



## MEMORANDUM

**To:** Land Use and Transportation Sector Multi-Sector Working  
**From:** Lauren Pederson, Michael Grant, Erika Myers, ICF International, Rich Kuzmyak, Renaissance Planning Group  
**Date:** April 9, 2015  
**Re:** Proposed Transportation and Land Use Subgroup Strategies

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The purpose of this memorandum is to present ICF's qualitative evaluation of greenhouse gas (GHG) reduction strategies developed by the Transportation and Land Use Subgroups of the Multi-Sector Working group (MSWG). This memorandum serves as one of ICF's deliverables under Task 2 of this project.

### Identification and Assessment of Land Use and Transportation Strategies

We have grouped the lists of strategies developed by the subgroups into a set of generally comprehensive strategies, presented in the tables below with a description of each. The qualitative evaluation of the strategies is in the attached file.

#### Land Use Strategy Groupings

Strategy	Measure Description (including possible Implementation Actions)
<b>L-1: Maximize urban tree canopy</b>	Measures to maintain/increase tree canopy in the region, which could occur through active preservation of existing forest/rural/open space through: <ul style="list-style-type: none"><li>• Tree conservation ordinances</li><li>• Conservation of open space</li><li>• Regional mitigation bank</li><li>• Shifting more new development into activity centers with smaller environmental footprint (through measures like L-2 and L-3 below) and thus preserving existing undeveloped lands.</li></ul>
<b>L-2: Increase proportion of new housing and jobs in activity centers</b>	Measures to encourage a higher share of new development in regional activity centers (RACs), together with associated sustainable urban design factors, such as:

	<ul style="list-style-type: none"> <li>• Build near transit (transit-oriented development) and/or enhance existing transit service levels</li> <li>• Higher densities</li> <li>• Greater mix &amp; balance of uses</li> <li>• Street network/walk friendly</li> <li>• Management of parking supply/cost</li> <li>• Greater mix of housing options RE size and affordability</li> <li>• School locations, design and access</li> </ul> <p>Recommend testing as a package of the above, in three different levels:</p> <ul style="list-style-type: none"> <li>• Constrained Long-Rangy Plan (CLRP) activity levels and networks (with assumed growth in RACs)</li> <li>• Maximum shift to RACs: assume entire 2014-2040 growth increment into RACs</li> <li>• Augmented: increase above current planned levels, rule-based targeting to centers by place type (transit service, location in major corridors)</li> </ul>
<p><b>L-3: Improve regional jobs/housing balance</b></p>	<p>Efforts to foster greater jobs/housing balance, particularly by targeting more residential opportunities to areas with high jobs/housing ratios. Key actions embodied in this strategy include</p> <ul style="list-style-type: none"> <li>• Housing affordability (especially in center city and inner suburban jurisdictions and areas near transit)</li> <li>• Live Near Your Work incentives</li> <li>• Balancing job opportunities between west and east region</li> </ul>
<p><b>L-4: Maximize walkable design in activity centers</b></p>	<p>Ensure adequate pedestrian and bicycle infrastructure and connectivity in activity centers to support walking and biking as modes, as well as access to transit. Key actions embodied in this strategy include:</p> <ul style="list-style-type: none"> <li>• Local street networks meeting block size or intersection density criteria</li> <li>• Complete streets concepts</li> <li>• Traffic calming measures.</li> <li>• On &amp; off-road bicycle networks and storage facilities</li> </ul>
<p><b>L-5: Establish adequate retail balance in activity centers</b></p>	<p>Actions embodied in this strategy include:</p> <ul style="list-style-type: none"> <li>• Higher retail/service to households or employment ratios</li> <li>• Location incentives for retail</li> <li>• Easing/changing zoning to allow broader array of retail/service options, locations</li> </ul>

<b>L-6: Focus Government employment near premium transit</b>	<p>This measure seeks to locate as much of new or relocated government employment near premium transit (Metro, commuter rail, LRT/BRT), including:</p> <ul style="list-style-type: none"> <li>• Federal agencies</li> <li>• State agencies</li> <li>• Regional, county and municipal agencies</li> </ul>
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**Transportation Strategy Groupings**

