TRANSFORM

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Dear Director El-Tawansy,

Thank you for the opportunity to provide comments on the Draft Environmental Impact Report (DEIR for the Interstate 680 Northbound Express Lane Completion Project (the project). With over twenty years of transportation policy experience, Transform works to ensure that people of all incomes thrive in a world safe from climate chaos. We envision vibrant neighborhoods, transformed by excellent, sustainable mobility options and affordable housing, where those historically impacted by racist disinvestment now have power and voice.

Transform analyzed the I-680 DEIR, focusing specifically on project alternatives considered and the analysis, estimate, and mitigation of induced vehicle miles traveled (VMT). We also evaluated the air quality and greenhouse gas (GHG) assessment. This letter summarizes our analysis and focuses on four key points, which we discuss in turn:

1. That the DEIR did not consider a reasonable range of project alternatives.
2. That a flawed methodology for the transportation analysis has vastly underestimated induced VMT from the project.
3. The underestimate of induced VMT leads to underestimation of its attendant impacts, such as impacts to (a) air quality and (b) GHG emissions.
4. The VMT mitigation is inadequate.

An investment of this scale, extent, and budget (up to $463 million) offers an enormous opportunity to improve the transportation options, air quality, GHG emissions, environmental justice, and quality of life in the I-680 corridor, the surrounding area, and in the greater San Francisco Bay Area. It also poses an opportunity to create massive harms, further entrench auto-dependency, and exacerbate air quality and climate burdens, which are disproportionately borne by the most vulnerable communities. Transform encourages you to make this project a model for transportation investment that implements California's goals for climate, air quality, and environmental justice.

1. Project Purpose, Need, and Considered Alternatives

This project intends to add express lanes in the northbound direction of Interstate 680 (I-680) in Contra Costa County between postmiles (PM) 10.7 and PM 23.1. The Draft Environmental Impact Report/Environmental Assessment (DEIR) discusses the purpose and need for the project, the project setting, and four Build Alternatives, which are summarized below.

Project Purpose & Need

Section 1.3.1 of the DEIR states that the "purpose" of the proposed project is to:

- Reduce peak-period congestion and delay on northbound I-680.
- Encourage use of high occupancy vehicles (HOV) and transit service.
- Offer non-carpool eligible drivers a reliable travel time option.
- Optimize use of the existing HOV lane capacity in the I-680 corridor to better meet current and future traffic demands.
- Reduce travel time and improve travel time reliability for travelers in the corridor.

Section 1.3.2 states the "need" for the project is "to address existing transportation problems," which it describes as [emphasis in original document]:

- **Congestion** – Northbound I-680 general purpose lanes within the Project Study Limits experience substantial congestion – over 30 minutes of delay – during peak hours.
- **System Continuity** – There is a 7.5-mile gap in the existing northbound I-680 managed lane system between Livorna Road and SR-242; system continuity is lacking throughout this area, diminishing the effectiveness of the managed lane system and increasing travel time for all users.
- **Operational Improvements** – The weaving movement between Lawrence Way and Treat Boulevard creates a bottleneck on I-680 and a traffic queue as far back as Livorna Road during the afternoon peak traffic period. The situation is compounded by the gap in the managed lane system.

Section 1.3.2 continues about the "need" for the project, describing that the "northbound I-680 general-purpose lanes within the Project Study Limits experience congestion during peak periods." It states that "[s]peed and travel times throughout the corridor would continue to degrade in the future" without this project, "while the HOV lane currently has, and would continue to have, available capacity to accommodate forecasted increases in travel demand through the Project's Design Year (2047)." It further specifies that this project "is intended to shift single-occupancy vehicle (SOV) drivers choosing to pay a toll from the general-purpose lanes to the proposed express lane, thereby optimizing the use of the existing HOV lane and offering more reliable travel time options" (DEIR p. 1-6).

Project Alternatives

All of the build alternatives of the project would "include the creation of a northbound express lane (in various lengths) between Livorna Road and SR-242 (PM R11.30 to R18.87) and conversion of an existing HOV lane to an express lane north of Arthur Road (PM18.87 to R22.87)." Build Alternatives 1C, 2, and 3 propose to **expand** the highway right-of-way to build the new express lane. Build Alternative 5 proposes to **convert** an existing general-purpose lane to create the new express lane. Build Alternatives 1C and 3 would create a continuous northbound express lane within the project corridor while Build Alternatives 2 and 5 would have a 2-mile discontinuity in the express lane between South Main Street and North Main Street in Walnut Creek. The specifics of the project alternatives are summarized in an attachment to this letter.

In other words, two of the four build alternatives purport to "close the gap" in the regional express lane network, but are actually increasing highway capacity to effectively create a wholly new express lane. A third alternative, Build Alternative 2, would "reduce the gap" also by increasing highway capacity. Transform understands and supports the goal of a complete regional express lane network in the Bay Area, but these project alternatives are disingenuous in their branding. These alternatives are highway expansion, not "gap closure," and lead the Bay Area and California further from its goals for climate, air quality, equity, and environmental justice. Transform supports completing the regional express lane network by converting existing general-purpose and high-occupancy vehicle (HOV) lanes to express lanes and is disappointed that only one project alternative (Build Alternative 5) evaluates conversion of existing lanes. Further, the lead agency hamstrung the feasibility of this conversion alternative because its design does not meet the project's "need" for a continuous express lane network – it only "reduces the gap" in the express lane network. While converting existing lanes would meet the project's purpose and needs without inducing additional VMT and its attendant environmental impacts, the only alternative that considers lane conversion appears to have been designed to fail both fair evaluation and full disclosure of its benefits and impacts to the public and to decision makers. This violates the spirit of CEQA.

