REAL SOLUTIONS FOR CLIMATE CHANGE

Reducing GHG through VMT Strategies

MAY 5, 2010

GLORIA SHEPHERD, FHWA
SARAH SIWEK, Sarah J. Siwek & Associates
KATHY LEOTTA, WSDOT
BRIAN LAGERBERG, WSDOT
KAT BEAUDOIN, Maine DOT
During the webinar, please e-mail your questions to melvinj@pbworld.com.
REAL SOLUTIONS FOR CLIMATE CHANGE

Reducing Greenhouse Gas Emissions through VMT Strategies
FHWA: Activities and Initiatives

MAY 5, 2010

Presented by:

Gloria Shepherd, FHWA
Associate Administrator
Office of Planning, Environment and Realty
Transportation Strategies to Reduce Growth in VMT and GHG Emissions

A few to start:

- More efficient land use patterns
- Coordination of transportation/land use
- Increase use of transit, freight rail, bicycling, walking
- Carpooling/vanpooling
- Telework/Trip Chaining
- Congestion relief
- Pricing (PAYD insurance, parking, tolls, congestion pricing)
- Travel Demand Management
Opportunities to Address Climate Change

• Planning for:
  – Grid street patterns, short blocks, streetscapes
  – Expansion in transit services
  – Planning for bike and pedestrian travel
  – TOD/infill/centrally located development (as it supports transportation and vice versa)
  – System efficiencies (ramp metering, traffic signal synchronization, incident management, etc.)
  – Travel Demand Management
  – Freight strategies
Transportation’s Role in Reducing U.S. Greenhouse Gas Emissions
Volume 1: Synthesis Report

Report to Congress
U.S. Department of Transportation
April 2010

Mandated by the Energy Independence and Security Act of 2007

Produced by the U.S. DOT Climate Change Center

Analyzes:
• Transportation greenhouse gas (GHG) emissions levels and trends
• Strategies for reducing these emissions

Scope:
• Full range of strategies
• All transportation modes
• Primarily synthesis, snaps to common baseline, should be seen as rough order of magnitude
• GHG reduction, costs, co-benefits, impact on DOT goals, key interactions
GHG Reduction Strategies

- Low Carbon Fuels
- Vehicle Fuel Efficiency
- System Efficiency
- Reduce Carbon Intense Travel Activity

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## Reduce carbon-intensive travel activity

### REAL SOLUTIONS FOR CLIMATE CHANGE

<table>
<thead>
<tr>
<th>Strategies</th>
<th>2030 reduction</th>
<th>Key Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay as you drive insurance</td>
<td>1.1-3.5%</td>
<td>Require states to allow (low) Require companies to offer (high)</td>
</tr>
<tr>
<td>Congestion pricing</td>
<td>0.4–1.6%</td>
<td>LOS D on all roads (avg 65c/mi for 29% of urban and 7% of rural VMT)</td>
</tr>
<tr>
<td>Public transportation</td>
<td>0.2-0.9%</td>
<td>2.4-4.6% annual increase in service</td>
</tr>
<tr>
<td>Non-motorized travel</td>
<td>0.2-0.6%</td>
<td>Comprehensive urban bike/ped improvements 2010-2025</td>
</tr>
<tr>
<td>Land use</td>
<td>1.2-3.9%</td>
<td>60-90% of new urban growth in approx. &gt;5 units/acre</td>
</tr>
<tr>
<td>Parking management</td>
<td>0.2%</td>
<td>Downtown workers pay for parking ($5/day avg. for those not already paying)</td>
</tr>
<tr>
<td>Commuter / worksite trip reduction</td>
<td>0.1-0.6%</td>
<td>Widespread employer outreach and alternative mode support</td>
</tr>
<tr>
<td>Telework / compressed work week</td>
<td>0.5-0.7%</td>
<td>Doubling of current levels</td>
</tr>
<tr>
<td>Individualized marketing</td>
<td>0.3-0.4%</td>
<td>Reaches 10% of population</td>
</tr>
<tr>
<td>Eco-driving</td>
<td>0.8-4.3%</td>
<td>10-50% of drivers reached, half implement</td>
</tr>
<tr>
<td><strong>Combined Strategies</strong></td>
<td><strong>5-17%</strong></td>
<td></td>
</tr>
</tbody>
</table>
**Land Use**