Strategy	Measure Description (including possible Implementation Actions)
<b>I. Vehicle Fuel Efficiency / Low Carbon Fuels</b>	
<b>T-1: Improve fuel economy of light-duty vehicle fleet</b>	<p>Measures to incentivize more fuel efficient passenger vehicles:</p> <ul style="list-style-type: none"> <li>• Implement a “Cash for Clunkers” program to encourage replacement of older, less fuel efficient vehicles</li> <li>• Offer incentives for consumer/private sector purchase of electric vehicles and charging equipment</li> <li>• Offer incentives for purchases of fuel-efficient vehicles (fee-bates)</li> <li>• Provide disincentives for purchases of fuel-inefficient vehicles (gas guzzler tax/registration fees)</li> <li>• Adoption of CA Low-Emission Vehicle (LEV) Phase II program</li> </ul>
<b>T-2: Increase alternative fuels in public sector fleets</b>	<p>Measures to increase the number of alternative fuel vehicles in public fleets, such as:</p> <ul style="list-style-type: none"> <li>• Encourage use of AFVs in school buses and transit bus fleets</li> <li>• Increase funding for alternative fuel buses</li> <li>• Establish shared facilities for school and transit bus fleets with alternative fuels</li> <li>• Convert transit/school bus garages to alternative fuels</li> <li>• Increase the percentage of electric vehicles in public sector fleets (light-duty and heavy duty)</li> </ul>
<b>T-3: Clean freight technologies</b>	<p>Measures to reduce emissions associated with freight:</p> <ul style="list-style-type: none"> <li>• Engine and powertrain technologies to improve fuel efficiency (e.g., hybrids, plug-in electric, and alternative fuel vehicles)</li> <li>• Vehicle technologies to improve fuel efficiency (e.g., aerodynamic devices, low rolling resistance tires, tire pressure systems, idle reduction technologies)</li> <li>• Operational strategies (e.g., routing software,</li> </ul>

	<p>engine governors, truck-stop electrification, efficient truck refrigeration units, off-peak delivery incentives)</p> <ul style="list-style-type: none"> <li>• Clean truck corridor infrastructure (e.g., overhead catenary systems, linear synchronous motors, in-road battery charging capabilities)</li> </ul>
<b>T-4: Lower emissions off-road construction vehicles</b>	Measures to increase off-road construction equipment emissions standards and use of alternative fuels
<b>T-5: Low carbon fuel standard</b>	Implement market-based program to reduce carbon intensity of on-road fuels through use of lower-carbon alternatives (e.g., natural gas, electricity, biofuels, hydrogen)
<b>II. System and Operational Efficiency</b>	
<b>T-6: Roadway bottleneck relief / targeted capacity enhancements</b>	<p>Apply cost-effective roadway improvements to reduce bottlenecks, minimize congestion, and improve safety. May include:</p> <ul style="list-style-type: none"> <li>• New roadway capacity</li> <li>• Major intersection improvements/conversion to interchanges</li> </ul>
<b>T-7: Corridor / regional operational improvements</b>	<p>Apply cost effective operational improvements to freeways and arterials/collectors, such as:</p> <ul style="list-style-type: none"> <li>• Integrated corridor management (ICM) on freeway and major arterial corridors</li> <li>• Implement ramp metering</li> <li>• Freeway operations patrols / faster incident management</li> <li>• Signal retiming</li> <li>• Roundabouts</li> <li>• Intersection efficiency improvements</li> </ul>
<b>T-8: Promote ecodriving</b>	Promote driving patterns to reduce rapid acceleration/deceleration and extended idling
<b>T-9: Off-peak freight deliveries</b>	Measures targeted to increasing the efficiency of goods movement (and corresponding traffic congestion benefits), such as efforts to increase off-peak freight deliveries to large scale businesses
<b>T-10: Lower speed limits</b>	Lower speed limits on freeways and included GHG surcharge as part of enforcement
<b>T-11: Advance adoption of connected vehicle technologies</b>	System efficiency improvements through connected vehicles, such as vehicle-to-vehicle, vehicle-to-infrastructure, and autonomous vehicles
<b>III. Reduce Growth in Vehicle Trips and Vehicle Miles Traveled (VMT)</b>	
<b>T-12: Enhance the bicycle/pedestrian environment</b>	<p>Measures designed to increase the share of bike/walk trips, such as:</p> <ul style="list-style-type: none"> <li>• Complete streets policies</li> <li>• Increased bike-sharing</li> <li>• Completion of bicycle/pedestrian enhancements</li> </ul>