2. **The DIER omits reasonable project alternatives that would meet the project purpose and need and create less environmental impact.**

While the California Environmental Quality Act (CEQA) states that an "EIR need not consider every conceivable alternative to a project," it does require that EIRs consider a "range of reasonable alternatives to 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."[1] The DEIR fails to do this. The DEIR omits alternatives that could better address peak-period congestion and delay, transit use, travel time reliability, travel time reduction, and optimization of existing infrastructure – which are specifically listed as "purposes" for this project – and that would have less impact on the environment and cost less to build. Further, the DEIR considers project alternatives that explicitly fail to meet stated "need" for the project to address peak-hour congestion on northbound I-680, continuity of the managed lane system, and "operational improvements" between Lawrence Way and Treat Boulevard.

Three of the four build alternatives (Build Alternative 1C, 2, and 3) propose to expand the highway capacity to build the northbound express lane. They propose to add between 4.92 and 7.57 lane miles of new highway capacity, depending on the alternative, with the stated purposes listed above. Decades of substantial and robust evidence from a wide variety of contexts shows that expanding highway capacity does not "reduce congestion" in the long term.[2] Expanding highway capacity induces new VMT, and the new VMT causes the highway corridor to re-congest – often to pre-project levels of vehicle delay – within 5 years of opening day. The additional VMT creates rebound congestion which degrades travel time reliability, air quality, the climate, water quality, noise, traffic safety, and various other factors important for human health, the environment, and transportation quality. Therefore the alternatives that expand highway capacity do not meet the stated purpose and needs of the project and should not be considered "reasonable" alternatives in this DEIR.

The DEIR should include project alternatives that, like Build Alternative 5, converts one or more general-purpose lanes to an express lane but that, unlike Build Alternative 5, continues through the entire length of the project corridor. Such an alternative would meet all the project's stated "purposes," including the optimized use of the existing lane capacity on I-680, while inducing far less vehicle travel and thus causing less impact on the environment, air quality, and the climate. Such alternatives would also cost significantly less than the alternatives that expand the highway's lane miles and physical right-of-way.

The DEIR should also include alternatives that include pricing of all existing northbound lanes without adding new highway capacity. Congestion pricing on all existing lanes could address peak-period congestion and delay, encourage transit use, improve travel time reliability for all I-680 travelers (passenger, freight, and transit), create a continuous system of managed lanes, and address "bottlenecks" along the corridor. Such an alternative would meet the project's purposes and needs more effectively than adding new express lanes and leaving the existing

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[1] CEQA Guidelines § 15126.6(a); *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 566 (EIRs "must consider a reasonable range of alternatives to the project . . . which offer substantial environmental advantages over the project proposal").

[2] Volker & Handy. 2022. *Updating the Induced Travel Calculator*. Available here: https://escholarship.org/content/qt1hh9b9mf/qt1hh9b9mf.pdf?t=rjc9wx.

general-purpose lanes unpriced. This alternative would also cause fewer environmental impacts, vastly reduce the cost of the project, and generate revenue that could be used for mitigation of the project's impacts and for beneficial projects in the Bay Area. Indeed, Caltrans District 4 has considered all-lane tolling for a highway in the Bay Area to manage congestion and vehicle travel demand. All-lane tolling should also be an alternative for I-680.

The DEIR discusses in great length the operational improvements that are "needed" because the weaving movements between Lawrence Way and Treat Boulevard "create a bottleneck" as I-680 transects the City of Walnut Creek (DEIR Section 1.3.2). The on-ramp for Lawrence Way and off-ramp for Treat Boulevard are 0.4 miles apart. An on-ramp for Lawrence Way and an off-ramp for a truck scale facility are 0.4 miles apart, and the on-ramp for the truck scale facility is a further 0.4 miles north. The on-ramp for Bushkirk Avenue is 0.2 miles north of the truck scale facility on-ramp. Another on-ramp, for Oak Road, is 0.2 miles north of the Bushkirk Avenue on-ramp. Another off-ramp, for Contra Costa Boulevard, is another 0.25-mile north. That is, there are four on-ramps and two off-ramps within the 1.35-mile stretch between Lawrence Way and the Contra Costa Boulevard exit.

Such short distances between on- and off-ramps are well-documented for creating operational problems and reducing travel speeds on interstates and highways.[3,4] The AASHTO Green Book offers a rule of thumb for minimum spacing of ramps for optimal traffic operations, stating that there should be a minimum of 1 mile between interchanges in urban areas. The Highway Capacity Manual[5] describes the relationship between ramp density and free-flow speed on the mainline of a highway. It shows that four ramps per mile (e.g., one-mile spacing of full cloverleaf interchanges) decreases free-flow speeds by nearly 14 percent. It considers 6 ramps per mile to be a ramp density with "impractical design" as it would decrease free-flow speeds by an estimated 20 percent.

