

DISCUSSION BRIEF

GREENING THE HIGHWAY FROM BAJA TO BRITISH COLUMBIA

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**CASCADIA CENTER FOR REGIONAL DEVELOPMENT
DISCOVERY INSTITUTE**

"By 2050, the number of vehicles in the world is expected to go up by a factor of three. That should scare you. It scares me."

**John Heywood, director, Sloan Automotive Laboratory, MIT,
Washington Post, May 20, 2007**

"While some stakeholders believe that their particular alternative fuel can meet the 2020 goal exclusively, the staff believes that no single alternative fuel can reach this goal (20 percent of all transportation energy used in the state comes from alternative fuels). Instead, the state will need programs to increase the use of a variety of alternative fuels..."

2005 Annual Report, California Energy Commission

THE PROBLEM

TRAFFIC CONGESTION, VEHICLE & TRUCK EMISSIONS IN THE I-5 CORRIDOR

The United States' Interstate 5 corridor is 1,350 miles long. According to U.S. Department of Transportation, 65 percent of the 550 miles of I-5 going through urban regions is under heavy congestion, and that will grow to 95 percent by 2035 without intervention. I-5 congestion poses major costs to businesses, institutions and families, and intensifies the effects of fossil fuel use by cars, and diesel fuel emissions from en route and idling freight trucks. Controlling and ultimately reducing road congestion and greenhouse gas emissions on I-5 would address important economic and environmental objectives.

ONE BIG PIECE OF THE SOLUTION

GREENING THE HIGHWAY

"Greening the Highway from Baja to British Columbia" is a Cascadia Center initiative to help educate and unify stakeholders who can advance cleaner, greener and smarter use of major north-south highway corridors on the West Coast (I-5, Route 99). Concerns are intensifying about the role of transportation—and fossil fuel consumption—in greenhouse gas emissions, climate change, air quality and public health. One indicator is California Assembly Bill 118, which would provide funding for alternative fuel and green house gas reduction programs. Also, sharply higher fuel costs are compelling motorists and freight haulers to prioritize fuel efficiency in the near-term, and combined with policy mandates from voters and legislators, to embrace alternative fuels in the mid-to long-term. *Government, vendors, shippers and motorists will all be in this together.* Especially where larger fleets are involved, those who begin strategizing sooner to adapt to the emerging paradigm shift in transportation and alternative fuels will be best positioned to effectively manage change.

RECOMMENDED

A MULTI-STATE, CORRIDOR-BASED APPROACH

Support for the multi-state, corridor-based approach to greening the highway is growing. Just last week, the USDOT announced six "Corridors Of The Future" grants, including one of \$15 million to Washington, Oregon and California to aid developing projects in the I-5 corridor. These include a major bridge improvement (Columbia River Bridge Crossing), further planning of an alternative fuels distribution network pilot project utilizing highway safety rest areas, and improvements in intelligent transportation systems (ITS) and passenger and freight rail. This week in Oakland, Calif., (on Sept. 20) leading-edge ITS projects to cut freight hauler diesel fuel emissions and highway and port-related congestion in the I-5 corridor will be showcased at the ITS committee meeting of the West Coast Corridor Coalition, a consortium of government organizations and agencies, and other major transportation stakeholders.

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OVERVIEW

OPPORTUNITY KNOCKS

An important opportunity is emerging for a concerted West Coast strategy to unify alternative fuel infrastructure and green vehicle development, diesel fuel emission reduction, and ITS technologies. Together these could yield substantial environmental and economic benefits while providing a model for other major U.S. highway corridors. An additional consideration is that congestion pricing, though not part of the West Coast Green Highway initiative, would boost congestion relief and greenhouse gas reduction, particularly if pursued on a multi-state, I-5 corridor basis.

