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DETAILED COMMENTS BY WENDELL COX

On the Plan Bay Area Draft Environmental Impact Statement

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SUMMARY

The Plan Bay Area DEIR Draft Environmental Impact Report (DEIR) is **based upon flawed data** and fails to analyze important negative impacts of its proposed policies. The Proposed Plan is not required to meet the greenhouse gas emissions objectives. Further, the DEIR analysis prejudices results in favor of the Proposed Plan relative to the **No Project Alternative**. The Proposed **Plan should be withdrawn, since the No Project Alternative (essentially “doing nothing”) achieves the required greenhouse gas (GHG) emissions reduction objectives.**

- The DEIR does not include the effect of the latest **federal light vehicle fuel economy standards** as projected by the United States Department of Energy (DOE). As a result, the DEIR substantially over- estimates Bay Area greenhouse gas (GHG) emissions for 2040.
- If the DOE projections were included, as would be appropriate, the **No Project Alternative** would comfortably meet the GHG emissions objectives. This would eliminate the need for the Proposed Plan, which includes unprecedented interventions in land use and would seek to **steer people's housing preferences toward those favored by ABAG and the MTC**, at little gain in GHG emissions reduction and at potentially great cost.
- The DEIR does not apply economic metrics to its **GHG emissions reduction strategies**. This is inappropriate and may be characterized as arbitrary and capricious.
- The Proposed Plan **densification policies** (forcing most development into priority development areas [PDAs] within the current urban footprint) that would seek to improve the jobs-housing balance have generally **failed to achieve their objectives where tried**.
- Nearly all (95 percent) of the GHG emissions reductions in the Proposed Plan from 2010 that are attributed to land-use strategies are from **energy efficiency** and scoping measures, which would be achieved with or without the Proposed Plan.

- The DEIR **densification policies** are likely to materially **increase traffic congestion**, which would reduce the small expected GHG emissions reductions projected to result from the similarly small reduction in driving per capita (overall driving would increase 18 percent).
- Nearly all (93 percent) of the GHG emissions reductions in under the Proposed Plan from 2010 to 2040 that are attributed to transportation strategies are from **fuel economy improvements**, which **would occur with or without the Proposed Plan**
- The Proposed Plan strategies would strengthen the **urban containment policies** in the Bay Area that are principally responsible for having **escalated housing prices** so high relative to incomes that the Bay Area has become the **least affordable major metropolitan market in the nation**. The net effect of the proposed policies is likely to be a further deterioration in housing affordability, to the detriment of all households and especially low income households. The DEIR does not address this issue. The policies that would **force most commercial development into PDAs** could drive commercial land prices higher, undermining the optimistic domestic migration assumptions of Plan Bay Area and the business competitiveness of the Bay Area.
- The DEIR **does not consider strategies that would materially improve mobility for low income households**.

These deficiencies require withdrawal of the Proposed Plan. Moreover, the fact that the No Project Alternative meets the GHG emissions reduction objective renders the Proposed Plan unnecessary.

INTRODUCTION AND DEFINITION OF TERMS

In this document, the following terms refer to alternatives in the DEIR:

Proposed Plan: Alternative 1

No Project Alternative: Alternative 2 (this could be considered the “null” alternative)

This document outlines deficiencies in the Plan Bay Area DEIR Draft Environmental Impact Report (DEIR). The document further shows that the GHG emissions reduction objectives would be comfortably met without the policy interventions of the Proposed Plan. There is no need for the Proposed Plan, and it should be withdrawn.

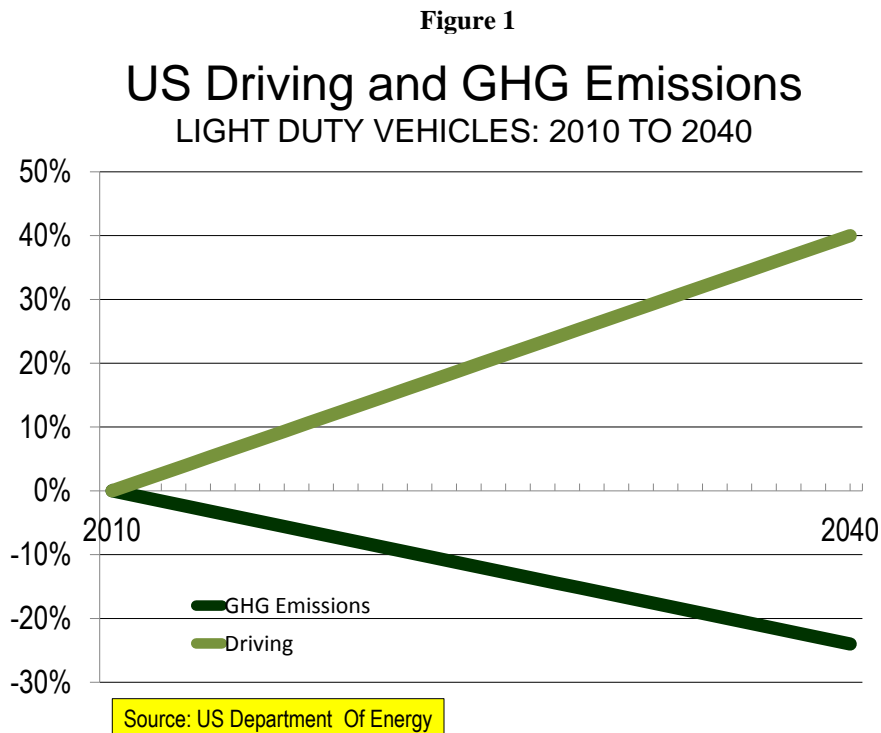
Issue #1: PLAN BAY AREA SUBSTANTIALLY UNDER-ESTMATES 2040 GREENHOUSE GAS (GHG) EMISSIONS REDUCTIONS FROM 2010.