With such priority given to reducing congestion and improving operations, and what the Highway Capacity Manual considers an "impractical" density of ramps at an identified "bottleneck," the DEIR should consider project alternatives that close and/or remove ramps from the project corridor. The DEIR proposes expensive and environmentally damaging alternatives with braided ramps to address the I-680's current design flaws. Rather than entrench these flaws even further, Caltrans should use the opportunity that this project presents to solve the operational problems from their root source by closing or removing on- and off-ramps that cause weaving, degrade operations, and harm safety and operations of local streets onto which they dump freeway-speed vehicle traffic.

3. **The transportation impact analysis is flawed, contradicts empirical evidence, and likely underestimates VMT impacts.**

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[3] American Association of State Highway and Transportation Officials (AASHTO). 2018. *Policy on Geometric Design of Streets and Highways (Green Book).* https://aashtojournal.transportation.org/aashto-releases-7th-edition-of-its-highway-street-design-green-book

[4] Transportation Research Board. 2022. *Highway Capacity Manual*. https://nap.nationalacademies.org/catalog/26432/highway-capacity-manual-7th-edition-a-guide-for-multimodal-mobility

[5] Transportation Research Board. 2010. *Highway Capacity Manual. https://www.trb.org/Main/Blurbs/164718.aspx*

The state guidance for analyzing transportation impacts – including Caltrans' *Transportation Analysis Framework (TAF),*[6] Caltrans' *Transportation Analysis under CEQA* (TAC),[7] and a 2021 memorandum "Changes to National Center for Transportation (NCST) Tool for VMT Analysis"[8] – includes unambiguous decision trees and matrices for selecting an approach for estimating the induced VMT impacts of highway capacity expansion projects. The TAF recommends using an elasticity-based approach, such as the National Center for Sustainable Transportation (NCST) Induced Travel Calculator, or a travel demand model if the NCST Calculator is not applicable and the travel demand model meets certain criteria. And while the first edition of the TAF (2020) stated that the NCST Induced Travel Calculator could not be applied to new priced highway lanes, a 2021 memo to Department of Transportation environmental managers states that the NCST Calculator can in fact be used to assess high-occupancy toll (HOT) lanes and is the "preferred induced travel assessment method."[9] This 2021 memo "supersedes guidance contained in the Transportation Analysis Framework (TAF) and Transportation Analysis Under CEQA (TAC)."[10] This indicates that the NCST Induced Travel Calculator is perfectly applicable to estimate the induced VMT impacts of the I-680 Northbound Express Lanes project.

However, the DEIR did not use the NCST Induced Travel calculator for the VMT impact assessment. Instead the DEIR used a combination of the NCST Calculator and the county-scale travel demand model for a "model benchmarking approach" to estimate project-induced VMT.

The TAF specifies that any "travel demand models must be checked for applicability" if they are to be used to estimate induced travel (page 16). The "Checklist for Evaluating Adequacy of Travel Demand Models for Estimating Induced Travel" in Section 4.5 of the TAF (page 21) states that an adequate travel demand model shall have:

1. A future land use specification that is sensitive to changes in the transportation network, travel times, and travel costs.
2. "Trip-making behavior" (e.g., trip generation, destination choice, route) that is sensitive to travel times and travel costs.
3. Sufficient detail and coverage of the modeled roadway and transit networks to reflect the full set of travel options, including for travel beyond the model's geographic boundary.
4. Convergence in network assignment to ensure differences are model estimates are attributable to the project scenario (rather than noise in the modeling process).
5. Calibration and validation across time and changes in travel time and travel cost "to confirm that the model is appropriately sensitive to these factors."

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[6] California Department of Transportation (Caltrans). 2020. *Transportation Analysis Framework.* Available at: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-09-10-1st-edition-taf-fnl-a11y.pdf

[7] California Department of Transportation (Caltrans). 2020. *Transportation Analysis under CEQA.* Available at: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-09-10-1st-edition-tac-fnl-a11y.pdf

[8] California Department of Transportation (Caltrans). "Changes to National Center for Transportation (NCST) Tool for VMT Analysis." 23 November 2021. Available at: https://dot.ca.gov/~//-/media/dot-media/programs/esta/documents/memo-changes-to-the-ncst-tool-for-vmt-analysis-102122-a11y.pdf

[9] Caltrans. *Changes to the National Center for Sustainable Transportation (NCST) Tool for VMT Analysis.* November 23, 2021. Available at: https://dot.ca.gov/~//-/media/dot-media/programs/esta/documents/memo-changes-to-the-ncst-tool-for-vmt-analysis-102122-a11y.pdf

[10] Ibid.