**Finding:** 1-4%↓ (2030), 3-8%↓ (2050)

**How?:** Relyed primarily on 3 reports:

<table>
<thead>
<tr>
<th>Year 2050</th>
<th>TRB Special Report 298</th>
<th>Moving Cooler</th>
<th>Growing Cooler</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. transport GHG reduction</td>
<td>0.6-6.5%</td>
<td>2-3.4%</td>
<td>7-10%</td>
</tr>
<tr>
<td>(baselines vary)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDV VMT reduction</td>
<td>1-11%</td>
<td>1.7-12.6%*</td>
<td>12-18%*</td>
</tr>
<tr>
<td>% of new urban development</td>
<td>25-75%</td>
<td>43-90%</td>
<td>60-90%</td>
</tr>
<tr>
<td>“compact”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definition of “compact”</td>
<td>1.98 DU/acre (~4 DU / residential acre)</td>
<td>&gt;4000 persons per square mile (~&gt;5 DU / residential acre)</td>
<td>Density, diversity, design, destination, accessibility, distance to transit</td>
</tr>
<tr>
<td>VMT in compact development</td>
<td>5-25% lower</td>
<td>23% lower</td>
<td>30% lower</td>
</tr>
<tr>
<td>% of structures re/developed present-2050</td>
<td>41-55%</td>
<td>64%</td>
<td>67%</td>
</tr>
</tbody>
</table>

* Urban only
What are Livable/Sustainable Communities?

“Livable Communities are where people have access to many different forms of transportation and affordable housing....”

Secretary Ray LaHood, DOT
Livable Communities Must Support All Users!

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• Better coordinate federal transportation, environmental protection, and housing investments and identify strategies that support the Partnership’s Guiding Principles
Six Livability Principles of the Sustainability Partnership

1. Provide More Transportation Choices
2. Coordinate Policies and Leverage Investment
3. Promote Equitable, Affordable Housing
4. Enhance Economic Competitiveness
5. Support Existing Communities
6. Value Communities and Neighborhoods

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The Future – Policies

- Performance-Based Planning
- Changes to the Planning Process
- Changes to the Funding Structure
Transportation-related GHG emission-reduction strategies have multiple co-benefits in:

- Reducing energy use;
- Reducing U.S. dependence on foreign oil;
- Improving air quality (reducing criteria air pollutants); and,
- Promoting livability
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Strategies to Reduce VMT

MAY 5, 2010

Presented by:

Sarah J. Siwek
President, Sarah J. Siwek & Associates, Inc.
Vehicle Miles Traveled (VMT)

- VMT Reduction *one of five* sets of GHG reduction strategies:
  - Vehicle efficiency,
  - low carbon fuels,
  - system operation,
  - Construction, maintenance and agency operations,
  - VMT Reductions (travel demand management, land use)

- Today’s presentation
  - VMT Trends
  - Strategies to Reduce VMT
  - Impact on GHG Emission Reduction
  - VMT as a Proxy for GHG Reduction
VMT Trends – Growth Rate has Declined

- VMT growth has been steadily declining since the 1950s
- VMT growth slowed to about 1.5% in early 2000s
- VMT growth was actually negative in 2008
- VMT is affected by population, economy, transportation prices, demographics, land use
- AASHTO supports reducing VMT growth rate to 1% per year

VMT GROWTH RATE PER DECADE

Source: Alan Pisarski and Cambridge Systematics
Many Strategies to Reduce VMT

- Road Pricing
- Parking Pricing
- Commuter Choice programs
- Carpooling and vanpooling
- Bike/pedestrian
- Transit
- Trip chaining
- Tele-working, tele-shopping, tele-education, tele-medicine
- Compact land use
- Comprehensive land use planning
- Coordination between local government plans
- Smart Growth policies
Pricing

- VMT Tax
- Congestion Fees
- HOT Lanes
- Pay as you Drive (PAYD) Insurance
- Parking pricing
- Tolls
- Higher user fees
### Moving Cooler: Price Affects Vehicle Choice More than VMT

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Increased Gas Price</th>
<th>GHG Reduction 2010-2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMT Fee – effect on VMT</td>
<td>$2.53/gallon</td>
<td>3.4 gigatons</td>
</tr>
<tr>
<td>Carbon Fee – effect on VMT</td>
<td>$2.71/gallon</td>
<td>4.7 gigatons</td>
</tr>
<tr>
<td>Carbon Fee – effect on Vehicle Choice (e.g., purchase of more fuel-efficient vehicle)</td>
<td>$2.71/gallon</td>
<td>10.4 gigatons</td>
</tr>
</tbody>
</table>
• **Challenges**
  – Public acceptance
  – Political will
  – Striking the right balance and price signals (e.g. economic impact)
  – Differences in freight and passenger travel (e.g. should all trip purposes be treated equally?)

