Oregon GHG Planning with the RSPM Tool

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Oregon GHG requirements called for a new “Strategic” Planning Tool...GreenSTEP/RSPM

- **Goal-oriented.** Complement other tools.
- **Quick Runtimes.** Many scenarios to explore uncertainties and tradeoffs.
- **Breadth over Depth.**
- **Simple.** Time available for using outputs.
- **Visual/interactive.** Exploration by policy makers/public.
Factors Considered at the Household Level
Forecasts Made at the Household Level

OUTPUT REPORTING

**Statewide** GreenSTEP summarizes results at the county and metropolitan area level.

**Metropolitan** RSPM summarizes results at regional and district levels.
RSPM evaluates a full range of factors that affect household travel and emissions.

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<th>Regional Context</th>
<th>Local Actions</th>
<th>Collaborative Actions</th>
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<td>Community Design</td>
<td>Marketing &amp; Incentives</td>
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<td>• Demographics</td>
<td>• Future Housing (Single- &amp; Multi-Family)</td>
<td>• TDM (home &amp; work-based)</td>
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<td>• Intelligent Transportation Systems</td>
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Sensitivity Test Viewer (CAMPO)

Corvallis Metropolitan Planning Area Scenario Viewer

Scenario Input Levels | Clear All Selections

Model Outputs: 32 scenarios selected out of 288 scenarios | Clear All Selections

- GHG Target Reduction: Average = -18%
- DVMT Per Capita: 2010 Value = 22 daily miles
- Bike Travel Per Capita: 2010 Value = 140 annual miles
- Walk Travel Per Capita: 2010 Value = 130 annual trips

Air Pollution Emissions: 2010 Value = 18 metric tons
Annual Fuel Use: 2010 Value = 24 million gallons
Annual Household Vehicle Cost: 2010 Value = 2,400 thousand $
Truck Delay: 2010 Value = 110 daily vehicle hr

http://www.oregon.gov/ODOT/TD/TP/Pages/scenarioviewer.html
Regional Strategic Planning Model

**Inputs**
- Regional Context
- Community Design
- Marketing & Incentives
- Fleet & Technology
- Pricing

**Outputs**
- Mobility
  - Vehicle miles traveled
- Land Use
  - Mixed Use
  - Housing Type
- Economy
  - Travel delay
- Equity
  - Household travel costs
- Environment
  - Air Quality
  - Greenhouse gas emissions

**RSPM**
1. Create MPO Households
2. Estimate Daily VMT
3. Add Vehicles & Estimate Greenhouse Gas Emissions
   Re-calculate to balance VMT & travel costs
Oregon GHG Planning with RSPM

- **Oregon State GHG Goals**
  - Stop emissions growth by 2010
  - Reduce emissions by 10% by 2020
  - Reduce emissions by 75% by 2050

- **Metropolitan GHG Reduction Targets**
  - Covers 6 metropolitan areas for 2035
  - Covers light duty vehicles (cars and trucks)
  - Scenario Planning – required in 2 largest MPOs

- **Oregon Sustainable Transportation Initiative (OSTI)**
  - Interagency program (ODOT & DLCD/Land Use & DOE & DEQ)
  - Statewide Transportation Strategy (STS)
  - Development of new planning tools (RSPM, toolkit, etc.)
  - MPO Scenario Planning
State GHG Planning with RSPM

2050 state GHG reduction vs. target of 75%

**Urban**
- UGB expansion
- Transit service (4x population growth)
- Parking pricing (+30% pay to park)

**Technology**
- 30% mode shift (for trips of <6 mi)
- PHEV & EV (+30%)
- Renewable energy

**System Optimization**
- Transit service (4x population growth)
- Maximize system operations and management
- Fuel efficiency priority (80% of households)

**Pricing**
- 100% PAYD insurance
- Parking pricing (+30% pay to park)
- Congestion pricing ($0.20/mi)

**Enhanced Combination**
Includes all assumptions

- 40% mode shift from SOV trips of <6 mi (was 30%)
- More pay for parking and at higher cost
- Average vehicle age 7.8 years (was 10 years)
- Increase in PHEV and EV (43%)
- Increase in TDM
- Commercial services vehicles are all electric or natural gas

- Enhanced + Price
  - $0.15 per mile VMT Tax in addition to other taxes (~$0.06 per mile)

- Enhanced + Technology
  - Cleaner power generation
  - Increase PHEV and EV (53%)
  - EVs have longer range (cars = 300 mi)

FIGURE 1 Evolution of STS scenarios for on-ground passengers (SOV = single-occupant vehicle, TDM = transportation demand management, UGB = urban growth boundary).
MPO Scenario Planning Process

**Proposed approach:** Regional Transportation Plan meets GHG target
- Assess adopted plans
- Evaluate more ambitious strategies
- Adopt a preferred scenario
- Monitor progress

**As implemented:**
Requirements vary by MPO size
For smaller MPOs, voluntary process

Broadening to more “targets” (e.g., health, equity, etc.) results in...

**Performance-Based Planning**
# MPO GHG Planning with RSPM

## RSPM Inputs:
- Demographics
- Income Growth
- Fuel Price
- Future Housing (Single- & Multi-Family)
- Parking Fees
- Transit Service
- Biking
- TDM (home & work-based)
- Car Sharing
- Education on Driving Efficiency
- Intelligent Transportation Systems
- Vehicle Fuel Economy (mpg)
- Fuels
- Commercial Fleets
- Pay-As-You-Drive Insurance
- Gas Taxes
- Road User Fee

## Corvallis Area MPO Results:

### 2005-2035 GHG Reduction Relative to Target Rule

<table>
<thead>
<tr>
<th>Level</th>
<th>Reduction Relative to Target Rule</th>
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<tbody>
<tr>
<td>Level 1</td>
<td>8.1%</td>
</tr>
<tr>
<td>Level 2</td>
<td>14.3%</td>
</tr>
<tr>
<td>Level 3</td>
<td>14.8%</td>
</tr>
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</table>

### Change Relative to 2010

- Daily VMT per Capita
- Walk Trips per Capita (1)
- Travel Costs per Household
- Air Quality Pollutants (2)
- Road Congestion
Regional Strategic Planning Model

Tool advantages
- Broad set of community outcomes
- Broad set of old/new policy inputs
- HH Budget constraints good for pricing
- Quicker setup than traditional tools
- Short runtimes allows for 1000s of runs
- Open source and modular construction
- 4 tools on Common Framework will allow improvements by a community of developers (COMING SOON!)

Tool limitations
- Less detail relative to other planning tools
- What-if Tool can’t tell you how to get there
- Built for understanding GHG/Vehicle Travel, not mode shifts

Energy and Emissions Reduction Policy Analysis Tool

Rapid Policy Assessment Tool (formerly SmartGAP)

VisionEval Open Source Project
GreenSTEP family of Models

COSMER Open Source Project (Collaborative Open Strategic Model Environment in R)