The Countywide travel demand model used in this DEIR fails to meet several of the fundamental criteria that are listed above, as described on page 10 of the Innovate 680 Travel Forecasts Report.[11] The Travel Forecasts Report compares the capabilities of the MTC [Metropolitan Transportation Commission] model and the Countywide Model, the two candidates in consideration, and specifies their respective capacities:

> *The MTC model has the capability to evaluate land use sensitivities to travel time and cost, but only if the complementary UrbanSim land use modeling system is incorporated in the process. The MTC model has sensitivity to travel times and costs included in all model components but does not have the network detail to distinguish between the Project alternatives. The Countywide Model has the appropriate network detail but does not have all required feedback processes.*

The Report states that "[n]either the MTC model nor the Countywide Model meets all the items in the TAF checklist." Regardless, the Countywide Model was "selected as the tool for the Project travel forecasts" even though it omits several components that are important for accurately estimating travel demand – e.g., it omits feedback loops necessary to capture the effect of travel times on trip generation, choice of destinations, departure times, residential and business location choices, and land use patterns. [12, 13, 14]

The DEIR uses off-model adjustments for induced travel estimation in attempts to compensate for its deficiencies. The DEIR uses the NCST Induced Travel Calculator to estimate induced VMT and pairs it with a select link analysis for an additional general-purpose lane on the I-680 corridor[15]. It uses the estimates from the NCST Induced Travel Calculator to "apply factors" to travel model estimates that increase the trip generation and trip distances that the select link analysis showed would be affected by the expansion of I-680. This is to make the VMT estimates from the travel demand model match the induced VMT estimates from the NCST Induced Travel Calculator. In essence, it uses the NCST Induced Travel Calculator to calibrate the countywide travel demand model. It then uses this calibrated model "with the induced VMT factor formulas" to assess the various alternatives for express lanes on I-680.[16]

This method, while novel, is fundamentally flawed and unnecessary. This kind of tinkering and adjustment to the travel model limits its capacity to accurately reflect travel behavior patterns and thus reduces the predictability of the model when it is applied to new scenarios, such when the DEIR applied it to the express lane alternatives. It adjusted only the trips with origins and

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[11] Innovate 680: I-680 Northbound Express Lane Completion Project Travel Forecasts Report. "Travel Demand Model Selection."

[12] Deakin. 2020. "Calculating and Forecasting Induced Vehicle Miles of Travel Resulting from Highway Projects: Findings and Recommendations from an Expert Panel." Caltrans. Available at: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-09-21-sb-743-expert-panel-rpt-fnl-a11y.pdf

[13] Milam et al. 2017. "Closing the induced vehicle travel gap between research and practice." *Transportation Research Record: Journal of the Transportation Research Board*, No. 2653, p.10-16.

[14] Marshall. 2018. "Forecasting the impossible: The status quo of estimating traffic flows with static traffic assignment and the future of dynamic traffic assignment." *Research in Transportation Business and Management.* 29, p. 85-92. Available at: https://www.sciencedirect.com/science/article/pii/S2210539517301232

[15] Innovate 680: I-680 Northbound Express Lane Completion Project Travel Forecasts Report. "Travel Demand Model Selection."

[16] DEIR, page 2.1.8-11

destinations that “benefited” from the project as demonstrated by the select link analysis, rather than capturing the full slate of induced travel effects that would occur from expanding highway capacity in the congested East Bay Area.[17] That is, it ignored other trips and areas in the metro region that travel behavior theory suggests, and evidence has shown, would respond to expanded highway capacity. And the structure of the travel model still omits key components of short- and long-run travel demand estimation, such as feedback loops to trip generation and land use changes.

If the goal of this roundabout and distortive travel modeling effort is for the transportation assessment to better reflect the induced travel effect as described and measured in the robust academic literature, from which the NCST Induced Travel Calculator draws, then the DEIR should simply use the NCST Induced Travel Calculator. Indeed, the latter approach is supported by a wealth of scientific literature.

Substantial and robust evidence shows that increasing highway capacity, including with express lanes, induces VMT.[18] Evidence shows that express lanes induced similar amounts of VMT as general purpose and HOV lanes, which makes the NCST Induced Travel Calculator completely applicable to this project.[19] The empirical literature on induced VMT from priced lanes includes evidence from additional HOT lanes on highways in the East Bay Area, which could not be more applicable for this express lane project on northbound I-680 in the East Bay.[20] Anderson et al. (2021) evaluated four capacity expansion projects in California and estimated their short-run effects on traffic flows. Two of the four capacity expansion projects were on highways in Alameda and Contra Costa Counties. The authors estimated the “implied” elasticities of induced travel and found that the “implied elasticities [were] similar across different types of lane expansions, and in all cases within the range of estimates from previous studies [of induced VMT]” (p. 65).

Volker and Handy (2022) discuss the evidence in the academic literature about the induced travel effect of expanding highway capacity with priced lanes. They state that the available academic evidence suggests that the results from Anderson et al. (2021) “might, if anything underestimate the induced travel effect” for HOV and HOT lanes and reach the conclusion that “the induced travel effect for HOV and HOT lanes can be just as large as the effect for general-purpose lanes” (p. 16). They continue, stating that:

> *Overall, the available evidence suggests that new HOV and HOT lanes might have similar induced travel effects as general purpose lanes. Furthermore, because HOT lanes allow more vehicles than HOV lanes (high-occupancy vehicles plus drivers willing to pay to use the lane), they would logically have at least as large induced travel effects as HOV lanes.*

Volker and Handy (2022) used this evidence to evaluate “whether there was enough evidence to justify using different elasticities for HOV, HOT, and general-purpose lanes in the [NCST]