• **Advantages**
  – Raises revenues
  – Public responds to prices; most direct way to impact travel behavior
Carpooling and Vanpooling

- Currently carpools and vanpools carry *7 times more person miles traveled* than transit
- No infrastructure, cost effective
- Works in all settings (rural, urban)
- Voluntary
- Many programs initially use incentives (e.g. ARC $3/day to carpool, WASHCOG $2/day to carpool)
- Many metro areas have had employer-based programs in place since 1990s
- University of South Florida clearinghouse: [http://www.nctr.usf.edu/clearinghouse/ridematching.htm](http://www.nctr.usf.edu/clearinghouse/ridematching.htm)
• Surge in new transit investments nationwide
• AASHTO policy - double transit ridership by 2030
• Increase transit funding from $10.5 to $18.5 billion/year
• Intercity rail - $8 billion federal commitment
• Public support – in many areas local sales tax or other revenue measures support transit
How much GHG reduction is likely from VMT strategies?

- Highly variable, highly speculative
- Depends on future behavior change
- Depends on future vehicle/fuel assumptions
- Most studies suggest small VMT impacts – unless there is significant pricing
  - CARB estimate for SB 375
  - Moving Cooler
  - State climate action plans
## Moving Cooler: Land Use/Transit, NMT Bundle

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6-9% On-Road GHG Reduction over 40 Years with Aggressive/Maximum Assumptions

<table>
<thead>
<tr>
<th></th>
<th>GHG Reductions from On-Road Baseline, 2010-2040</th>
<th>% of On-Road Baseline, 2010-2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggressive Deployment</td>
<td>3.8 gigatons</td>
<td>6%</td>
</tr>
<tr>
<td>Maximum Intensity</td>
<td>6.3 gigatons</td>
<td>9%</td>
</tr>
</tbody>
</table>

- 90% of all future land use is compact, in high-density Census tracts
- 50% cut in transit fares
- $1.2 trillion transit capacity expansion
- Congestion pricing in 120 metro areas, at 65 cents/mile
- $400 parking permits required on neighborhood streets
- $144 billion construction of high speed rail
- Bike/ped Expansion, Parking Pricing, HOV lanes, Car-Sharing, Employer-Based Commute Measures, Urban Nonmotorized Zones, Parking Restrictions, Signal Management, Traveler Information, and Urban (freight) Consolidation Centers
CARB: 3% Impact on LDV GHG in 2020 from SB 375

- CA’s SB375 law is aimed at reducing passenger vehicle VMT and GHG
- CARB’s first estimate was that SB375 would reduce GHG by 2 MMT in (<1.5% of CA’s LDV GHG) in 2020
- CARB’s second estimate was that SB 375 effect on GHG could be 5 MMT in CA (3% of CA’s LDV GHG) in 2020
Another Perspective: Congestion vs. VMT

- GHG emissions from traffic congestion in Los Angeles area ~3.4 MMTCO2e/annually;
- Two-thirds of the entire 5 MMTCO2e/annual reduction goal for SB375
- Statewide in CA, congestion accounts for 6MMTCO2e/annually

Source: UCLA School of Public Affairs: Measuring Vehicle Greenhouse Gas Emissions for SB 375 Implementation
## Smart Growth/Transit Strategies in State Climate Plans