WEST COAST GREEN HIGHWAY

1. Development of alternative fuel and “solar highway” infrastructure and advanced green vehicles
2. Diesel emission reduction programs
3. ITS technologies to save truckers and motorists time and fuel

Already underway or planned are dozens of programs and targeted educational efforts corresponding with the aims of the **Green Highway Initiative**. A few examples are below:

INFRASTRUCTURE & GREEN VEHICLE DEVELOPMENT

- *Southern California bio-diesel network*: A range of allied organizations and entrepreneurs are promoting increased use of bio-diesel in Southern California. The Southern California Bio-diesel Users Group maintains an updated online list of filling stations selling bio-diesel. There are 18 listed in the counties of Ventura, Santa Barbara, Los Angeles, Orange and San Diego, plus 16 other bio-diesel vendors or manufacturers listed throughout the state. Colette Brooks' Southern California-based company, Biobling, uses the Internet to find cars that run on biodiesel for clients. And more than 1,400 vehicles have been converted to run on vegetable oil by LoveCraft Bio-Fuels of Los Angeles.
- *I-5 Alternative Fuels Distribution Network Planning*: U.S. DOT's recently-announced \$15 million I-5 "Corridors Of The Future" grant responsive to the joint application by Washington, Oregon and California, will focus on the Columbia River Bridge Crossing between Portland and Clark County, Wash., to reduce congestion and improve safety. It also entails feasibility analysis of a pilot project to develop an I-5 alternative fuels distribution network at safety rest areas.
- *ODOT Solar Highway*: Following the 2007 passage by the Oregon state legislature of a Renewable Portfolio Standard (25 percent of electricity from renewables by 2025), the Oregon Department of Transportation's Innovative Partnerships Program is seeking bids for demonstration projects to generate power via installation of solar photovoltaics on state-owned property including highway and freeway rights-of-way. The concept has been used for almost 20 years in Europe to generate additional solar power.
- *Hydrogen Highway*: The Hydrogen Highway is a voluntary network of technology companies and institutional partners showcasing a growing roster of hydrogen and fuel cell technology demonstration projects in British Columbia. These include: a) five advanced prototype Ford fuel cell vehicles being used in daily business operations by public and private sector

- employers in a pilot program; b) four Translink (Vancouver regional) transit buses powered by heavy-duty hydrogen and compressed natural gas processed after capture from a North Vancouver hydrogen waste stream; c) conversion of eight light-duty GMC Sierra trucks to run on compressed hydrogen gas in modified internal combustion engines.
- *Plug-in hybrid electric vehicle (PHEV) development:* Major auto manufacturers including Toyota, General Motors and Ford are working to bring to market within several years plug-in hybrid electric vehicles with extended battery-powered cruising range, and more than double the gas mileage of the current hybrid electric Toyota Prius. PHEVs of the near future can dovetail with initiatives for a smart, distributed electric power grid and corporate and government green vehicle fleets. In July 2007, a study released by the Natural Resources Defense Council and the Electric Power Research Institute concluded that given a cleaner electricity supply, PHEVs could help make substantial inroads on greenhouse gas emissions. Infrastructure is also key. Plug-in electric vehicle refueling stations will need to be integrated into highway corridor tourist stops (restaurant and motel parking areas); park-and-ride transit lots; and shopping mall and other parking facilities. Many of these issues have gained greater traction at the Microsoft-Cascadia Center annual conference and have been discussed in the briefing book, "Electrify Transportation," published by the Center.
 - *NW Hybrid Truck Consortium:* A \$250,000 EPA grant leveraged another \$1.5 million from other sources for members of the Northwest Hybrid Truck Consortium (including four counties and eight cities in Washington) to purchase 10 of the newest, cleanest hybrid-electric utility trucks. These yield almost 40 percent less in greenhouse gas emissions than standard utility vehicles, and up to a third less in smog- and soot-related emissions.