[17] Travel Forecasts Report. Page 14.
[18] Duranton and Turner. 2011. “The Fundamental Law of Road Congestion: Evidence from US Cities.” *American Economic Review,* 101(6), p. 2616-52. Available at: https://www.aeaweb.org/articles?id=10.1257/aer.101.6.2616
[19] Volker and Handy. 2022. *Updating the Induced Travel Calculator.* Pages 14-17. Available at: https://escholarship.org/uc/item/1hh9b9mf
[20] Anderson et al. 2021. Estimating Induced Travel from Capacity Expansions on Congested Corridors. California Air Resources Board and California Environmental Protection Agency. Available at: https://ww2.arb.ca.gov/sites/default/files/2021-04/18RD022.pdf

Calculator" (p. 21). Because "the available empirical evidence suggests that new HOV and HOT lanes might have similar induced travel effects as general-purpose lane expansions," they conclude that "[u]sing different elasticities for HOV, HOT, and general-purpose lanes is thus not justified at present." That is, the scientific evidence justifies using the NCST Induced Travel Calculator to evaluate projects that increase highway capacity with HOT lanes, such as the I-680 Northbound Express Lanes Project.

Applying the NCST Induced Travel Calculator[21] to the project alternatives shows the magnitude to which the transportation assessment in the DEIR likely underestimates the induced travel impacts. The table below shows that the induced VMT estimates in the DEIR were up to 33 percent lower than the induced VMT estimated with the NCST Induced Travel Calculator. These results suggest the degree to which the DEIR's "model benchmarking" approach is flawed.

Induced VMT Evaluation and Comparison: NCST Calculator vs. DEIR

Alt.	New Lane Miles	NCST – VMT/Year[22]	NCST - VMT/Day[23]	DEIR -VMT/Year	DEIR - VMT/Day[24]	Difference from NCST
1C	7.57	54,700,000	151,944	36,763,920	102,122	–33%
2	4.92	35,500,000	98,611	30,383,280	84,398	–14%
3	7.57	54,700,000	151,944	37,074,600	102,985	–32%
5	0	0	0	–	–	0%

These results also show that the DEIR is vastly underestimating the VMT impacts of the project. Thus the other impact assessments that use these VMT estimates are also flawed, the impacts of the project are not adequately disclosed to decision makers and the public, and the impacts of the project are not adequately mitigated.

4. The air quality analysis relies on the flawed transportation analysis and underestimates air quality impacts of the project.

The San Francisco Bay Area Air Basin is in nonattainment with National Ambient Air Quality Standards (NAAQS) for ozone (O_3) and fine particulate matter ($PM_{2.5}$), and the project is located in an area that is in nonattainment with the California Ambient Air Quality Standards (CAAQS) for ozone (O_3), respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) under the current designations of the San Francisco Bay Area Air Basin.[25] Therefore regional- and project-level conformity requirements apply to this highway project for ozone and fine particulate matter, as described on page 2.2.6-1 of the DEIR and in the federal Clean Air Act. Passenger and freight vehicles are "the largest sources of MSATs [mobile source air toxics] affecting sensitive receptors (e.g. schools, child-care centers, hospitals, parks) in the Project area" (DEIR p. 2.2.6-10), thus an accurate estimation of induced passenger and freight vehicle travel is essential for an accurate assessment of the air quality impacts of the project.

However, the DEIR inaccurately estimates vehicle travel and "traffic volumes" and thus underestimates mobile source air toxics and the project's impacts to air quality. The DEIR states that it follows guidance from the Federal Highway Administration (FHWA) for "determining when

[21] NCST California Induced Travel Calculator. Available at: travelcalculator.ncst.ucdavis.edu
[22] Assumptions: Base year of 2019, Interstate highway (class 1 facility), San Francisco-Oakland-Hayward MSA
[23] Annualization factor to convert VMT per year to VMT per day of 360.
[24] DEIR, p. 3.2-42 and 3.2-43. Estimate includes trucks for comparison purposes.
[25] DIER, p. 2.2.6-7

and how to address MSAT impacts in the NEPA [National Environmental Protection Act] process for transportation projects," and that guidance identifies three levels of analysis required for highway projects (p. 2.2.6-16):

- Category 1: No analysis for exempt projects or projects with no potential for meaningful MSAT effects,
- Category 2: Qualitative analysis for projects with low potential MSAT effects,
- Category 3: Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Category 2 projects, expected to have "low potential MSAT effects," are projects that "improve highway … operations or movement without adding substantial new capacity, or do not create a facility that is likely to substantially increase emissions." Category 3 projects with "higher potential MSAT effects" include projects that "create new or add significant capacity to urban highways such as interstates"[26]. The assessment of projects to determine their appropriate category includes several factors: "the expected effect of the project on traffic volumes, vehicle mix, or traffic routing and the associated changes in MSAT for the Project alternatives (i.e., No-Build and Build Alternatives) based on VMT, vehicle mix, and speed."[27]

The DEIR concludes that this project "would not have a meaningful impact on traffic volumes or vehicle mix nor move major roadways closer to sensitive receptors. Therefore, it is being considered as a "Category 1" project" as it is assumed to have "no potential for meaningful MSAT effects."[28] It reaches this conclusion because the "amount of MSAT emitted is expected to be proportional to VMT".[29]

This conclusion relies on a fundamentally flawed estimate of induced VMT, which this letter shows were underestimated by as much as 33 percent. The air quality determination in this DEIR is therefore also flawed, and the air quality impacts of this project should be reevaluated with an updated analysis of induced vehicle travel.