<table>
<thead>
<tr>
<th>STATE</th>
<th>YEAR</th>
<th>% of ALL GHG REDUCTIONS IN PLAN FROM SMART GROWTH/TRANSIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>2020</td>
<td>1%</td>
</tr>
<tr>
<td>Colorado</td>
<td>2020</td>
<td>1.3%</td>
</tr>
<tr>
<td>Connecticut</td>
<td>2020</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Maine</td>
<td>2020</td>
<td>5.7%</td>
</tr>
<tr>
<td>Minnesota</td>
<td>2025</td>
<td>1.25%</td>
</tr>
<tr>
<td>New York</td>
<td>2020</td>
<td>1.89%</td>
</tr>
<tr>
<td>North Carolina</td>
<td>2020</td>
<td>4.2%</td>
</tr>
<tr>
<td>Oregon</td>
<td>2025</td>
<td>6%</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>2020</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>South Carolina</td>
<td>2020</td>
<td>2.6%</td>
</tr>
<tr>
<td>Washington</td>
<td>2020</td>
<td>10%</td>
</tr>
<tr>
<td><strong>MEDIAN</strong></td>
<td></td>
<td><strong>1.89%</strong></td>
</tr>
</tbody>
</table>
Benefits of Using VMT as Proxy for GHG

• We can estimate how much VMT is being traveled
• Simpler to estimate and forecast than GHG
• We have historical information to establish baseline
• Co-benefits – could enhance focus on integrated land use and transportation planning
• Supports planning activities in many areas to invest in and encourage travel in non-SOV modes
Shortcomings of VMT as a Proxy for GHG

- **Does not** take into account:
  - Fuel efficiency of vehicle
  - Fuel type
  - Number of passengers
  - Purpose of trip
    - Freight
    - Passenger
  - Speed
  - Stop-and-go traffic (Operational conditions)
  - Economic impact

- VMT reductions costly compared to other strategies

- Gallons of fuel sold a better proxy, info. easily available and directly related to GHG
Conclusion

• We have learned since 1990s
  – Suite of strategies, including pricing, will be most effective
  – Much experience with commuter programs over past 20 years
  – Emission reductions to date typically small

• Potential of pricing strategies to reduce GHG is significant

• VMT strategies not as cost effective as technology-based strategies (e.g. fuels, vehicles, etc.)
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Washington State VMT Reduction: VMT Targets, Strategies, and Challenges

MAY 5, 2010

Presented by:

Kathy Leotta
WSDOT TDM Data and Evaluation Manager and VMT Measurement Process Lead
Public Transportation Division
Washington State VMT and GHG Reduction Targets

- **Transportation is 47% of Washington State’s GHG Emissions (compared to 29% for U.S.)**
- **GHG Reduction (RCW 70.235.020)**
  - Based off of 1990 GHG
    - Return to 1990 levels by 2020
    - 25% Below 1990 levels by 2035
    - 50% below 1990 levels by 2050

- **VMT Reduction (RCW 47.01.440)**
  - Per capita VMT reduction; based off a year 2020 baseline VMT
    - 18% reduction in per capita VMT in 2020
    - 30% reduction in per capita VMT in 2035
    - 50% reduction in per capita VMT in 2050

- **Washington’s Leadership on Climate Change (Executive Order 09-05)**
  - Directs the Secretary of the Department of Transportation to work collaboratively with other state agencies, local and regional governments and others to:
    - Estimate current and future state-wide levels of VMT,
    - Evaluate potential changes to VMT benchmarks to address low- or no-emission vehicles,
    - Develop additional strategies to reduce emissions from the transportation sector
    - Cooperatively develop and adopt regional transportation plans that will... reduce greenhouse gases and achieve the statutory benchmarks to reduce annual VMT per capita.
Washington Statewide Light Duty VMT

Total and Per Capita; BAU and With VMT Benchmarks

Figure Source: Karin Landsberg, WSDOT

BAU = Business as usual
Large Portion of LDV GHG Reduction Expected from VMT Reductions

Figure Source: Karin Landsberg, WSDOT; LDV fleet fuel economy for all analysis improves from 21.1 mpg in 2010 to 35.5 in 2050. Does not include low carbon fuel standard or assumptions for increased penetration of PHEVs and EVs, as currently under development by Washington State Department of Ecology.
Effectiveness of VMT Reduction Strategies

- Several major studies provide estimates of effectiveness of strategies in reducing VMT and/or GHG (typically ranges).
- Studies include many caveats, qualifiers, etc. Such as:
  
  “The benefits of the strategies in this report are based on limited data and good faith assumptions. Numerical estimates contain substantial uncertainties.”