The GHG emissions reductions contained in the Plan Bay Area DEIR appear to be substantially **underestimated**, principally because Plan Bay Area does not include the recently approved **federal fuel economy standards** in its projections.

The Plan Bay Area DEIR must project achievement of a **per capita** GHG emissions reduction meeting a 15 percent target established by the California Air Resources Board (CARB) over the period of 2005 to 2035. The Proposed Plan achieves this objective comfortably. Moreover, the **No Project Alternative** (effectively the “null” or “do nothing” alternative) **also meets the objective**. As a result, **none of the transportation or land use strategies in the Plan Bay Area DEIR are necessary**.

Light Vehicle GHG Emissions Based on Out-of-Date Projections

The Energy Information Administration of the US Department of Energy (DOE) has produced GHG emissions projections that reflect the impact of the new fuel economy standards in its *Annual Energy Outlook*.¹ Passenger vehicle GHG emissions per mile are projected to drop 46 percent between 2010 and 2040.² At the national level, this improvement is projected to reduce GHG emissions from passenger vehicles 24 percent even as driving increases 40 percent (Figure 1). The passenger vehicle fleet in the Bay Area is sufficiently similar to the national fleet to justify the use of the DOE projections in the DEIR. The omission of these DOE projections renders the GHG emissions reductions analysis in the DEIR inaccurate and **of no value**.



MTC Climate Policy Initiative GHG Emissions Skewed to Favor the Proposed Plan

The Plan Bay Area DEIR makes assumptions regarding GHG emissions reductions from the MTC Climate Policy Initiative that bias results in favor of the preferred Proposed Plan and against the No Project Alternative. The documentation referenced in the Plan Bay Area DEIR for the seven "Climate Policy Initiatives" contains virtually no justification for the GHG emissions reduction advantages of the preferred Proposed Plan over the No Project Alternative.³

For example, it is not obvious that the Climate Policy Initiative strategies would yield materially different results under the two alternatives. It is assumed that no emissions reductions would be achieved by the

¹ US Department of Energy, Energy Information Administration, *Annual Energy Outlook: 2013*, <http://www.eia.gov/forecasts/aeo/>.

² Calculated from *Annual Energy Outlook 2013*.

³ *Draft Summary of Predicted Traveler Responses*, ABAG and MTC (March 2013), http://onebayarea.org/pdf/Draft_Plan_Bay_Area/Draft_PBA_Summary_of_Predicted_Traveler_Responses.pdf

"smart driving" (such as less aggressive driving) strategy or by a proposed "feebate" to impose a fee on new car purchases that exceed a GHG emissions standard, with funds rebated to purchasers of less GHG intensive cars. This is implausible.

A proposed "Commute Benefit Ordinance," would mandate employers with more than 50 employees to choose between contributing to employee commuting expenses, providing free shuttles to work or other alternatives that have "an equal or greater benefit in terms of reducing GHG emissions." This strategy seems unlikely to yield a material difference in GHG emissions between the Proposed Plan and the No Project Alternative.

Multi-Unit Housing Common Energy Consumption GHG Emissions Excluded

The Proposed Plan seeks to substantially change the composition of housing types, with far **more housing being multi-unit and much less being single family** dwellings. The Plan Bay Area DEIR assumes that multi-unit housing produces less GHG emissions than single-family dwellings. However, this difference could be substantially overstated. The source used by the Plan Bay Area DEIR⁴ does not include emissions from shared or common energy that can frequently occur in multi-unit buildings.

Common energy is consumed, for example, by elevators, common area lighting, parking lot lighting, common air-conditioning, common heating and energy used in pumping water to upper floors. An analysis in Sydney (Australia) found that the inclusion of **common energy in higher density resulted in greater GHG emissions per capita.**⁵

High Population Projection Assumption Skews Gross GHG Emissions High

The Plan Bay Area DEIR uses an aggressive **population projection** placing the 2010 to 2040 population increase at 1.99 million. By contrast, the California Department of Finance (DOF), projects a 1.29 million increase in population between 2010 and 2040. The Plan Bay Area DEIR thus projects an approximately 54 percent greater population increase than the state. This higher projection is largely justified by an expansion in domestic migration, which seems **exceedingly optimistic** given the high housing costs and cost of living in the Bay Area. The Plan Bay Area DEIR's high population assumption would tend to *overestimate* GHG emissions in 2040 (because of the strong association between population and GHG emissions).⁶

The California Department of Finance is the principal authority for projecting population in the state. The DEIR should assume DOF official population forecasts, unless DOF revises its official county projections *throughout the state* to reflect the methodology used by Plan Bay Area.

⁴ California Energy Commission, *California Energy Saturation Study* (2009).

<http://www.energy.ca.gov/appliances/rass/>

⁵ Paul Myers. Energy Australia. & Rachel O'Leary & Rob Helstroom, Multi-unit Residential Buildings Energy & Peak Demand Study, http://203.15.106.215/information/common/pdf/alts_adds_req/energy_mu_study.pdf.

⁶ Further, even before deferring to ABAG on population projection methodology, DOF's method of projecting population increase may be skewed high. This is illustrated by recent experience. In 2007, the Department of Finance projected a Bay Area that was 2.6 percent higher than the count just three years later in the 2010 census. There were similar over projections in other parts of the state and statewide as well. The author called these population projections into question at the time. See: Wendell Cox, "60 Million: Don't Bet on It: Cost of housing will put a lid on how much state's population can grow," *The Orange County Register*, August 24, 2007.