This flawed air quality determination has severe implications for health outcomes and environmental justice. Vehicles – and particularly freight and heavy-duty vehicles with diesel engines – emit high rates of fine particulate matter and nitrous oxide, a precursor to ozone. The communities in much of this project corridor experience the worst exposure to diesel particulate matter in California, shown below by CalEnviroScreen data. The deleterious effects of diesel particulate matter on human health are well-documented in the public health literature (e.g., Krieger et al. 1998, Zhu et al. 2002a, Zhu et al. 2002b, Garshick et al. 2004, Garshick et al. 2008, Mahmood and Pham 2007). The environmental health burdens of passenger and freight vehicle emissions fall disproportionately on communities of color and low-income households, who are overrepresented in the areas immediately surrounding highways and high-volume roads (Rowangould 2013, Tian et al. 2012, Boehmer et al. 2013).

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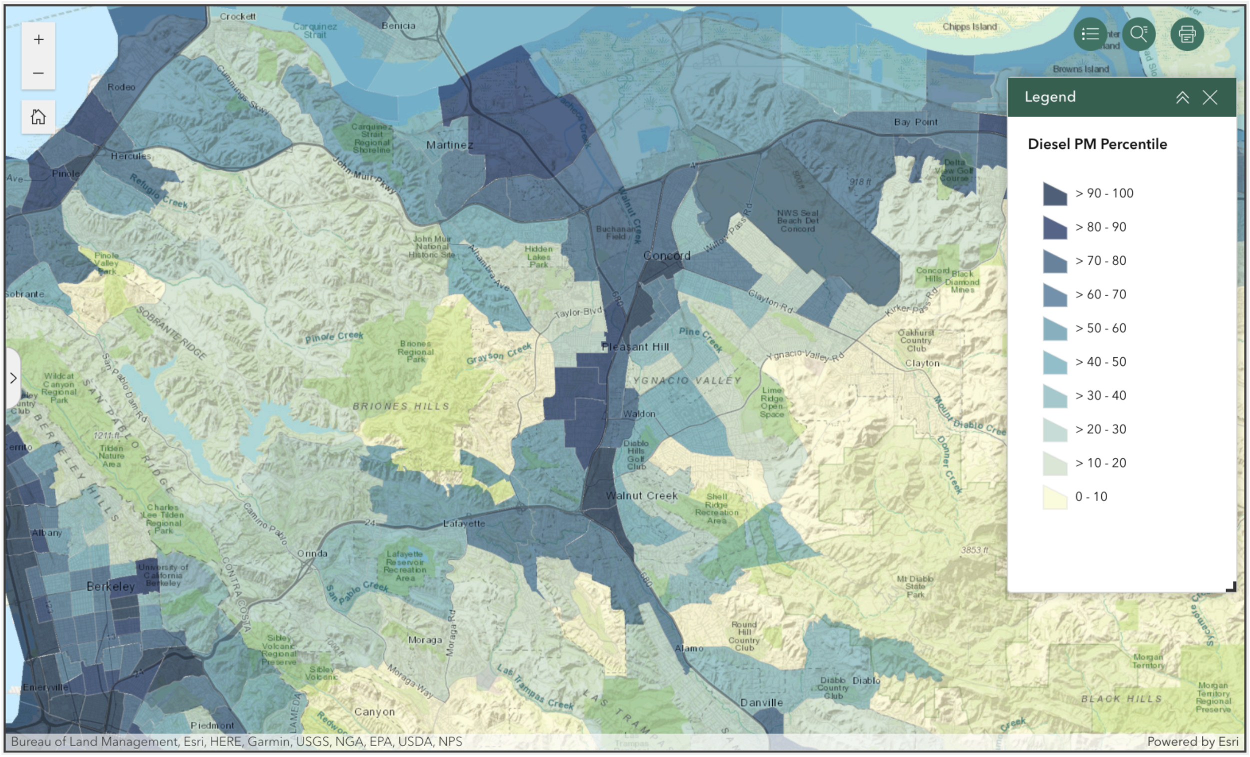
[26] DEIR, p. 2.2.6-17
[27] Ibid.
[28] Ibid.
[29] Ibid.



CalEnvironScreen Indicators Map: Diesel Particulate Matter in the I-680 Corridor

Expansion to highway capacity, as is proposed in Project Alternatives 1C, 2 and 3, has been measured to increase both passenger and freight vehicle travel. Empirical studies have found that "commercial traffic is at least as responsive to road supply as other traffic," where a "10 percent increase in interstate highways causes about a 10–20 percent increase in truck VKT [vehicle kilometers traveled]."[30] Duranton and Turner (2011) therefore estimate that "trucks account for between 19 and 29 percent of the total increase in interstate VKT [VMT]." This implies that this highway expansion project would result in an additional 10.4 million to 15.9 million truck VMT per year if Alternatives 1C or 3 were selected, and an additional 6.7 million to 10.3 million truck VMT per year if Alternative 2 was selected. This analysis is summarized in the table below.

