Transportation, Land Use and Greenhouse Gases

A Bay Area Resource Guide

DRAFT FOR PUBLIC COMMENT

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Metropolitan Transportation Commission

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This DRAFT guide was produced in February, 2009 for the Metropolitan Transportation Commission. The authors, Bruce Riordan and Chris Brittle, compiled the guide from numerous sources. Additional review and comment was provided by staff at the three other regional agencies—the Bay Area Air Quality Management District (BAAQMD), the Bay Conservation and Development Commission (BCDC) and the Association of Bay Area Governments (ABAG).

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Introduction

Forty percent of the Bay Area's greenhouse gas emissions (GHGs)—nearly 42 million metric tons a year—come from our cars, trucks, buses, trains, ships and planes. (See charts on page 5). While the Bay Area has begun a serious discussion on ways to reduce transportation GHGs (primarily CO_2), we need better information to help us understand which strategies will yield the most cost-effective results. In addition, we must develop a clearer understanding of the important roles that each stakeholder—regional agencies, local governments, businesses, community groups and Bay Area residents—must play if we are to significantly reduce our transportation "carbon footprint."

This is a work-in-progress. The goal of this guide is to spark discussion and generate new ideas in the Bay Area transportation community. To this end, we welcome and seek your input, additions, corrections and questions. With your participation, we hope that this guide will become a living document and community forum for the exchange of ideas on the best strategies for reducing GHGs from Bay Area transportation. **Please send your input on this DRAFT to bruce@elmwoodconsulting.com by March 10, 2009.**

We begin by presenting basic information on 45 potential strategies. Each entry provides background on:

- Existing projects or initiatives that can serve as models for Bay Area action.
- Our suggestions on potential lead and support roles to define more clearly where each stakeholder can have the greatest impact.
- Web links to in-depth material for each strategy.
- A finding on whether implementation is technically feasible within the next five years. (It is critical to begin reducing emissions now, as we plan for longer-term changes.)

In addition, we have provided some "back of the envelope" analysis to start the important discussion on potential impacts, costs and cost-effectiveness including:

- A high-medium-low rating for Bay Area impact in 2020. This rating is based on analysis of the individual strategy, not on combinations of strategies.
- Information on costs associated with one or more elements of a strategy.
- A high-medium-low rating for cost-effectiveness.

This latter task was not easy as it relies on a series of fairly subjective assumptions. To encourage a lively debate and discussion, we have been as transparent as possible about the assumptions for each strategy or project, hoping that the reader will be moved to create their own scenarios for community review. There are many paths to reducing transportation GHGs and we look forward to including your proposals in the next version of this guide.

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Finally, here are three key observations on our process.

- First, the evaluation focuses solely on CO_2 reductions, and does not attempt to quantify other co-benefits, such as reductions in criteria pollutants, congestion relief, safety, decreased dependence on foreign oil, etc.
- Second, some strategies were not evaluated for impacts or cost effectiveness because they are very general or there was insufficient information for analysis. These should be the focus of additional research in 2009.
- Third, it is likely that some of the impacts described would be greater if strategies were packaged and implemented together.

Table A (pages 6-10) provides a short summary of the 45 strategies. Table B, at the back of this report (page 102), allows the reader to better understand the relative importance of various transportation market segments for GHG reductions.

