



July 1, 2009

To: Metropolitan Policy Committee
From: Susan Payne
Subject: Item 5.c: Planning for Climate Change

Action Recommended: None. Information only.

“Reducing transportation-related emissions of carbon dioxide-the primary greenhouse gas-that contribute to climate change and adapting to the consequences of climate change will be among the biggest public policy challenges facing the transportation profession over the coming decades.” *Transportation Research Board of the National Academies*

Status

Over the past two years, MPO staff have been anticipating and preparing for the need to incorporate planning for climate change into the MPO’s activities, plans and programs. There has been no lack of studies and discourse on the subject but little coherent direction has been provided by the state and federal agencies with which we work and coordinate. Thus, we have participated in as many information exchanges, tutorials, workshops, and training sessions as possible in order to keep current as time and other work has permitted. We have initiated and participated in state committees on global warming. We have actively promoted the need to advance all MPOs’ modeling tools and data collection efforts in order to be able to report defensible results. Attachment 1 lists the work that has been undertaken since July 2007.

There is now momentum at both state and federal levels to at least define the roles of the State, the MPOs (of all sizes), and local agencies. Regulations are expected to be drafted within 12-18 months which will hopefully define the parameters within which the MPO must operate. Our two-year Unified Planning Work Program (UPWP) anticipated this timeline with work outlined in the Air Quality Planning and the Transportation System Modeling and Data Maintenance tasks.

This subject is complex, expansive and touches many of the facets of long range and short range transportation planning. It requires tracking of data and modeling of long range futures. This memo provides an introduction to the work that we are beginning. Staff will keep the MPC informed as progress is made and issues need to be resolved.

Background

State of Oregon Goals:

Oregon HB 3543 in 2007 established GHG reduction goals for the State which are those most likely to be applied to our region:

- 2010 -- stabilize emissions and begin reduction
- 2020 -- achieve 10% reduction below 1990 levels
- 2050 -- achieve 75% reduction below 1990 levels.

Existing Inventory Work:

A *state-level* inventory has been reported from 1990 forward that describes the changing contributions to greenhouse gas emissions¹ (GHGs) by sector. This shows that between 1990 and 2005, total CO₂ emissions grew by 26.3%; transportation emissions grew by 16.6%.

Using a variety of sources, Table 1 compares the estimated total CO₂ emissions/capita across the nation, the state, and the cities of Portland, Eugene and Springfield for 2005. The fraction of total emissions due to transportation sources is influenced by the type of fuel used to generate electricity. Thus, in the Central Lane area, transportation is a relatively higher fraction of the total CO₂ emissions (48%, 51%) due to the large amount of hydropower and other alternatives used in electricity generation (i.e., “clean energy”).

Note that the City of Portland states that it has reached its goal of matching its 1990 level emissions. If so, and assuming that the inventory methods are comparable, it has a carbon footprint per capita that exceeds those of the cities in our region.

Table 1. Comparing GHG emissions

2005, estimated, per year	United States	Oregon	Portland	Eugene	Springfield
Total: CO ₂ e metric tonnes/capita	20.4	17.2	12.5	8.6	7.9
% attributed to transportation	28%	38%	39%	51%	48%
Transportation-related: CO ₂ e metric tonnes/capita	5.7	6.5	4.9	4.4	3.8
Mileage equivalent (miles/year/capita)					
at 25 mpg	16,193	18,466	13,920	12,500	10,795

An illustration of the challenge facing us can be shown as follows: to reduce our transportation-related footprint by 50 percent while accommodating a doubling of the population we need to achieve a transportation “budget” of around 1 ton of CO₂e/capita. This is equivalent to driving a 25 mpg car using gasoline about 2,700 miles per year per capita.

¹ Greenhouse gases are considered to include carbon dioxide (CO₂), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. These are combined and expressed as carbon dioxide equivalents, or CO₂e.

ODOT analysis has shown that for the State to meet its goals, all strategies have to be employed: demand management, low carbon fuels, electric vehicles and alternative modes including transit. No one approach will enable us to meet the goal.