<http://www.ocregister.com/opinion/growth-23157-county-san.html>

Revised GHG Emissions Reduction Projections

We have provided a draft revision of the Plan Bay Area DEIR projections to account for these issues. Application of these adjustments to the No Project Alternative yields a 40 percent reduction in GHG emissions (overall national emissions, as opposed to per capita emissions), from passenger vehicles in 2040 compared to 2010, and a 37 percent reduction overall, including housing (Table 1).

Additional reductions are also likely, but not estimated in Table 1 for lack of data. These include (1) appropriate allocation of GHG emissions reductions to the No Project Alternative from the MTC Climate Initiative Program; (2) allocation of GHG emissions from common energy consumption in multi-unit housing, and (3) a multi-unit house size appropriate for the larger projected market of homeowners, which would reduce the GHG emissions reduction advantage of the Proposed Plan over the No Project Alternative.

	2010	2040 No Project	2040 Plan	2040 No Project with EIA	2040 No Project with EIA & Department of Finance Poulton	Source of Base Data (DEIR)
Daily Passenger Vehicle Miles (Millions)	136.4	164.2	160.9	164.2	151.9	2.4-9
Population	7,151,000	9,137,000	9,137,000	9,137,000	8,434,000	3.1.29 & DOF/ABAG
ANNUAL GHG EMISSIONS (Metric Tons)						
Passenger Vehicle	19,383,000	14,927,000	14,631,000	12,583,000	11,641,000	3.1.29
Change from 2010: Metric Tons		(4,456,000)	(4,752,000)	(6,800,000)	(7,742,000)	
Change from 2010: Percentage		-23%	-25%	-35%	-40%	
Compared to 2040 No Plan Alternative			-2%	-16%	-22%	
Annual per Capita GHG Emissions	2.71	1.63	1.60	1.38	1.38	
Change from 2010: Metric Tons		(1.08)	(1.11)	(1.33)	(1.33)	
Change from 2010: Percentage		-40%	-41%	-49%	-49%	
Compared to 2040 No Plan Alternative			-2%	-16%	-16%	
TOTAL GHG EMISSIONS (Metric Tons)	48,846,000	42,895,000	41,344,000	39,296,000	36,355,000	3.1.29
Change from 2010: Metric Tons		(5,951,000)	(7,502,000)	(9,550,000)	(12,491,000)	
Change from 2010: Percentage		-12%	-15%	-20%	-26%	
Annual per Capita GHG Emissions	6.83	4.69	4.52	4.30	4.31	
Change from 2010: Metric Tons		(2.14)	(2.31)	(2.53)	(2.52)	
Change from 2010: Percentage		-31%	-34%	-37%	-37%	
Compared to 2040 No Plan Alternative			-4%	-8%	-8%	
ADDITIONAL GHG EMISSION REDUCTION FACTORS NOT INCLUDED IN 2040 NO PLAN ALTERNATIVE						
Equalization of MTC Climate Initiative Savings						
Allocation of shared energy consumption emissions to multi-unit housing						
Multi-unit house size						

Issue #2: PLAN BAY AREA FAILS TO APPLY AN ECONOMIC METRIC TO ITS GHG EMISSION REDUCTION STRATEGIES

Moreover the Plan Bay Area DEIR does not apply an economic metric to its strategies for GHG emissions reductions. This is a gross oversight. It is not sufficient to simply adopt policies that reduce GHG emissions without applying a cost metric. ***Policies must be chosen based on their relative cost effectiveness; otherwise there is the potential for retarding economic growth, job creation, and household affluence, while increasing poverty.***

According to the United Nations Intergovernmental Panel on Climate Change (IPCC), sufficient GHG emissions reductions can be achieved at a maximum cost of \$20 to \$50 per (metric) ton.

Policy decisions need to be made based upon their relative cost-effectiveness. The IPCC, for example, estimates that the potential for GHG reduction in the transportation sector is less than one half of its contribution to overall GHG emissions.⁷ The European Conference of Ministers of Transport acknowledged a lesser potential for transportation: "Transport and other sectors are ... expected to contribute correspondingly less to overall emissions reduction strategies."⁸

There are indications that the strategies in the Proposed Plan may be more costly than that standard, especially the housing and transportation strategies. For example, some of the proposed "Climate Policy Initiatives" would substantially exceed the IPCC maximum cost guideline per ton of emission reduction. A 2012 document⁹ indicated that four of six listed strategies exceeded the \$50 per ton maximum. The most costly strategy was more than \$800 per ton, or between 16 and 40 times the IPCC maximum.

Elements in the previous MTC 2035 Transportation Plan, estimated an annual cost of from \$200 to \$800 per ton of GHG for its **bus** improvement strategies and from \$800 to \$5800 per ton for its **rail and ferry improvements**.

In addition, the Plan Bay Area DEIR failed to apply a **cost metric to the densification** policies, to account for the likely increase in housing and commercial costs resulting from its intensified land rationing policies (urban containment policies). The impact of urban containment policies is discussed in greater detail under Issue #5.¹⁰

Failing to apply a cost metric to GHG emission strategies is inappropriate and renders the adopted strategies, in effect, arbitrary and capricious with respect to the Bay Area economy and the living standards of all households, with particular likely negative impacts on low income households.

Issue #3: PLAN BAY AREA LAND USE OUTCOMES ARE UNLIKELY TO ACHIEVE OBJECTIVES, BASED UPON EXPERIENCE ELSEWHERE

In attempting to reduce GHG emissions, the Proposed Plan seeks substantial **densification** of residences and commerce, **concentrating 77 percent of new housing and 63 percent of new jobs in priority development areas (PDAs)**, nearly all located within the present urban footprint. The Plan Bay Area DEIR suggests that this will improve the "jobs-housing" balance, a metropolitan planning concept that has largely **not achieved its objectives elsewhere**.