WEST COAST DIESEL EMISSION REDUCTION PROGRAMS

- *Western Climate Initiative:* Superceding the November 2004 West Coast Governors' Global Warming Initiative compact between Washington, Oregon and California, the Western Climate Initiative formed in February 2007, and includes those three states plus British Columbia, Manitoba, Utah, New Mexico and Arizona. In August 2007, initiative partners announced a goal to reduce greenhouse gas emissions in their states and provinces to an aggregate of 15 percent below 2005 levels by 2020.
- *San Pedro Bay Ports Clean Air Action Plan:* To cut freight short-haul trucks' diesel fuel exhaust emissions that the state links to 1,200 annual Southern California deaths, the Ports of Los Angeles and Long Beach have committed to lowering key emissions to 2001 levels by contracting to have 16,000 trucks replaced or upgraded to use electricity or ultra-clean diesel. As part of the agreement, cargo ships will be pushed to switch to low-sulfur fuel 24 miles offshore.
- *Northwest Ports Clean Air Strategy:* The Ports of Vancouver, Seattle and Tacoma in May 2007 announced voluntary 2010 target reductions of 70 percent in diesel particulate emissions from ships at port, and 30 percent from cargo-handling equipment. Further talks are planned with industry on targets for trains, trucks and harbor vessels, and greenhouse gases.
- *Truck Idle Reduction Initiative:* The Northwest EPA-led West Coast Collaborative's I-5 Truck Idle Reduction Initiative provided \$400,000 in grants which leveraged \$6 million in additional funds for three agencies in Washington, Oregon and California to develop truck stop electrification projects and begin installation of on-board power systems, allowing trucks to idle without emitting diesel exhaust.
- *SmartWay Solutions on the I-5 Corridor:* West Coast Collaborative's "SmartWay Solutions On the I-5 Corridor" program provided a \$200,000 grant to Cascade Sierra Solutions of Eugene, Ore., which leveraged another \$5 million in state funds to establish two I-5 trucker outreach

centers to provide information on, and financing options for voluntary diesel emission reduction technologies. These include on- and off-board idle reduction devices, improved tractor trailer aerodynamics, low-rolling resistance tires, and exhaust after-treatment devices.

- *Truck stop electrification in Washington and Oregon:* With government partners, the Climate Trust is funding electrification of as many as 275 truck stop rest spaces in Washington and Oregon. In July 2007, as part of the initiative, electrification of 32 spaces was completed at the Jubitz Travel Center in Portland by Shurepower (of Rome, New York and Portland, Ore.). In Oregon alone, initial planned electrification of 160 truck rest stop spaces along I-5 would cut carbon dioxide emissions by an estimated 8,000 tons annually. There are about 2,000 semi-trailer rest spaces along I-5 in Oregon.

ITS TO "GREEN THE HIGHWAY" IN WESTERN U.S. & I-5 CORRIDOR*

- Oregon, California and Nevada "seamless" 511 traveler information system, designed to provide road and traffic conditions on major routes that cross state lines, helping truckers undertake corridor-based planning to avoid delays and congestion.
- *I-5 Corridor Tri-State Traveler Website* (www.wsdot.wa.gov/partners/TIO/): Site compiles listings and information for truckers and motorists in the tri-state I-5 corridor on rest areas, local weather, truck stops, truck permits, and trucker restrictions; and highlights the 511 phone line for current traffic information in Washington, Oregon and Northern California.
- Real-time, on-board, GPS-based congestion and route option information for truckers.
- *"Gateways" ITS project, Los Angeles/Long Beach:* To cut truck and rail freight congestion and pollution via routing information and staged integration of freight and passenger highway traffic.
- *VII (Vehicle Infrastructure Integration) technology:* To optimize safety and traffic throughput via on-board sensors; controls for incident avoidance and vehicle spacing; and other tools.
- *"Smart Park" information systems:* To efficiently guide truckers to parking and electric plug-ins at rest areas.

WHAT NEXT?

GREENING THE HIGHWAY - NEXT STEPS

Explore three or four top priorities. What big "asks" need to be made? How can resources be drawn into the opportunity? What might pilot programs, and a public-private partnership for "Greening the Highway" look like? What are possible organizational models?

Copies of this Discussion Brief are available
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