. It is much too dangerous a proposition. In 2015, there were 9 explosions or derailments of fossil fuel trains in North America. You do not want to be responsible for such a disaster happening in your community.

You want the best for your community. That is why you are considering the granting of the permit: because of the increased revenue that it will bring. But THIS PROJECT COMES WITH FAR TOO MUCH RISK and, FOR THE SAFETY AND HEALTH OF YOUR COMMUNITY, MUST BE REJECTED.

Humanity is at a tipping point. WE MUST STOP OUR INVOLVEMENT WITH FOSSIL FUELS or we will VERY SOON bring our climate patterns into never-before patterns of violent extremes where destruction of human life and property and human suffering become much more widespread than they are today.

It is now possible to power our lifestyles with the clean and INFINITE power of the sun and wind. WIND and SOLAR POWER can employ our workforce and boost our local economies.

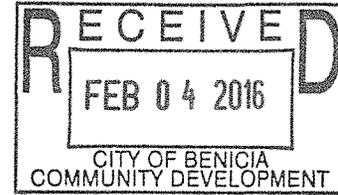
PLEASE BE THE FORWARD-THINKING LEADER THAT WE NEED YOU TO BE AND DENY THE VALERO PERMIT.

Sincerely,
Felicia Bander
Los Angeles

Sent from my iPhone

MEMORANDUM

DATE: February 4, 2016
TO: Benicia Planning Commission
REGARDING: Valero Crude by Rail Project
FROM: Bob Berman
250 West K Street
Benicia, CA 94510



MESSAGE:

Dear Commissioners

I am writing to the Benicia Planning Commission to urge you to DENY the Use Permit for the Valero Crude by Rail Project.

As you are aware, the Final EIR for the Valero project identified 11 significant and unavoidable impacts either directly or indirectly related to the proposed project. These impacts are related to air quality, biological resources, greenhouse gas emissions, plus hazards and hazardous materials. Several of these significant and unavoidable impacts will directly affect Benicia residents, individuals working in Benicia, or individuals passing through Benicia.

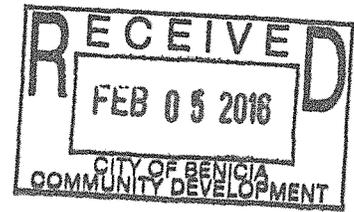
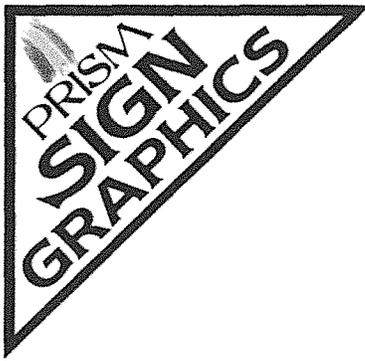
Contrary to the staff report, I believe that these impacts would result in a project inconsistent with several goals of the City's General Plan, including Goals 2.5, 4.8, and 4.9. For example, I believe that the direct and indirect impacts of the proposed project will not maintain the City's health, safety, and quality of life. Thus in conflict with Goal 2.5.

I also believe that the Planning Commission cannot make the necessary findings to support the Use Permit. As noted in the staff report, section 17.104.060 of the Benicia Municipal Code states that the City cannot approve a project that will be detrimental to the public health, safety, or welfare of persons residing or working in or adjacent to the neighborhood of such use, nor detrimental to properties or improvements in the vicinity or to the general welfare of the city. I believe that based on the documented direct and indirect impacts of the proposed project the necessary finding required by section 17.104.060 cannot be made.

I understand that City staff relies on the legal concept of "federal preemption" in stating that the City is precluded from conditioning or regulating the operation of the railroad. Furthermore, City staff contends that potential impacts resulting from operation of the railroad that are identified in the EIR, shall not bear on the City's decision making with respect to certification of the EIR or consideration of the Use Permit.

To me this type of thinking does not pass the straight face test. We are going to acknowledge significant and unavoidable impacts, including those that could pose a significant hazard to the public, but we are going to ignore them in the review of the proposed project.

I maintain that the identified significant and unavoidable impacts identified in the Final EIR are either direct or indirect impacts of the proposed Valero Crude by Rail Project. As direct or indirect impacts of the proposed project these impacts need to be taken into consideration when the Planning Commission considers consistency with the City's General Plan or making the necessary findings for the issuance of a Use Permit. When taken into account the Planning Commission has only one option - deny the Use Permit.



Oct 29, 2015

Dear Ms Million:

I sincerely urge Benicia's Planning Commission and the City Council to reject Valero's environmentally irresponsible and potentially catastrophic proposal.