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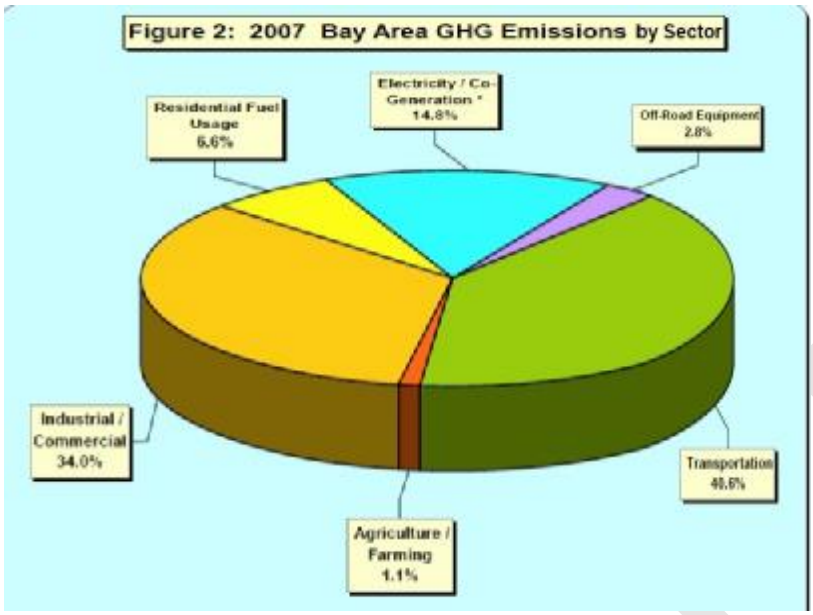
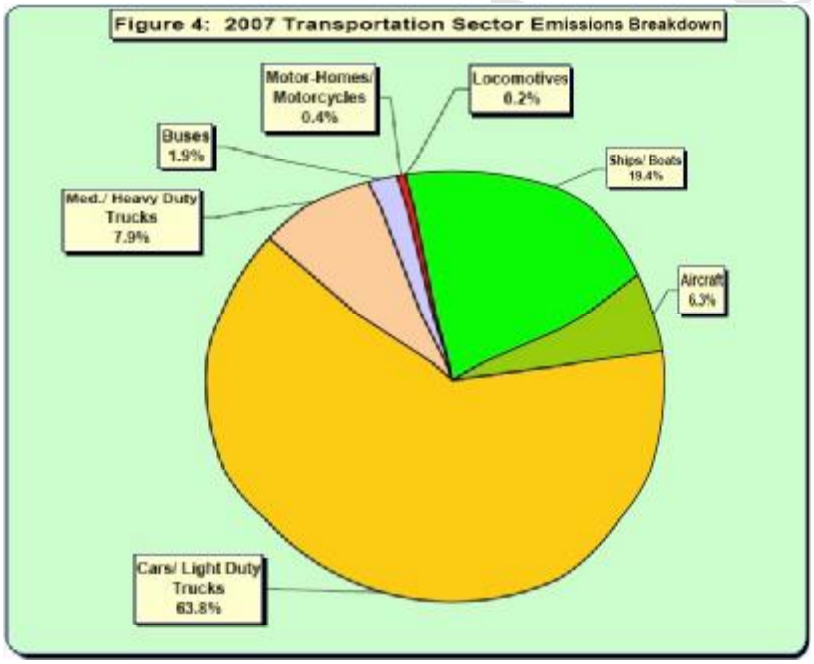


Source: Bay Area Air Quality Management District



Source: Bay Area Air Quality Management District

NOTES:
Aircraft = emissions within 9-county Bay Area
Ships/Boats = emissions within 100 miles of coast
Emissions for all other categories are for driving within 9-county Bay Area

Table A: Strategy Summary Table

Strategy/Project	Potential Lead	Already implemented somewhere?	Technically possible in 5 years?	Potential impact in 2020[1]	Cost-effectiveness[2]	Complete Info
Part I: Improve Vehicles and Fuels (Page 11)						
1. California new car standards (Pavley)	State	Yes	Yes	High	High	Page 11
2. Heavy duty new truck standards	Fed/State	Yes	Yes	Low	Unknown	Page 14
3. New car feebates	State	Yes	Yes	High	High[3]	Page 16
4. Hybrid vehicles *Specific project: Hybrid tax credits*	Fed/State/Regional agencies	Yes	Yes	High	Medium	Page 18
5. Plug in hybrids & EV infrastructure *Specific project: PHEV tax credits*	Fed/State	No	Yes	High	Medium	Page 20
6. Neighborhood electric vehicles *Specific project: NEV infrastructure*	Cities/counties	Yes	Yes	Medium	High[3]	Page 22
7. Vehicle buy-back	Regional agencies	Yes	Yes	Low	Medium	Page 24
8. Vehicle efficiency program *Specific projects: low resistance tires, tire pressure monitors, subsidized tune-ups*	Regional agencies	Yes	Yes	Low	High, High, Medium	Page 25
9. Cellulosic ethanol	Fed/State	No	No	Medium	Unknown	Page 27

[1] Impact in 2020: Ratings are for single strategy only. <u>Impacts could be significantly higher when strategies are analyzed as packages</u>. High (> 2% reduction in transportation CO2), Medium (1-2% reduction), Low (< 1% reduction)
[2] Cost-effectiveness: High (< $100 per ton of CO2 reduced), Medium ($100-$500 per ton), and Low (> $500 per ton)
[3] Qualitative analysis only