⁷ Transportation is a large contributor to GHG emissions, estimated at 23 percent of the world GHG emissions, 75 percent of which is from road vehicles (IPCC 2007b, 325). IPCC further estimated the potential for GHG reductions from transportation at between 8 and 10 percent, assuming a cost of less than \$100 per ton (IPCC 2007a, 11) and based upon a total CO2 equivalent GHG emission of from 16.1 gigatons to 31.1 gigatons in 2050 (IPCC 2007c, 632).

⁸ European Council of Ministers of Transport, *Transport and Environment: Review of CO2 Abatement Policies for the Transport Sector Conclusions and Recommendations*, p.3, 2006.

⁹ the Plan Bay Area DEIR, "the Plan Bay Area DEIR Preferred Land Use Scenario/Transportation Investment Strategy,"

http://apps.mtc.ca.gov/meeting_packet_documents/agenda_1875/Item_4a_Pref_Land_Use_Scenario_Transp_Invest_Strategy.pdf

¹⁰ In another report we have estimated the cost per ton of GHG emission removed at \$20,000 for a national implementation of urban containment policy. See: Wendell Cox, "Reducing Greenhouse Gases from Personal Mobility: Opportunities and Possibilities," Reason Foundation, 2011, http://reason.org/files/reducing_greenhouse_gases_mobility_development.pdf.

In justifying this strategy, the Plan Bay Area DEIR notes that households living closer to transit travel less frequently and shorter distances than those living farther away from transit. The reduction is cited as being on the order of 30 percent.

MTC's 2006 report, "Transit-Oriented Development: New Places, New Choices in the San Francisco Bay Area," supports the proposition that transit-oriented development can reduce the rate of car ownership. According to this report, almost 30 percent of households living within a half-mile of a rail or ferry station do not own cars. Households closer to transit also log fewer daily miles on the cars they do own (20 miles per day for households less than a half-mile from transit, versus 39 to 55 miles per day for households living more than one mile from transit). Furthermore, households close to transit report a higher share of daily work and non-work trips on foot or by bike than households farther from transit.

The MTC Study notes the potential role of "self-selection" in this finding, but concludes that transit oriented development (PDAs) "hold promise."¹¹

The study does recognize that "self-selection," or the tendency for individuals with a high propensity for using transit to live in TODs, may also be a factor in these travel behaviors. Still, the study concludes that: "Whether being near rail/ferry transit simply allows people who prefer to drive less than personal choice, or whether it creates a greater interest in such travel options, this research demonstrates that policies to support transit-oriented development hold promise as one important tool, among others, in addressing congestion, transit usage, non-motorized travel, and air pollution in the Bay Area.

In fact, however, the Plan Bay Area DEIR's modeling (which we criticize elsewhere) demonstrates little, if any such promise, yielding only a miniscule reduction in per capita (per household) travel of only 2 percent in 2040.¹² This illustrates the fact that small area estimates cannot be reliably used for metropolitan area projections.

Further, the DEIR forecasts an overall passenger vehicle travel volume increase of 18 percent, despite these expected improvements in the jobs-housing balance. These modest results are not surprising.

Attempts to establish localized jobs-housing balances within metropolitan areas have not achieved their objectives, having little, if any impact on reducing commute distances.

In the United Kingdom, "self sufficient" new towns (such as Milton Keynes and Stevenage) were built in the exurbs with sufficient employment for the new residents. The jobs and the residents materialized, but the shorter travel distances did not. The 2001 census shows that residents average work trip travel distances nearly double that of the new town diameters, and often work in other jurisdictions, sometimes substantial distances away. Other workers commute long distances from other parts of the metropolitan areas to job locations in the new towns.

Urbanologist Peter Hall of the London School of Economics made similar findings with respect to Stockholm's satellite communities. Despite jobs-housing balance planning intentions similar to those in

¹¹ Metropolitan Transportation Commission, *New Places New Choices: Transit Oriented Development in the San Francisco Bay Area*, 2006 http://www.mtc.ca.gov/planning/smart_growth/tod/TOD_Book.pdf.

¹² Based on the difference in the passenger vehicles GHG emissions between the Proposed Plan and the 2040 No Plan alternative in Table 3.1-29.

the United Kingdom, the overwhelming majority of people work outside the intended “self sufficient” communities in which they live.¹³

The Proposed Plan's land use strategies contribute little to GHG emissions reduction. Approximately 95 percent of the reduction in GHG emissions under the Proposed Plan are from energy efficiency improvements and other measures (referred to as "Scoping Plan Reductions in the DEIR) *that are the same under the Proposed Plan and the No Project Alternative*. The other five percent is from the land use policies of the Proposed Plan and represent the difference from the No Project Alternative. Even this small contribution is unlikely to be achieved, as is suggested above.

*Nearly all (95 percent) of the GHG emissions reductions in the Proposed Plan from 2010 that are attributed to land-use strategies are from energy efficiency and scoping measures, which would be achieved with or without the Proposed Plan.*¹⁴

Issue #4: PLAN BAY AREA LAND-USE AND TRANSPORTATION STRATEGIES ARE LIKELY TO INTENSIFY TRAFFIC CONGESTION

Despite the draconian **land use interventions that seek to minimize travel distances between homes and work**, the preferred Proposed Plan would **result in only two percent less driving volume than in the No Project Alternative. Travel by passenger vehicles would increase 18 percent**, and passenger vehicles would remain the dominant mode of travel.