I would also like to thank Valero for their continued support of the arts in Benicia's community and suggest the company become a leader in exploring a shift towards sustainable energy.

The argument *for* these dangerous trains is to 'create jobs'. Brilliant young scientists are being hired in Europe. Because of progressive legislation, that is where there are opportunities to design, innovate and build green energy systems. If Valero were to think long term and lead this shift in the US, their example would gain respect and acclaim worldwide. Many more prestigious jobs would be created and the risk to be on the environmental disaster list with BP and Exxon would disappear.

Sincerely,

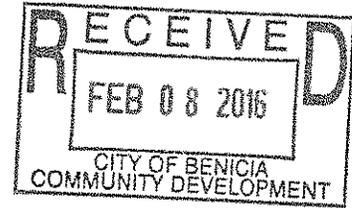
A handwritten signature in black ink that reads "Mernie". The signature is written in a cursive, flowing style.

Mernie Buchanan

In business in downtown Benicia since 1987

Amy Million

From: Janette Wolf <janette.wolf@sbcglobal.net>
Sent: Sunday, February 07, 2016 7:10 PM
To: Amy Million
Subject: Revised Draft EIR - Crude by Rail



Dear Ms. Million,

Because I am unable to attend the upcoming meetings about Valero's proposed crude by rail project, I wanted to leave you a written comment.

I strongly object to Valero's beginning a crude by rail delivery system in Benicia, for the following reasons.

1. According to **Table ES-1**, the "*No Project Alternative*" is most preferred in eight out of eleven possible environmental impacts. This alone is significant enough to suggest that Valero should not be allowed to move forward with the project.
2. According to **section 2.1.7**, there are still major areas of controversy that need to be resolved, including, "*The geographic area of study considered for impact analysis of the Project and potential indirect impacts of the Project.... Railroad hazardous material operational safety and tank car specification information.... [and] Cumulative impacts of the Project and other similar refinery or oil terminal projects within the State of California.*"
3. **Table ES-2** further shows that the impact to the following areas, even taking mitigation measures into account, is "Significant and Unavoidable". "*The Project could conflict with implementation of applicable air quality plans.... Operation of the Project could contribute to an existing or projected air quality violation uprail from the Roseville Yard.... The Project could result in cumulatively considerable net increases in ozone precursor emissions in uprail air districts.... The Project could have a substantial adverse effect on candidate, sensitive or special-status wildlife species or migratory birds, including injury or mortality resulting from collisions with trains along the North American freight rail lines as a result of increased frequency (high traffic volumes) of railcars.... The Project would generate direct and indirect GHG emissions.... The Project would conflict with Executive Order S-3-05.... The Project could pose significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.... Train derailments and unloading accidents that lead to hazardous materials spills, fires, and explosions could result in substantial adverse secondary effects, including to Biological Resources, Cultural Resources, Geology and Soils, and Hydrology and Water Quality.... [and] Operation of the Project could expose people or structures to significant risk, injury, or loss from wildland fires.*" These are all very serious concerns which, I think, override the areas where impact is predicted to be "Less than Significant."
4. Nine air districts will be impacted, according to **Impact 4.1-5**, and there would be a "*net increase of air pollutant emissions within the air districts along the three routes.*" According to **Table 4.1-12**, the emissions of nitrous oxide would exceed the thresh hold in all nine air districts.

5. Trains generate more emissions than marine vessels, according to **Table 4.1-15**, and trains' net emissions vary based on the crude oil source (**Table 4.1-16**), so we don't really know the total air impacts of this project.

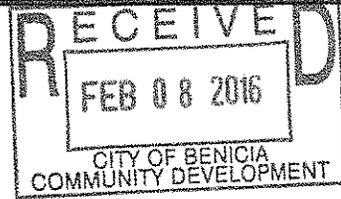
In this letter, I've only indicated negative impacts to air quality. In addition, there will be impacts to biological resources, cultural resources, geology and soils, and hydrology and water quality (shown by the fact that the most preferred option in these areas, according to **Table ES-1**, is to not move forward with the project.

I love our community, and love our state. Imagine if our descendants 100 years from now could have an environment that is beautiful, clean, and livable. Saying "No" to Valero's proposed project is one step in the right direction.

Thank you,
~Janette Wolf
510 Grant Court
Benicia

Amy Million

From: Kathy Kerridge <kkerridge@sbcglobal.net>
Sent: Saturday, February 06, 2016 9:56 AM
To: Amy Million
Subject: Comment on Crude by Rail



Please forward this comment to the commissioners, since I don't believe I will be able to attend the hearings.