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Strategy/Project	Potential Lead	Already implemented somewhere?	Technically possible in 5 years?	Potential impact in 2020[1]	Cost-effectiveness[2]	Complete Info
10. Biodiesel	State	Yes	Yes	Low	Unknown	Page 29
11. Vehicle fleets *Specific projects: Hybrid buses*	All fleet operators	Yes	Yes	Low	Low	Page 31
Part 2: Improve Infrastructure (Page 33)						
12. Expand transit service *Specific projects: Regional Transit Expansion Program, bus route, shuttle*	Transit agencies, MTC	Yes	Yes	Varies by project	Low, Low, Medium	Page 33
13. Expand bike facilities	Cities/Counties	Yes	Yes	Low	Low	Page 36
14. Expand pedestrian facilities *Specific project: Safe Routes to Schools*	Cities/Counties	Yes	Yes	Low	Medium	Page 38
15. Expand carpooling facilities *Specific project: HOV/HOT lane network*	Regional agencies	Yes	Yes	Varies by project	Low	Page 40
16. Expand car sharing	Car share companies	Yes	Yes	Low[3]	Unknown	Page 41
17. Expand school bus services	State/Schools	Yes	Yes	Low	Low	Page 43
18. High speed rail	State	Yes	No	Unknown	Low[3]	Page 45
19. Traffic signal synchronization	Cities/Counties	Yes	Yes	Low	High	Page 46
20. Signal and roadway lighting	Caltrans, Cities/Counties	Yes	Yes	Unknown	Unknown	Page 48
21. Lower-GHG & reflective cement	Caltrans, Cities/Counties	Yes	Yes	Unknown	Unknown	Page 50

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Strategy/Project	Potential Lead	Already implemented somewhere?	Technically possible in 5 years?	Potential impact in 2020[1]	Cost-effectiveness[2]	Complete Info
22. Freeway operations *Specific project: Freeway Performance Initiative*	Caltrans	Yes	Yes	Unknown	High	Page 51
23. Freeway speed limits	State	Yes	Yes	High	High[3]	Page 53
24. Shift freight to rail	Port/ Railroads	Yes	No	Unknown	Low[3]	Page 54
25. Truck idling	State/ Cities	Yes	Yes	Unknown	Unknown	Page 56
26. Truck facility electrification	State	Yes	Yes	Low	Medium	Page 58
Part 3: Focus Growth (Page 60)						
27. FOCUS program	Regional agencies, Cities/Counties	Yes	Yes	Medium	Unknown	Page 60
28. Affordable housing	Regional agencies, Cities/Counties	Yes	Yes	Low	Unknown	Page 64
29. Indirect source review	Regional agencies	Yes	Yes	Unknown	Unknown	Page 67
30. Reform CEQA	State, Regional agencies	No	Yes	Unknown	Unknown	Page 69
31. SB 375 implementation	Regional agencies	No	No	Unknown	Unknown	Page 70

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Strategy/Project	Potential Lead	Already implemented somewhere?	Technically possible in 5 years?	Potential impact in 2020[1]	Cost-effectiveness[2]	Complete Info
Part 4: Transportation Behavior (Page 74)						
32. Fill empty seats/underused facilities *Specific projects: Pay SOVs to ride transit, subsidize vanpools and carpools, transit priority measures*	Transit agencies, Regional agencies	Yes	Yes	Low, Medium	Low, Medium, High	Page 74
33. Smart driving *Specific project: Real-time fuel economy gauge*	Regional agencies	Yes	Yes	High	High	Page 77
34. Trip linking and elimination	Regional agencies	Yes	Yes	Medium	High[3]	Page 80
35. Long-distance travel	State, regional agencies	No	Yes	Unknown	High	Page 81
36. Reduce shipping by buying local	State, regional agencies	Yes	Yes	Unknown	Unknown	Page 83
37. Telework and teleconferencing	Regional agencies	Yes	Yes	Low	High	Page 84
38. Parking pricing and management	Regional agencies, Cities/Counties	Yes	Yes	Medium	Unknown	Page 86
39. Bridge, road and area tolls	State, regional agencies	Yes	Yes	Unknown	Unknown	Page 90
40. Carbon fuel taxes	State, Regional agencies	Yes	Yes	High	Unknown	Page 92
41. Pay-as-you-drive insurance	State	Yes	Yes	Unknown	Unknown	Page 94

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Strategy/Project	Potential Lead	Already implemented somewhere?	Technically possible in 5 years?	Potential impact in 2020[1]	Cost-effectiveness[2]	Complete Info
Part 5: Other Strategies (Page 96)						
42. California carbon trading system	State	Yes	Yes	Unknown	Unknown	Page 96
43. In-house GHG reductions	Transportation agencies	Yes	Yes	Unknown	Unknown	Page 98
44. Climate adaptation	State, Regional agencies, Cities	Yes	Yes	Unknown	Unknown	Page 99
45. GHG measurement/tracking	State, Regional agencies	Yes	Yes	Unknown	Unknown	Page 101

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