  *Transportation’s Role in Reducing GHG Emissions*, Report to Congress, April, 2010

- Does there appear to be a gap between benchmarks and what appears achievable?
- Options to fill/reduce gap, implications, etc.
No One Strategy or Set of Strategies Can Get Us There

- The largest body of research indicates we will need significant progress on all fronts:
  - More ambitious/aggressive vehicle and fuel regulations and technologies.
  - Pricing incentives to encourage travel behavior changes and more widespread use of more efficient vehicles.
  - Improvements to operational efficiency.
  - Reductions in growth rate of VMT.
Examples of Individual and Combined VMT Reduction Strategies

• Pricing
  — Parking pricing / restrictions
  — Carbon pricing VMT impact  
    (cap and trade, higher fuel taxes, carbon tax, etc.)
  — Various other roadway pricing  
    (congestion, tolls, cordon, etc.)
  — PAYD insurance
  — VMT fee

• Transit and Passenger Rail:
  — Transit fares
  — Transit frequency
  — Urban transit expansion
  — Intercity passenger rail
  — High-speed passenger rail

• HOV and Employer Based Programs
  — HOV lanes
  — Car-sharing
  — Employer-based commute strategies (CTR/GTEC)

• Land Use:
  — Smart Growth/TOD
  — Non-motorized strategies
Some of The Challenges We’re Working Through

- Benchmark based on 2020 forecast rather than historical VMT
- Measuring VMT at state versus regional/local levels
- Lack of clarity, common agreement as to whether benchmarks are goals or mandates
- Benchmarks set for state; no directives on regional target setting
- Regional differences in Washington State complicate target setting
- We believe the “law” should be “emissions reduction” not VMT reduction
- Sense of little influence/certainty on technological advances in vehicles/fuels
- Limited resources
Status

• Working closely with other state agencies (Dept. of Ecology and Dept. of Commerce) to provide guidance to the Governor
• Working with Executive Order 09-05 Working Group
• Report due by late 2010 on:
  – Current and future state-wide VMT,
  – Potential changes, if any, to current law and other GHG reduction strategies, such as low- or no-emission vehicles,
  – Additional strategies to reduce emissions from the transportation sector.
• Report due by the end of 2011 on:
  – Which RTPOs have developed, or are developing, plans with GHG strategies,
  – Which strategies appear to have the greatest potential to achieve the benchmarks, and
  – What policy or funding issues need to be resolved to ensure implementation.
VMT is One Strategy for Reducing Greenhouse Gas Emissions

• VMT is one “leg of the stool” for reducing GHG:
  – Supporting improved vehicle technology,
  – Lowering the carbon content of fuels,
  – Improving the efficiency of the transportation system, and
  – Increasing travel options to reduce vehicle miles traveled per capita.

• Other important benefits of reducing drive-alone:
  – Health impacts of increased walking and biking,
  – Safety, time, economic impacts of reduced congestion,
  – Frees-up urban corridors for freight access,
  – Strengthens a diverse transportation system,
  – Less dependence on foreign oil, and
  – Alternative fuel and technology development in US helps create jobs and a stronger economic recovery.
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Washington State VMT Reduction:  
The Commute Trip Reduction Program

MAY 5, 2010

Presented by:

Brian Lagerberg  
Assistant Director  
Public Transportation Division
The evolution of demand management in Washington state

• CTR program 1991 – 2003, “improve the program”

How we have changed our approach

• Since 2003: “Reframe and expand”
• Targeting demand management investments: Construction Traffic Management
• Creating the infrastructure for future success

Where we are going from here

• Integrating our approach: Moving Washington
Demand Management 1991-2003

A model employer-based demand management program
1991 – 2003 Commute Trip Reduction

– Employer, part of the problem, part of the solution
– Mandated approach, peanut butter application
– Highly structured—narrow focus
– Goal driven—politically calculated goals
– Incremental changes

Despite its limitations, the program is considered successful
Impacts of CTR

Drive Alone Comparison:
Percent of commuters who drive alone

Number of Vehicle Trips Reduced at CTR sites
And Employment in Washington

Number of trips reduced
30,000
25,000
20,000
15,000
10,000
5,000
0
1995 1997 1999 2001 2003 2005 2007