Dear Commissioners,

I urge you not to certify the EIR. It leaves to many questions unanswered. I urge you to deny the project.

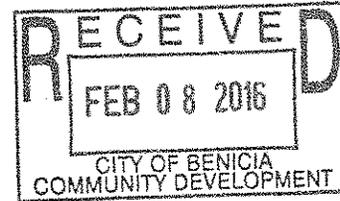
All religions around the world have one fundamental principle. Do unto others as you would have them do unto you. If you would answer no to any of the following questions then you must not approve this project.

1. Would we want these trains running down the center of 1st. Street? If the answer is no than we should not ask Davis or Sacramento or any other uprail communities to suffer because of our greed.
2. Would we want the redwood forests to be strip mined? If the answer is no then we should not contribute to the destruction of the forest in Alberta, where an area as big as Florida is being stripped mined for tar sands that will be shipped here.
3. Would we want our water supply tainted by fracking or by a spill from a oil train, as has happened in other communities? If the answer is no then we should not contribute to the environmental destruction that will be visited on North Dakota as a result of fracking, or the risk of water pollution in any of the hundreds of waterways that will be traversed by these rail cars.

Kathy Kerridge

Amy Million

From: Allen Kaplan <alkap@sbcglobal.net>
Sent: Saturday, February 06, 2016 10:03 AM
To: Amy Million
Subject: Valero CBR



Forget about CBE which might possibly have us burning wood chips or maybe just have us turn the lights off.
Forget about light crude versus heavy crude.

But do not forget about rail shipment safety which cannot be assured to any reasonable degree. I was a CBR supporter until the West Virginia derailment year or two ago. That was not the first and will not be the last.

Allen Kaplan, Benicia resident.

Amy Million

From: Craig Ritts <craigterryritts@gmail.com>
Sent: Monday, February 08, 2016 12:26 PM
To: Amy Million
Subject: To the Planning Commission: my view of the Final EIR for Valero's Crude by Rail Project

To the Planning Commission:

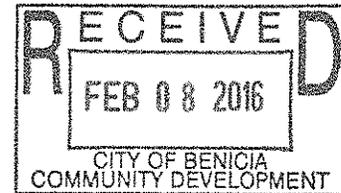
The Final EIR does not address adequately the extreme dangers to the Citizens of Benicia and those up rail from Benicia that are possible

with Valero's Crude by Rail Project.

These dangers of train derailment should be stressed: fire, explosions, loss of human life, and damage to property.

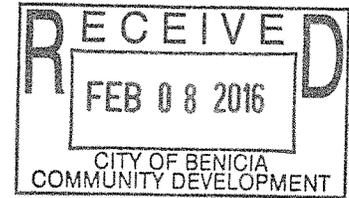
As a Benicia citizen, I respectfully ask the Benicia Planning Commission to reject the permit for Valero's Crude by Rail Project.

Thank you,
Theresa Ritts
Craig Ritts
2086 Casa Grande St., Benicia



Amy Million

From: Nancy Holdridge <yellowkayak3@sbcglobal.net>
Sent: Monday, February 08, 2016 2:23 PM
To: Amy Million
Subject: FEIR



Dear Amy Million,

I am writing as a concerned citizen of Benicia and from my experience as a Public Health Nurse, having cared for many people who suffered the consequences of a sick environment. I urge you to vote NO regarding the certification of Benicia's Final Environmental Impact Report and NO to the approval of the Conditional Use Permit for Valero's Crude by Rail Project.

My concern is not only for Benicia but also for the people and cities all along the rail route.

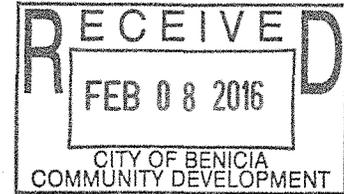
Thank you for your consideration.

Sincerely,

Nancy Holdridge, RN, PHN
106 W. Seaview Drive
Benicia, CA

Amy Million

From: Dana Stokes <des835@sbcglobal.net>
Sent: Monday, February 08, 2016 2:45 PM
To: Amy Million
Subject: Copy of my comments re Valero Crude by Rail at 2/8 FEIR hearing



February 8, 2016
Amy Million
Principal Planner,
Benicia Community Development Department
amillion@ci.benicia.ca.us

Dear Planning Commissioners,
Thank you for listening to my commentary this evening. Here is the written version of my comments regarding the Final Environmental Impact Report and the Valero Crude-by-Rail Project.