At the same time, this increase in traffic would be accommodated on a **roadway system little expanded** from the present. Traffic would further be more concentrated in **PDAs**, in which population densities and employment densities would be higher, generating many more trips. Both of these factors could be expected to **increase traffic congestion. Yet this likely increase in traffic congestion is largely ignored in the Plan Bay Area DEIR.**

There is a strong relationship between higher population and employment density (such as would be produced by concentration of residences and employment in the PDAs) and greater traffic volumes. A meta-analysis of nine studies examining per capita or per household automobile use by Ewing and Cervero associates a doubling of density with a miniscule decline in driving (approximately a 0.4 percent reduction in *per capita* driving for each 10 percent increase in population density).¹⁵ This means that with a 10 percent increase in population density (people in a specific geographic area), total driving would rise nearly 10 percent, *nearly the same as the population increase*.

Our review of more than **180 metropolitan areas in Europe, North America, and Asia** indicated a strong relationship between higher density and greater traffic congestion. The same research, covering **109 metropolitan areas**, also indicated that higher urban population density was strongly associated with **longer work trip travel times**.¹⁶

¹³ Peter Hall, *Cities in Civilization* (New York, NY: Pantheon Books, year), pp. 842–887.

¹⁴ Assumes application of the US Department of Energy light vehicle GHG emissions projections to 2040.

¹⁵ Reid Ewing and Robert Cervero, "Travel and the Built Environment: A Meta-Analysis," *Journal of the American Planning Association*, May 2010, <http://www.reconnectingamerica.org/resource-center/browse-research/2010/travel-and-the-built-environment-a-meta-analysis>

¹⁶ Wendell Cox, "Urban Travel and Urban Population Density," *Journeys*, November 2012, Land Transport Authority, Singapore Government, http://ltaacademy.gov.sg/doc/JOURNEYS_Nov%202012.pdf.

All things being equal, traffic volumes increase with population densities. It can be expected, therefore, that traffic congestion will increase unless sufficient **roadway** capacity is added to accommodate higher traffic volumes. There is **no such capacity increase** in the Proposed Plan.

Greater Traffic Congestion Retards Expected GHG Emissions Reductions from Less Driving

The greater traffic congestion could virtually cancel most or all of the GHG emissions reductions that might otherwise be expected from reducing driving (in the Proposed Plan compared to the No Project Alternative). Each gallon of gasoline produces the same volume of GHG emissions. Greater fuel consumption in congested traffic can result in GHG emissions over 70 percent higher per mile than in free-flow traffic.¹⁷

*In not accounting for the **increased traffic volumes** and increased traffic congestion, Plan Bay Area over-estimates the reduction in GHG emissions under the Proposed Plan compared to the No Project Alternative.*

Greater Traffic Congestion Likely to Negatively Impact Health Along Corridors

The greater traffic congestion is likely to have **negative health impacts**. According to the American Heart Association and the US Environmental Protection Agency, air pollution increases along congested corridors. There is a strong relationship between more intense air pollution and higher population density (Figure 2).¹⁸

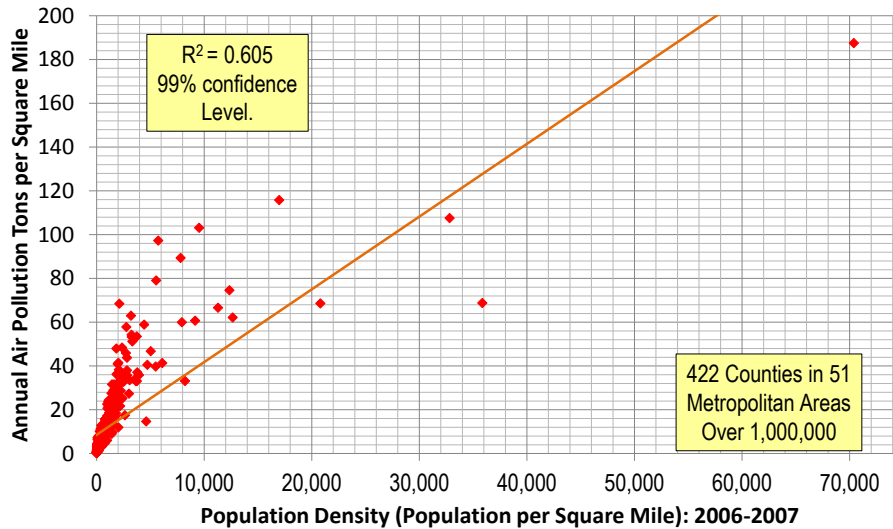
By not considering the increased traffic congestion that can be expected from densification, the Plan Bay Area DEIR fails to consider the expected negative health impacts.

¹⁷ Transport Canada, *The Cost of Urban Congestion in Canada*, 2007, <http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=9CD2D9FA6D7AE54580D380138C052FED?doi=10.1.1.134.6880&rep=rep1&type=pdf>

¹⁸ Wendell Cox, "Smart Growth (Livability), Air Pollution and Public Health," *The New Geography*, September 29, 2011, <http://www.newgeography.com/content/002462-smart-growth-livability-air-pollution-and-public-health>

Figure 2

Density & Nitrogen Oxides (NOx) Emissions ROAD VEHICLES: MAJOR METROPOLITAN COUNTIES



Source: Calculated from EPA data

Excessively Optimistic Transit Ridership Increase Assumption

Moreover, the projected **transit ridership** increases in the Proposed Plan appear to be overly optimistic. Between 2010 and 2040, the Proposed Plan assumes a 93 percent increase in transit ridership.¹⁹ Yet, over the same period, the Plan Bay Area DEIR projects that transit service will increase only 27 percent (seat miles). It is unusual for transit ridership to increase faster than the increase in transit service, simply because the transit services that are already operated are in markets with the highest demand. New services are routinely less well patronized.