Employment in Washington in Millions
2.8
2.6
2.4
2.2
2.0
1.8
1.6

Data Source: CTR Survey Database. One way trips reduced per average day. Represents all sites with measurement surveys in the cycle indicated.
Employment Data Source: U.S. Census Bureau
Driving The Evolution Since 2003

- From 2003 into the future
  Modify the program
  - Focus the program on recognized transportation deficiencies
  - Make real, and meaningful goals for the state
  - Require local and region governments to define their own goals but within statewide framework
  - Develop new tools to help the locals achieve their goals: Growth and Transportation Efficiency Center (GTEC)
  - Establish the flexibility that broadens ownership of the program
  Meet customer needs with supplemental services
  - Vanpooling: State investments in flexible transportation options
  - Trip Reduction Performance program: innovation and efficiency
  - Construction Traffic Management: maintaining capacity during construction

- What Happened?
Employees Changed Their Behavior

Percent Change in Drive Alone Rate from 2007 to 2009

- All CTR Sites: 0.0%
- CTR Sites active since 2007: -2.8%
- CTR Sites in GTECs: -5.9%

Sources: U.S. Census Bureau and CTR survey database
Applying the Lessons Learned

Construction Traffic Management

- Develop meaningful, credible goals for mitigation
- Set targets for each strategy
- Monitor, monitor, monitor
- Report

- Example from a mitigation project, I-405
### Example: Construction Traffic Management

<table>
<thead>
<tr>
<th>Investment Strategy</th>
<th>Total Cost</th>
<th>Vehicle trip reduction daily round trips</th>
<th>Implementation Timeline</th>
<th>Total one-way trips reduced during project</th>
<th>Average daily cost per one-way trip reduced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote carpooling</td>
<td>$95,340</td>
<td>330</td>
<td>142</td>
<td>71,000</td>
<td>~$1.3</td>
</tr>
<tr>
<td>Outreach to residents</td>
<td>$72,322</td>
<td>183</td>
<td>95</td>
<td>23,750</td>
<td>~$3.0</td>
</tr>
<tr>
<td>Outreach to Bellevue employers</td>
<td>$75,082</td>
<td>171</td>
<td>264</td>
<td>132,000</td>
<td>~$0.6</td>
</tr>
<tr>
<td>Outreach to south King County employers</td>
<td>$37,374</td>
<td>135</td>
<td>163</td>
<td>101,875</td>
<td>~$0.4</td>
</tr>
<tr>
<td>Relocate vanpools</td>
<td>$54,000</td>
<td>180</td>
<td>180</td>
<td>127,500</td>
<td>~$0.4</td>
</tr>
<tr>
<td>Outreach to Bellevue employees</td>
<td>$11,068</td>
<td>108</td>
<td>92</td>
<td>34,500</td>
<td>~$0.3</td>
</tr>
<tr>
<td>Install and promote bicycle lockers</td>
<td>$16,235</td>
<td>16</td>
<td>7</td>
<td>1,750</td>
<td>~$9.3</td>
</tr>
<tr>
<td>Promote vanshare</td>
<td>$4,560</td>
<td>24</td>
<td>65</td>
<td>32,500</td>
<td>~$0.1</td>
</tr>
<tr>
<td><strong>SUBTOTAL</strong></td>
<td><strong>$365,981</strong></td>
<td><strong>1,147</strong></td>
<td><strong>1,008</strong></td>
<td><strong>524,075</strong></td>
<td><strong>$0.7</strong></td>
</tr>
<tr>
<td>Commute trip reduction</td>
<td>-</td>
<td>-</td>
<td>1,232</td>
<td>770,000</td>
<td>-</td>
</tr>
<tr>
<td>Vanpools</td>
<td>-</td>
<td>-</td>
<td>462</td>
<td>288,750</td>
<td>-</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>-</td>
<td>-</td>
<td><strong>2,702</strong></td>
<td><strong>1,583,625</strong></td>
<td>-</td>
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</table>
### Mitigation Strategies