The True Cost of Oil – Who Pays?

I wish to address the section of the staff report entitled “Significant and Unavoidable Impacts (Impacts without Mitigation Measures)” beginning on page 26. The identified impacts are summarized for informational purposes only, as the staff report summarizes in several paragraphs why under federal preemption no mitigations of any kind can be offered for any of the impacts.

We uprail communities appreciate that the report acknowledges the issues so many agencies, environmental groups, and individuals brought to your attention in the course of the CEQA study and further that they are recognized as significant impacts. Eleven is a sobering number of impacts.

In an effort to work with Benicia in its desire to bring volatile Bakken crude and perhaps in the future toxic tar sands into California by rail, a danger not previously faced by all the communities along the three northern routes the railroad is free to choose from, the same governing agencies offered possible solutions and mitigations to make the impacts more livable. The series of joint letters from the Air Quality Management Districts in particular offered staff time to help work out specific mitigation plans for a number of the impacts. All of the governmental responses countered with legal cases showing mitigation despite claims of federal preemption.

The basic issue is this: the true cost of oil must be paid somehow. If this Planning Commission certifies the FEIR and approves the Valero Project, Benicia gains financially as does Valero and the Railroad. But the environmental costs in degraded air quality, adverse effects on wildlife, additional greenhouse gas emissions, and exposure and risk to the public and public lands of hazardous materials should there be a spill, accident, explosion or fire falls on all those communities and lands uprail on a daily basis.

All routes into California traverse high risk rails where the risk of accident is greater than the statistics. Please see the Oil by Rail Safety in Californ Report 6-10-14, State of CA, Interagency Rail Safety Working Group which include an Oil by rail Risk and Response Map including high risk rails, haz mat team locations, fault lines, and more. In addition they are underlaid by earthquake faults, some probably unknown to us as the recent

Napa earthquake indicated. In the case of Lac Megantic, the two railroads involved went bankrupt immediately after the accident and left the government to cover the prohibitive expenses.

Only Benicia gets to approve the FEIR and the Project, but the entire uprail community will pay the true cost. I ask you to consider whether it is right to pass either the FEIR or the Project until at least the mitigations requested are in place. If Benicia will never have control over the railroad and its deliveries, perhaps it's a bad bargain for Benicia as well.

Thank you for thinking of your neighbors and fellow Californians in making your decisions. You have a chance to protect California and many fellow citizens.

Air Quality

- Locomotive emissions associated with the Project's transportation of crude oil by rail could conflict with implementation of applicable air quality plans [Impact 4.1-1].
- Locomotive emissions required to transport Project-related crude by rail would contribute to an existing or projected air quality violation(s), including NOx [Impact 4.1-1b].
- Locomotive emissions required to transport Project-related crude by rail could result in a cumulatively considerable net increase in criteria pollutant and ozone precursor emissions [Impact 4.1-2].
- Locomotive emissions associated with operation of the Project could contribute to an existing or projected air quality violation uprail from the Roseville Yard [Impact 4.1-5].
- Locomotive emissions associated with operation of the Project could result in cumulatively considerable net increases in ozone precursor emissions in uprail air districts [Impact 4.1-7].

Biological Resources

- The Project could have a substantial adverse effect on candidate, sensitive or special-status wildlife species or migratory birds, including injury or mortality, resulting from collisions with trains along the North American freight rail lines as a result of increased frequency (high traffic volumes) of railcars [Impact 4.2-10].

Greenhouse Gas Emissions

- Locomotive emissions associated with the Project would generate direct and indirect GHG emissions [Impact 4.6-1]. (28)
- GHG emissions resulting from the increase in locomotive emissions required to transport Project-related crude oil by rail would conflict with Executive Order S-3-05 [Impact 4.6-2].

Hazards and Hazardous Materials

- The Project could pose significant hazard to the public or the environment at points along the North American freight rail lines through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment [Impact 4.7-2]. Although the risk of such an occurrence is extremely low, the potential consequences of such an event could be extremely high.
- Train derailments and rail car unloading accidents that lead to hazardous materials spills, fires, and explosions could result in substantial adverse secondary effects, including to Biological Resources, Cultural Resources, Geology and Soils, and Hydrology and Water Quality [Impact 4.7-6]. As analyzed in the EIR, these extremely low-risk events could have extremely high consequences.
- Operation of the Project could expose people or structures to significant risk, injury, or loss from wildland fire if a train derails in a fire hazard severity zone and a resulting fire or explosion causes a wildland fire [Impact 4.7-9].