This increase in transit ridership is in contrast to recent longer term trends. **Between 1985 and 2010, transit service levels were increased 46 percent in the Bay Area.²⁰ However, ridership²¹ declined** slightly between 1983 and 2010. The Proposed Plan ridership and service projections indicate a 3.45 ratio of new ridership to new service, which is considerably higher than the minus 0.01 ratio between 1985 and 2010.

As a result of the high transit ridership projections, the Proposed Plan assumes a reduction of demand for automobile travel. This biases the Plan Bay Area DEIR's Proposed Plan over the No Project Alternative.

Nearly all (93 percent) of the GHG emissions reductions in under the Proposed Plan from 2010 to 2040 that are attributed to transportation strategies are from fuel economy improvements, which would occur with or without the Proposed Plan.²²

¹⁹ All transit travel, both work trips and other trips.

²⁰ Analysis of National Transit Database, 1985 and 2010.

²¹ Measured in "boardings." A boarding occurs each time a passenger gets on a vehicle. Thus, a door to door trip using two buses counts as two boardings, even though it is only one trip (called a "linked trip").

²² Assumes application of the US Department of Energy light vehicle GHG emissions projections to 2040.

Issue 5: PLAN BAY AREA COULD EXACERBATE THE BAY AREA'S ALREADY WORST HOUSING AFFORDABILITY AMONG THE NATION'S MAJOR METROPOLITAN AREAS

The Bay Area is by far the least affordable major metropolitan housing market. In late 2012, the San Jose metropolitan area had a median multiple of 7.9 (the median multiple, which is the median house price divided by the median household income), the highest among the 51 major metropolitan areas. The San Francisco metropolitan area had a median multiple of 7.8, the second highest among the 51 major metropolitan areas. Bay Area house prices *in relation to incomes* were more than double that of other major metropolitan areas.²³

More recent data indicate a further deterioration of housing affordability. For the year ended March 31, 2013, median house prices rose more than 30% in the San Francisco and San Jose metropolitan areas. Each of these increases is above the 11% national average, which was characterized by the National Association of Realtors as the “best year-over-year performance in over seven years” (the largest price increase).²⁴

The Bay Area also has the highest cost of living of any major metropolitan market. The *C2ER Cost of Living Index* indicates that the cost of living is 48 percent higher in the Bay Area than the national average.²⁵ This means that a dollar earned by Bay Area residents has a purchasing power of only \$0.68 compared to the national average (of \$1.00). Compared to less costly areas, such as fast growing Nashville or Columbus (Ohio), the value of a Bay Area dollar drops to nearly \$0.60.

Housing is the largest expenditure of household budgets. Cost of living differences around the nation tend to be driven by differences in housing costs.²⁶ It is estimated that 80 percent of the Bay Area's higher cost of living is attributable to its higher cost of housing.²⁷

The Bay Area was not always excessively expensive. Before the **implementation of stronger land use regulation in the 1970s**, housing affordability in the Bay Area was much closer to that of other major metropolitan areas.²⁸ Since that time, **housing affordability**, as measured by the median multiple (median house price divided by median household income) has increased **2.5 times the national average in the San Francisco metropolitan area and more than three times the national average in the San Jose metropolitan area**.

Urban Containment Policies Retard Housing Affordability

²³ Wendell Cox and Hugh Pavletich, *9th Annual Demographia International Housing Affordability Survey*, p.6, 2013, <http://www.demographia.com/dhi.pdf>.

²⁴ National Association of Realtors, *Metro Area Home Price Growth Trend Continues in First Quarter*, May 9, 2013, <http://www.realtor.org/news-releases/2013/05/metro-area-home-price-growth-trend-continues-in-first-quarter>.

²⁵ Calculated from *C2ER Cost of Living Index: Annual 2012*. Indexes for Oakland and San Francisco metropolitan divisions and San Jose metropolitan area weighted by population (San Benito County included because it is included in the San Jose data. Because of San Benito County's smaller population, this is unlikely to materially impact the calculation). The *C2ER Cost of Living Index* is the most frequently consulted cost of living index, and was formerly called the *ACCRA Cost of Living Index*. <http://www.coli.org/>.

²⁶ Our analysis of the *2008 ACCRA Cost of Living Index* (predecessor to the *C2ER Cost of Living Index*) indicates that 68 percent of the difference in the cost of living is attributable to housing costs (analysis of local observations where the cost of living is 5 percent plus or minus the national average).

²⁷ Groceries are also more expensive in the Bay Area, at more than 20 percent above the national average. Calculated from *C2ER Cost of Living Index: Annual 2012*. <http://www.coli.org/>.

²⁸ William Fischel, *Regulatory Takings, Law, Economics and Politics*, Harvard University Press, 1995, p. 218-225.

There is considerable evidence that urban containment policies, which are extensive in the Bay Area, drive up the price of land for residential development, especially by rationing land. ***This is consistent with the economic principle that rationing of a good or service tends to lead to higher prices.***

When the supply of any commodity is restricted, the commodity's price rises. To the extent that land-use, building codes, housing finance, or any other type of regulation is binding, it will worsen housing affordability.²⁹

Rising house prices relative to household incomes can be an indication of an insufficient, affordable land supply.³⁰ Economist Anthony Downs of the Brookings Institution stresses the importance of a "competitive land supply" to housing affordability. The principal cost element in the loss of housing affordability from urban containment policy is higher land costs. Downs describes the process by which urban growth boundaries can drive up the price of land, which increases house prices.³¹

If a locality limits to certain sites the land that can be developed within a given period, it confers a preferred market position on those sites. . . . If the limitation is stringent enough, it may also confer a monopolistic power on the owners of those sites, permitting them to raising land prices substantially.