Induced Freight VMT Evaluation: I-680 Northbound Express Lanes

Alt.	Total Induced VMT/ Year	Total Induced VMT/ Day	Induced Truck VMT/ Year	Induced Truck VMT/ Day
1C	54,700,000	151,944	10,393,000 to 15,863,000	28,869 to 44,064
2	35,500,000	98,611	6,745,000 to 10,295,000	18,736 to 22,597
3	54,700,000	151,944	10,393,000 to 15,863,000	28,869 to 44,064
5	0	0	0	0

Transform disagrees with the April 1, 2022 finding of the Bay Area Air Quality Conformity Task Force[31] and contends that an additional 15.9 million heavy-duty VMT per year is indeed a

[30] Duranton and Turner. 2011. "The Fundamental Law of Road Congestion: Evidence from US Cities." *American Economic Review,* 101(6), p. 2616-52.
[31] DEIR p. 2.2.6-15

“significant” increase in the number of diesel vehicles in this $PM_{2.5}$ nonattainment area, which makes this expanded highway project a “project of air quality concern” (POAQC) per the Clean Air Act.[32] Project Alternatives 1C, 2, and 3 should be required to undergo a $PM_{2.5}$ hot-spot analysis and should use an appropriate methodology to estimate induced VMT and induced truck VMT when doing so. Better still, the DEIR should evaluate and Caltrans should select a project alternative that converts existing highway lanes to express lanes and thus obviate the air quality impacts and environmental justice burdens from highway expansion and its induced passenger and freight VMT.

5. The GHG analysis also relies on the flawed transportation analysis.

The assessment of GHG emissions also relies on an estimate of VMT and relies on the flawed analysis of induced VMT. Alternatives 1C, 2, and 3 would increase the highway capacity of I-680, which evidence shows will induce VMT and thereby increase GHG emissions. The underestimate of induced VMT, illustrated in Table 3.4.3-1 of the DEIR, therefore underestimates the operational GHG emissions from Build Alternatives 1C, 2, and 3 of the project.

The discussion of the project’s GHG emissions and climate change impacts in Chapter 3.4 reflects the flawed VMT analysis and logic throughout the DEIR. Section 3.4.3.1 of the DEIR states that “[t]o the extent that a project enhances operational efficiency and improves travel times in high-congestion travel corridors, GHG emissions, particularly CO_2, may be reduced, provided that improved travel times do not induce additional VMT.” This statement contravenes fundamental theories of travel behavior and empirical evidence: decades of research shows that improved travel times is a key causal mechanism that induces additional VMT in the short- and long-terms.[33]

Unsurprisingly, Build Alternative 5 “performs the best overall as it would decrease GHG emissions”[34] in the design year compared to the baseline year. This is because it does not increase highway capacity, while still achieving congestion-relief benefits from tolling and the express lane network. The introduction of pricing through lane conversion can relieve congestion, create more equitable outcomes, and benefit the economy while creating the smallest impact to climate change.[35] Transform strongly recommends proceeding with an alternative that converts an existing lane to an express lane to better align with California’s climate and air quality goals.

6. The VMT mitigation is inadequate.

The DEIR proposes three transportation mitigation measures “should either Alternative 1C, 2, or 3 be selected as the preferred alternative.”[36] These mitigation measures are:

1. Implementing a new express bus service with six buses in the fleet, which would operate on I-680 between the Martinez Amtrak Station and the Dublin/Pleasanton BART station with stops at the Walnut Creek BART station and Bollinger Canyon Road.

[32] 40 CFR § 93.123(b)(1) - Procedures for determining localized CO, PM10, and PM2.5 concentrations (hot-spot analysis).
[33] Duranton and Turner, 2011; Cervero, 2003; Hymel, 2019; and others
[34] DEIR, p. 3.2-22
[35] Transform. 2019. “Pricing Roads, Advancing Equity”. Available at: https://drive.google.com/file/d/1cnuJVoDfiKa04I9PhxjktOt4Er03RMuf/view
[36] DEIR, p. 3.2-43

2. Contra Costa Transportation Authority pursuing funding for shared mobility hubs at three locations, designed to support the I-680 express bus service and existing fixed-route transit service. The hubs may include mobility hub improvements and Mobility-on-Demand (MoD)/Mobility-as-a-Service (MaaS) application and could potentially include additional mobility services, such as microtransit and/or increased eBike/eScooter operations.
3. Expanding the countywide transportation demand management (TDM) program operated by Contra Costa Transportation Authority.

The DEIR estimates the reduction in VMT from each of these mitigation measures, as well as the factors on which their implementation relies. The I-680 express bus is estimated to reduce VMT by approximately 36,800 VMT per day.[37] The three shared mobility hubs are estimated to reduce VMT between 6,600 and 15,400 VMT per day, depending on the area of "non-automobile access connection improvements" (1- or 2-mile radius around the mobility hubs).[38] Expanding the TDM program in Contra Costa County is estimated to reduce VMT between 30,153 and 47,786 VMT per day.[39] In total, the mitigation measures are "estimated to offset the Project's induced VMT."[40]