<table>
<thead>
<tr>
<th>Investment strategy</th>
<th>Target market</th>
<th>Why this strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote and offer carpool incentives</td>
<td>I-405 corridor drivers</td>
<td>Research shows that commuters in east King County are receptive to the idea of carpooling and traffic data indicates that there are a lot of empty seats in vehicles on the I-405 corridor. Also, CTR data showed that many I-405 commuters had common origins and destinations in numbers significant enough to support carpools.</td>
</tr>
<tr>
<td>Outreach and incentive program to get residents to commit to reduce their drive-alone trips</td>
<td>Central Renton and Renton Highlands residents that commute on the I-405 corridor</td>
<td>Past home-based outreach programs showed that providing information about highway construction, transit, carpool, vanpools, walking, bicycling, trip chaining and shopping closer to home and getting local businesses and residents to commit to trip reduction would help reduce highway trips.</td>
</tr>
<tr>
<td>Outreach to downtown Bellevue employers, offering commute assistance and incentives for those who join the FlexPass program</td>
<td>Commuters on I-405</td>
<td>The popular FlexPass program offers transit benefits to commuters. Data shows incentives can help attract new businesses to provide the passes and that those who join continue the program even after the incentives diminish. With FlexPasses, commuters incorporate non-SOV modes into their routine workday, reducing trips during rush hours.</td>
</tr>
<tr>
<td>Outreach to south King County employers, offering commute assistance and incentives for those who join the FlexPass program</td>
<td>Commuters on I-405 and SR 167</td>
<td>The popular FlexPass program offers transit benefits to commuters. Data shows incentives can help attract new businesses to provide the passes and that those who join continue the program even after the incentives diminish. With FlexPasses, commuters incorporate non-SOV modes into their routine workday, reducing trips during rush hours.</td>
</tr>
</tbody>
</table>
Demand Management Infrastructure

Partnerships

- Local governments
- Regional governments
- Transit agencies
- Employers
- Non-profit organizations
- Entrepreneurs
- Community groups

- Focus on creating a benefit for our partners: Leveraging impacts
Total investment in CTR, 2007-2009

Biennial CTR funding 2007-2009

- Employer: 96.0
- Vanpool: 8.6
- Tax Credit: 5.5
- State CTR funding
  - to locals: 3.9
  - to WSDOT: 2.1
- TRPP: 2.5
- GTEC: 2.4
Moving Washington

WSDOT’s strategy to address congestion supports climate change goals

• Adding Capacity Strategically
• Operating Efficiently
  – Getting the most out of the infrastructure we have
  – Real Time Traffic Information
  – Incident Response
  – HOV Lanes
• Managing Demand
  – Providing people choices
  – Commute Trip Reduction programs
  – Transit
  – Vanpools and Carpool programs
  – Roadway pricing
  – Travel information
  – Telecommuting and flexible work schedules
“Commute Trip Reduction efforts are vital for businesses looking to make the most of their human and financial resources. Employers take strongly into consideration the cost of community infrastructure, the importance of conservation, and a commitment to livable growth centers as they make their operational decisions. Smart commuting has become a business imperative.”

David Graybill, President & CEO, Tacoma-Pierce County Chamber

“We believe rideshare participation has a direct, positive impact on employee retention, absenteeism, and punctuality, which ultimately promotes increased productivity, company morale and business sustainability.”

Sage Manufacturing, Kitsap County
Why Does Demand Management Work?

Downtown Vancouver Employee Parking Costs

*Total capital cost of different rates of driving-alone*

Source: City of Vancouver
REAL SOLUTIONS FOR CLIMATE CHANGE

Gateway 1:
Linking Land Use and Transportation to Preserve Capacity and Enhance Community & Economic Development

MAY 5, 2010

Presented by:
Kat Beaudoin, AICP, Chief of Planning
MaineDOT
What is Gateway 1?

• Comprehensive U.S Route 1 corridor transportation / land use planning process
• Goal – to preserve transportation facilities / community quality of life along mid-coast U.S. Route 1
Who are the Partners?

- 20 Communities – Interim Steering Committee
- MaineDOT
- Federal Highway Administration
- State Planning Office
- 2 Economic Development Districts/5 RPCs
- Local, Regional, State Interest Groups
- Federal and State Agencies
  \((ACOE, \text{ Maine Historic Preservation, USF&W, etc})\)
Why Undertake Gateway 1?

• Disconnect between land use decisions & transportation investments
• MaineDOT’s vision of Route 1 different than communities’
• Mobility & safety needs are escalating
• Need to Integrate state / federal laws
• Hypothesis: “There has to be a better way!”
Why U.S. Route 1…Why now?