Even comparatively modest house price differentials can have a significant effect on a community and its inhabitants. Downs notes that a modest 10 percent increase in house prices makes it impossible for four percent of households to purchase a home, and concludes that such an effect is "socially significant."³²

Urban Containment Draws (Encourages) Investor Interest (Speculation)

Buyers will tend to be attracted to markets in which investment gains appear to be most lucrative. It is thus not surprising that urban containment is associated with a higher share of investment (speculative) buyers than buyers seeking primary residences.³³

Recent house price increases made the Bay Area more attractive to real estate investment (speculation). By encouraging a disproportionate increase in demand, while severely limiting supply, house prices are driven up by increases in investor activity. This influence was particularly important in the extraordinary house price increases during the housing bubble in California and elsewhere, according to Federal Reserve Bank of New York research.³⁴

²⁹ R. K Green and S. Malpezzi (2003), *A Primer on U.S. Housing Markets and Housing Policy*, Urban Institute Press, p. 146.

³⁰ In the Portland area, virtually across the road raw land values per acre at the urban growth boundary average 11 times higher within the boundary than outside the boundary (see: Wendell Cox, "Property Values 11 Times Higher Across Portland's Urban Growth Boundary," *The New Geography*, October 12, 2010, <http://www.newgeography.com/content/001808-property-values-11-times-higher-across-portlands-urban-growth-boundary> and Gerald Mildner, *Public Policy and Portland's Real Estate Market*, 2009, http://www.pdx.edu/sites/www.pdx.edu.realestate/files/media_assets/quarterly_report/2010_1st/1Q10-4A-Mildner-UGB-1-31-10.pdf)

³¹ Anthony Downs (1994), *New Visions for Metropolitan America*, Brookings Institution Press and Lincoln Land Institute, p. 38. [newvison.aspx](http://www.newvison.aspx), p. 38

³² Downs, p. 36.

³³ E. L. Glaeser & J. Gyourko (2008), *Rethinking Federal Housing Policy: How to Make Housing Plentiful and Affordable*, American Enterprise Institute, 2008.

³⁴ Haughwout, A., Lee, D., Tracy, J., and van der Klaauw, W., "Real Estate Investors, the Leverage Cycle, and the Housing Market Crisis," Federal Reserve Bank of New York, 2001. www.ny.frb.org/research/staff_reports/sr514.pdf.

Urban Containment Can Hobble Economic Growth

There is also research pointing to urban containment policy as inhibiting economic growth. US Federal Reserve Board economist Raven Saks found that employment growth is 20 percent less than expected in US metropolitan areas with stronger land use policies.³⁵ Another econometric analysis found an association between more restrictive land use regulation and slower economic growth in the Randstadt region (Amsterdam-Rotterdam-The Hague).³⁶

After the collapse of the housing market, the U.S. Congress commissioned a report on the causes of the financial crisis. The US Financial Crisis Inquiry Commission identified four hypotheses as possible causes for the US housing bubble. One of the hypotheses involved strong land use restrictions. The commission stated:

*Land use restrictions. In some areas, local zoning rules and other land use restrictions, as well as natural barriers to building, made it hard to build new houses to meet increased demand resulting from population growth. When supply is constrained and demand increases, prices go up.*³⁷

There is considerable additional research on the strong relationship between urban containment policy and the loss of housing affordability. For example, Paul Cheshire of the London School of Economics has concluded that *urban containment policy is incompatible with housing affordability*.³⁸ Other research also concludes that urban containment policy can hamper broader economic performance.³⁹

Impact on the Proposed Plan on Rental Costs and Workforce Housing

The housing affordability problem extends to rental housing as well. California's median monthly housing costs were 40 percent above the national average in 2011. In 2012, San Jose had the highest overall median housing costs among the nation's major metropolitan areas, at 78 percent above average.⁴⁰ San Francisco had the third highest housing cost, at 68 percent above the national average.

The extent of the rental affordability problem for "working families" in the Bay Area is detailed in a Urban Land Institute report (*Priced Out*).⁴¹

³⁵ R. E. Saks (2005), *Job Creation and Housing Construction: Constraints on Metropolitan Area Employment Growth*, Federal Reserve Board.

³⁶ Vermeulen W. and J. Van Ommeren. Does land use planning shape regional economies? A simultaneous analysis of housing supply, internal migration and local employment growth in the Netherlands (2009), <http://www.sciencedirect.com/science/article/pii/S1051137709000448>.

³⁷ US Financial Crisis Inquiry Commission (2011) *Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States*, <http://www.gpo.gov/fdsys/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf>

³⁸ Paul Cheshire, "Urban Containment, Housing Affordability, Price Stability -Irreconcilable Goals," 2009, [http://www.sjcapitalgroup.com/publications/Urban percent20containment percent20housing percent20affordability percent20and percent20price percent20stability.pdf](http://www.sjcapitalgroup.com/publications/Urban%20containment%20housing%20affordability%20and%20price%20stability.pdf).

³⁹ A compendium of research on the relationship between urban containment policy and higher house prices is available at <http://demographia.com/db-dhi-econ.pdf>

⁴⁰ Further, the high cost of housing is not limited to the San Francisco and San Jose metropolitan areas. Other Bay Area Metropolitan areas are also costly. Napa ranks 11th most costly of the 374 Metropolitan areas for which there are data. Vallejo ranks 14th and Santa Rosa ranks 17th.

⁴¹ *Priced Out: Persistence of the Workforce Housing Gap in the San Francisco Bay Area*, Urban Land Institute, Terwilliger Center for Work Force Housing, 2009. [http://www.rclco.com/archivepdf/Priced percent20Out percent20San percent20Fran percent20Report.pdf](http://www.rclco.com/archivepdf/Priced%20Out%20San%20Fran%20Report.pdf)

Unless serious changes are made, future construction will not alleviate the problem. A scarcity of appropriately zoned and located land together with relatively high development costs makes it nearly impossible for builders and developers to deliver high-quality new rental communities at price points affordable to workforce families.