<b>T-13: Enhance transit services</b>	Measures designed to increase the share of transit trips through increased/improved services, such as: <ul style="list-style-type: none"> <li>• More neighborhood circulator buses</li> <li>• Enhanced commuter bus services</li> <li>• Real-time bus scheduling information</li> <li>• Transit signal priority improvements / bus rapid transit</li> <li>• Expand Metrorail / Commuter rail</li> <li>• Bus stop improvements (benches, shelters)</li> </ul>
<b>T-14: Transit incentives</b>	Measures designed to incentivize transit use through lower fares, such as: <ul style="list-style-type: none"> <li>• Reduced price monthly transit passes</li> <li>• Free bus-rail transfers</li> <li>• Free off-peak bus service</li> </ul>
<b>T-15: Park-and-ride and HOV investments</b>	Measures designed to increase opportunities and incentives for carpooling/vanpooling, such as: <ul style="list-style-type: none"> <li>• Increasing park-and-ride lots</li> <li>• HOV restrictions/lanes along major corridors</li> </ul>
<b>T-16: Parking management</b>	Measures to reduce the availability of free parking in activity centers, such as: <ul style="list-style-type: none"> <li>• Parking impact fees</li> <li>• Parking caps</li> </ul>
<b>T-17: Travel demand management</b>	Measures designed to incentives carpooling/ridesharing, non-motorized modes, and telecommuting, such as: <ul style="list-style-type: none"> <li>• Expanding telecommuting</li> <li>• Carpool incentive programs</li> <li>• Vanpool incentive programs</li> <li>• Increased employer outreach</li> <li>• Ordinances to require employers to offer parking cash out / transit benefits</li> </ul>
<b>IV. Pricing (may reduce VMT, increase operational efficiency, and/or incentivize fuel efficient vehicles)</b>	
<b>T-18: Road pricing / congestion pricing</b>	Pricing freeway travel, such as: <ul style="list-style-type: none"> <li>• Electronic tolling of major bridges and connectors</li> <li>• Conversion to full electronic tolling</li> <li>• VMT-based vehicle fees</li> </ul>
<b>T-19: Cordon pricing</b>	Adding roadway pricing for entering major activity centers across the region (e.g., downtown Washington, Tysons Corner)
<b>T-20: Pay As You Drive insurance</b>	Encourage adoption of pay as you drive insurance options
<b>T-21: Increasing fuel taxes / Carbon tax</b>	Significant increases in motor fuels taxes or implementation of a carbon tax

Several notes are important in examining these strategies:

**State, Regional, and Local Actions, not Federal:** The strategy lists focus on actions that can be taken at the state, regional, or local levels. National policies and regulations could have the most significant impacts, but these same strategies may not be feasible or desirable to be applied at a regional level, such as:

- Higher light-duty vehicle fuel economy standards
- Higher heavy-duty vehicle fuel economy standards
- Significant increases in fuel prices/carbon tax or VMT fees

These strategies will be addressed at a high level under Task 6.

**Strategies, not Implementation Mechanisms or Processes:** The work groups identified a number of implementation mechanisms and “process” requirements, which could play important roles in helping to advance implementation of strategies. For instance, process requirements such as follows may be important mechanisms to advance transportation and land use strategies that reduce GHG emissions:

- A requirement that the regional transportation plan set targets for GHG reduction
- A requirement that development project reviews include calculation of GHG emissions
- Establishment of a Climate Change program to fund GHG reduction strategies

The role of these requirements is to spur implementation of strategies, but these options are not considered strategies themselves.

**Groupings of Strategies:** There are a large number of transportation strategies identified. Some of these were separated out due to differences in specific factors (such as political acceptance or cost). However, for analysis purposes, we suggest bundling several closely aligned strategies. For example, the following strategies could be bundled: Increase proportion of new housing and jobs in activity centers (L-2) + Maximize walkable design in activity centers (L-4) + Establish adequate retail balance in activity centers (L-5) + Focus Government employment near premium transit (L-6) + Enhance the bicycle/pedestrian environment (T-12).