Rate of Population Change 1990 - 2000
- (15) - (2.1) %
- (2) - 2.5 %
- 2.6 - 15 %
Three Phases

- Phase I – Agreement on Problem
- Phase IIA – Understanding the Problem
- Phase IIB – Designing Solutions & Solidifying the Partnership
What are the Problems?

- Speeding
- Loss of image, aesthetics & open space
- Safety
- Lack of inter-municipal cooperation
- Truck Noise/Safety
- Threats to downtowns
- Traffic congestion
- Lack of Bus/Rail/Ferry
Process Highlights

• Phase I - Each “partner” signs MOU on process/roles/problems
  - Steering Committee reps officially appointed locally
  - Role of DOT/FHWA as resources - not directors
  - Consultants selected by committee

• Scope detailed with municipal representatives’ input

• Multiple outreach mechanisms
  - Keep elected officials in the know

• Regional Planning staff liaisons
Key Components of Plan

- **Inventory & Analysis – traditional plus**
  - **Attitudes & Values**
    - Towns feel they are doing ok with land use – neighboring towns could do better!
    - Open to working together
    - Want state leadership not control
    - High degree of multimodal support
    - Economics more important than aesthetics
  - **Detailed business sector analysis**
    - What’s growing, where and how re employment?
  - **Considered different futures**
    - What strategies will work no matter the level of economic activity
Key Components of Plan

- **Measures of Effectiveness**
  - Chosen by Steering Committee
  - Addressing corridor goals
    - Mobility (3 measures incl. “change in VMT/day”)
    - Transportation Choice (3 measures)
    - Jobs-Housing Balance (5 measures)
    - Rural Land/Habitat Preservation (2 measures)
    - Community Character (2 measures)
### Measures of Effectiveness

#### Table: Measures of Effectiveness

<table>
<thead>
<tr>
<th>Development Pattern</th>
<th>Economic Vitality</th>
<th>Quality of Life</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Compact Area/Access</td>
<td>Distribution of DU’s</td>
<td>Viewsed Impact</td>
</tr>
<tr>
<td>Micropolitan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transit Oriented Corridor</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Green circles** indicate improvements.
- **Red circles** indicate worsened conditions.
- **Purple circles** indicate variability.

**Legend:**
- Improves
- Improves Significantly
- Worsens
- Varies
- Varies Widely

**Sources:**
- AASHTO
- Federal Highway Administration
VMT Reduction?

• Choosing a different future
  – Patterns of Development options & their effects
  – Visual examples of patterns from near and far
  – Steering Committee elects to measure effects of two patterns
  – A hybrid emerges as the preferred pattern based on likelihood of political success
Community Centered Corridor

- Guides **jobs and housing** to core growth areas
- Supports economic development
- Protects village areas & downtowns
- Protects rural/open space/view sheds
- Provides opportunities for transportation choice
- Preserves capacity of Route 1
Some Specific Strategies – Some of the 8Ds

- Create Core Growth Areas (Density)
  - using tools such as
    - TIFs and other tax shelter vehicles
    - Floor Area Ratio minimums
- Promote mixed use (Diversity)
- Link modes of transportations at Destinations (Distance)
  - Explore feasibility of ride sharing services (fixed route, seasonal, GoMaine vanpools)
  - Build sidewalks and bike trails
  - Reduce off-street parking requirements near bus stops
  - Limit non-compatible land uses near rail lines
- Protect rural lands/habitats – transfer of trip rights (Design)
- Access Management (Design)
  - Limit access on rural portions of Routes 1 & 90
  - Require shared access / build service roads
  - Retrofit/combine access points in built up areas
- Create redundant street network (Design)
Executing the Plan

- **Incentives** for towns that adopt the Plan
  - Shared decision making
  - Bonus prioritization points
  - Reduced local match requirements
  - Access to other funding programs
  - Coalition has political clout

- **Status** – 16 towns still in
For copies of these slides and webinar recording, go to AASHTO’s website:
http://environment.transportation.org/center/products_programs/climate_change_webinars.aspx

These materials will also be available on AASHTO’s climate change website,
where you can also find more information on climate change:
http://climatechange.transportation.org/webinars/

Thank you!