VMT Mitigation versus Induced VMT

Mitigation Measure	**Mitigated VMT (daily)**
TRAN-MM-1: I-680 Express Bus	36,800
TRAN-MM-2: Shared Mobility Hubs	6,600 to 15,400
TRAN-MM-3: TDM	30,153 to 47,786
Total Mitigated VMT	73,553 to 99,986
Induced VMT Method	**Estimated Induced VMT (daily)**
DEIR	Alt 1C: 102,122 Alt 2: 84,398 Alt 3: 102,985 Alt 5: 0
NCST Induced Travel Calculator	Alt 1C: 151,944 Alt 2: 98,611 Alt 3: 151,944 Alt 5: 0

This VMT mitigation is completely inadequate because the DEIR vastly underestimated the project's induced VMT. The table above compares the VMT mitigation (perhaps erroneously assuming full implementation) to estimated induced travel from the DEIR and from the NCST Induced Travel Calculator. With a full accounting of induced VMT, full implementation of the mitigation measures would only offset the projects induced VMT if Alternative 2 or 5 were selected as the preferred alternative. Else, only half to three-quarters of the induced VMT would be mitigated. This is before consideration of the backfilling effect that would be expected from

[37] DEIR, p. 3.2-44
[38] DEIR, p. 3.2-45
[39] DEIR, p. 3.2-47
[40] Ibid.

implementation of an I-680 express bus service, which would have limited effect on VMT mitigation.[41]

Further, the DEIR shows that even this sub-par magnitude of VMT mitigation has uncertain funding and implementation pathways. Full funding and implementation of these three mitigation measures is “currently uncertain” and it is “uncertain whether these programs would extend beyond the Project’s Design Year (2047).” Even when underestimating the induced VMT impacts, the DEIR still assumes the VMT impacts from Alternatives 1C, 2 and 3 would be “significant and unavoidable.”

The lack of certainty and inadequate magnitude of VMT mitigation further underscores Transform’s position and strong recommendation to consider only alternatives that expand the regional express lane network through conversion of existing highway capacity on I-680.

Transform supports the project's goals of congestion reduction, operational improvement and system continuity for the I-680 corridor. However, none of the proposed alternatives fully meet the goals of the project, and more viable and climate-friendly alternatives that prioritize lane conversion were not included at all. We look forward to working with Caltrans and the Contra Costa Transportation Authority to move the best possible project forward.

Thank you for considering these comments. Please reach out to Transform’s Policy Director, Zack Deutsch-Gross, if you have any questions.

Sincerely,

Zack Deutsch-Gross
Policy Director, Transform

Cc: See next page

[41] Duranton and Turner (2011) note that “[p]ublic transit serves to free up road capacity by taking drivers off the roads and putting them in buses or trains. Thus, the fundamental law implies that the provision of public transit should not affect the overall level of VKT in a city.” Their results support this hypothesis.

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Attachment 1

Alternative	**Unique Features of Alternative**
Build Alternative 1C: Close the Gap with Realignment	- Adds a northbound express lane from Livorna Road to SR-242 through widening and restriping (7.57 miles). - Converts existing northbound HOV lane to an express lane from SR-242 to north of Arthur Road (4 miles). - Realigns southbound I-680 and the southbound I-680/Westbound SR-24 connector to make room for the new NB I-680 express lane. - Estimated cost is $315 to $371 million
Build Alternative 2: Reduce the Gap Plus Braided Ramps	- Adds a northbound express lane from Livorna Road to just north of South Main Street (1.61 miles), and from just south of North Main Street to SR-242 (3.31 miles) through widening and restriping (4.92 miles total) - Converts existing northbound HOV lane to an express lane from SR-242 to north of Arthur Road (4 miles). - A 2-mile gap in the express lane would remain. - Constructs braided ramps between the North Main Street/Lawrence Way Interchange and the Treat Boulevard off-ramp. - Estimated cost is $240 to $283 million
Build Alternative 3: Close the Gap with Realignment Plus Braided Ramps	- A combination of Alternatives 1C and 2. - Adds a northbound express lane from Livorna Road to SR-242 through widening and restriping (7.57 miles). - Converts existing HOV lane from SR-242 to just north of Arthur Road to an express lane (4 miles). - Modifies on- and off-ramp configuration in the vicinity of the I-680/SR-24 Interchange by constructing braided ramps for the Treat Blvd. off-ramp and Lawrence Way on-ramp. - Estimated cost is $393 to $463 million
Build Alternative 5: Reduce the Gap with General-Purpose Lane Conversion Plus Braided Ramps	- Converts a northbound general-purpose lane to an express lane from Livorna Road to South Main Street (1.61 miles) and from North Main Street to SR-242 (3.31 miles). (4.92 miles total.) - Converts an existing northbound HOV lane to an express lane from SR-242 to north of Arthur Road (4 miles). - Constructs braided ramps between North Main Street/Lawrence Way Interchange and Treat Boulevard - Would not add any new lanes to northbound I-680. - Estimated cost is $127 to $150 million.
No-Build Alternative	The No-Build Alternative does not include any improvement on I-680.

Road, Highways, Post Miles, and Distances

Referenced Roads & Highways (south to north)	**Approx. Post Mile**	**Distance from Previous**	**Distance from Livorna Road**
Livorna Road	R11.30	–	

South Main Street	12.91	1.61	1.61
SR-24	14.03	1.12	2.73
North Main Street	15.56	1.53	4.26
SR-242	R18.87	3.31	7.57
Arthur Road	R22.87	4.00	11.57