Urban Containment Retards Household Affluence and Disadvantages Low Income Households

Yet, there is no shortage of land for development. For example, much urban development has taken place on agricultural land. However far more agricultural land has been taken out of production, both nationally and in California than all of the new land occupied by new urbanization (not all of which was on formerly agricultural land). An area larger than Texas and Oklahoma combined has been taken out of production since 1950 in the United States, far more land that has been required by new urbanization. In California, approximately four times as much land has been taken out of agricultural production since 1950 as has been used for new urbanization. Agricultural land reductions have not been the result of urbanization.⁴²

The entire extent of urbanization in the Bay Area is approximately 1,238 square miles. The total agricultural land in the Bay Area is approximately 3,369 square miles, three times the total land covered by urbanization.⁴³

At the same time, urban containment policies have largely been adopted without a full discussion or disclosure of the negative externalities, such as higher housing costs, as well as their impact on households, whether above or below the poverty line.

Impact of the Proposed Plan on Overall Housing Affordability and Commercial Land Prices

The Proposed Plan's housing policies seem likely to *worsen* the Bay Area's already worst in the nation housing affordability and make its commercial real estate more costly. Nearly all new housing (97 percent) would be in the existing urban footprint, with little potential for new housing on the fringe. This would preclude the use of less costly land.

The Bay Area's housing affordability is so severe that households have been locating in the San Joaquin Valley to obtain more affordable housing.⁴⁴ The Proposed Plan's land use policies could encourage intensification of this trend.

Further, by seeking to concentrate new employment locations in the PDAs, the Proposed Plan could further raise commercial land prices, which would make the cost of doing business in the Bay Area greater and lead to higher service and product prices. As noted under Issue 2, these issues should also have been subject to an economic analysis of the cost per ton of GHG emissions reduced, an omission that is virtually complete with respect to virtually all Proposed Plan strategies in the Plan Bay Area DEIR.

These potential detrimental effects on household affluence, especially on low income households, are not considered in the Plan Bay Area DEIR.

⁴² Calculated from US Census Bureau and US Department of Agriculture data.

⁴³ DEIR.

⁴⁴ *Priced Out: Persistence of the Workforce Housing Gap in the San Francisco Bay Area*, Urban Land Institute, Terwilliger Center for Work Force Housing, 2009. [http://www.rclco.com/archivepdf/Priced percent20Out percent20San percent20Fran percent20Report.pdf](http://www.rclco.com/archivepdf/Priced%20Out%20San%20Fran%20Report.pdf)

Issue #6: THE DEIR DOES NOT CONSIDER ALTERNATIVES TO IMPROVE MOBILITY FOR LOW-INCOME HOUSEHOLDS

Access to the broad array of jobs throughout the Bay Area is important to all. Plan Bay Area expresses considerable concern low income households, Plan. Yet the transportation strategies of the Proposed Plan would do virtually nothing to materially increase their access to employment.

It is generally understood that transit is used more by low income citizens than by others. Even so, the overwhelming majority of commuting by low income households is by passenger vehicle, not transit. This is because transit cannot provide sufficient mobility throughout the Bay Area. The average worker in the Bay Area can reach only 10 percent of jobs on transit in 45 minutes,⁴⁵ far longer than automobile commute times. By contrast, 72 percent of Bay Area automobile commuters have a work trip travel time of 30 minutes or less.⁴⁶ The inability to reach most employment by transit in a reasonable period of time forces many low income workers to purchase cars.

Yet, mobility throughout the labor market is important to taking advantage of better employment opportunities, especially for low income workers. This requires an automobile. As a Progressive Policy Institute report put it:⁴⁷

In most cases, the shortest distance between a poor person and a job is along a line driven in a car. Prosperity in America has always been strongly related to mobility and poor people work hard for access to opportunities. For both the rural and inner-city poor, access means being able to reach the prosperous suburbs of our booming metropolitan economies, and mobility means having the private automobile necessary for the trip. The most important response to the policy challenge of job access for those leaving welfare is the continued and expanded use of cars by low-income workers.

There are alternatives for materially improving mobility for low income households, which were not evaluated in the Plan Bay Area DEIR. For example, sharing programs have received considerable favorable publicity. Some of the strongest such programs operate in the Bay Area. Car sharing permits users personal mobility without the necessity of car ownership. These programs have a strong presence in the Bay Area. Further, user subsidies to support automobile ownership may have some potential for improving low income mobility and could yield substantial economic and social benefits. There are successful private-not-profit models around the nation. Incentives to increase working at home, the most sustainable mode of work access, may also offer some potential.

The Plan Bay Area DEIR does not consider alternatives that could materially improve mobility for low income residents.

⁴⁵ A. Tomer, A. E. Kneebone, A. Berube, & R. Puentes, "Missed Opportunity: Transit and Jobs in Metropolitan America," Brookings Institution (2011).

⁴⁶ The Bay Area combined statistical area (San Jose-San Francisco). Data from the American Community Survey 2011 (1 year).

⁴⁷ M. Waller and M. A. Hughes, "Working Far From Home: Transportation and Welfare Reform in the Ten Big States," Progressive Policy Institute, 1999. http://www.dlc.org/documents/far_from_home.pdf

CONCLUSION

The Proposed Plan should be withdrawn, since the GHG emissions reduction objectives would be met by the No Project Alternative. This course of action would also have the advantage of avoiding the negative impacts noted above.