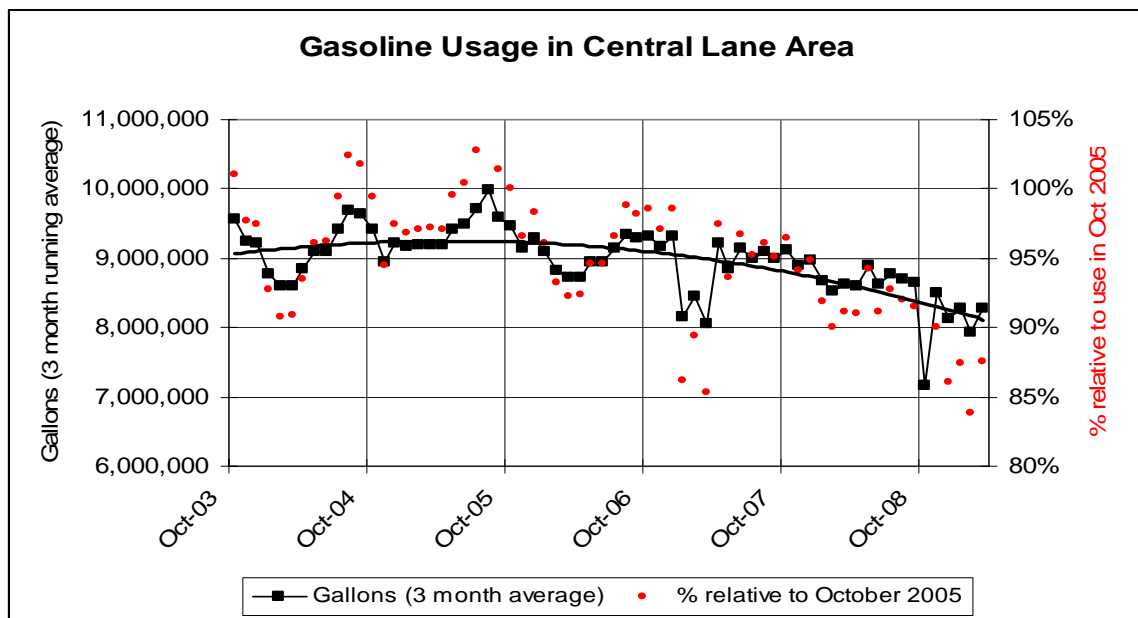
Trends:

It is and will continue to be advisable to collect and maintain data to complement any modeling forecasts. This is analogous to monitoring air pollutants that are analyzed under the air quality conformity rules of the Clean Air Act.

The following figures show trends extracted from federal and state data that are routinely reported on the web. It is clear that vehicle miles traveled on state highways (at least) have been declining within the state and local geographies. At the current time levels are approximately around 1998 levels.

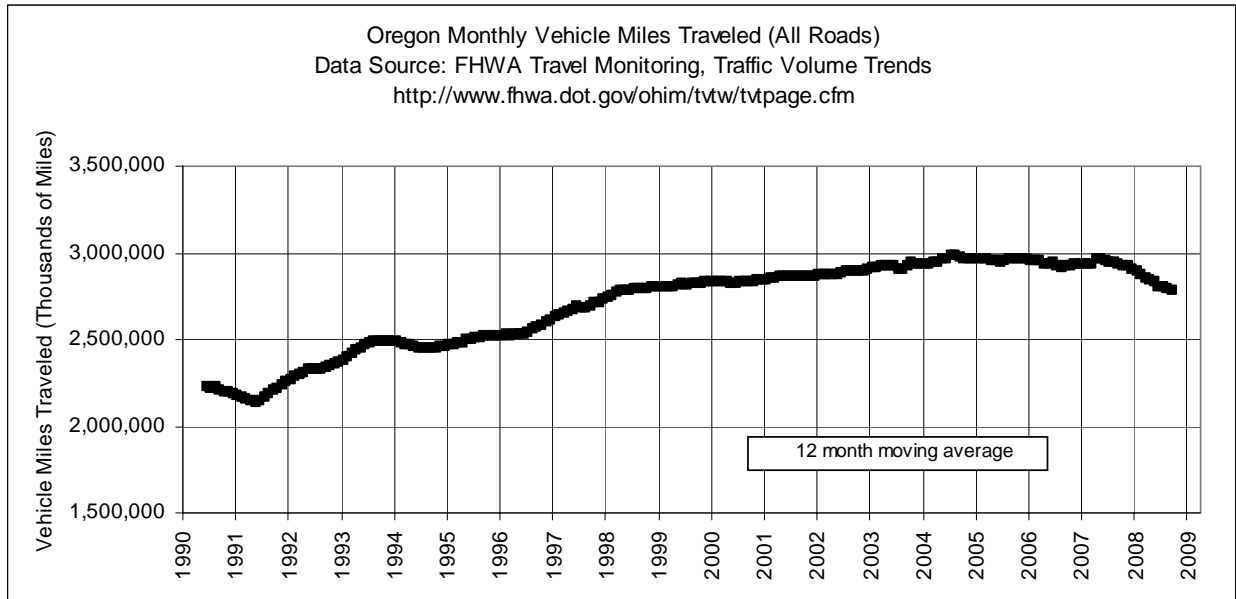
It should be emphasized that VMT is **NOT** equivalent to GHG emissions over the long term. Emissions are highly dependent on vehicle operating conditions including congested speeds. Also, as low carbon fuels are introduced, the CO2 emissions rate per gallon of fuel burned decreases. And, the type and age of the vehicle is highly significant. The long-awaited USEPA MOVES emissions model will be able to calculate the appropriate CO2 emissions rates given the appropriate input data. Fuel usage (converted to carbon content) is probably the most representative metric in that it integrates all these factors.

A. From local fuel sales tax receipts: in *March 2009*, fuel usage was about **88%** of usage in July 2005. We expect the current levels of use to be lower based on economic conditions.

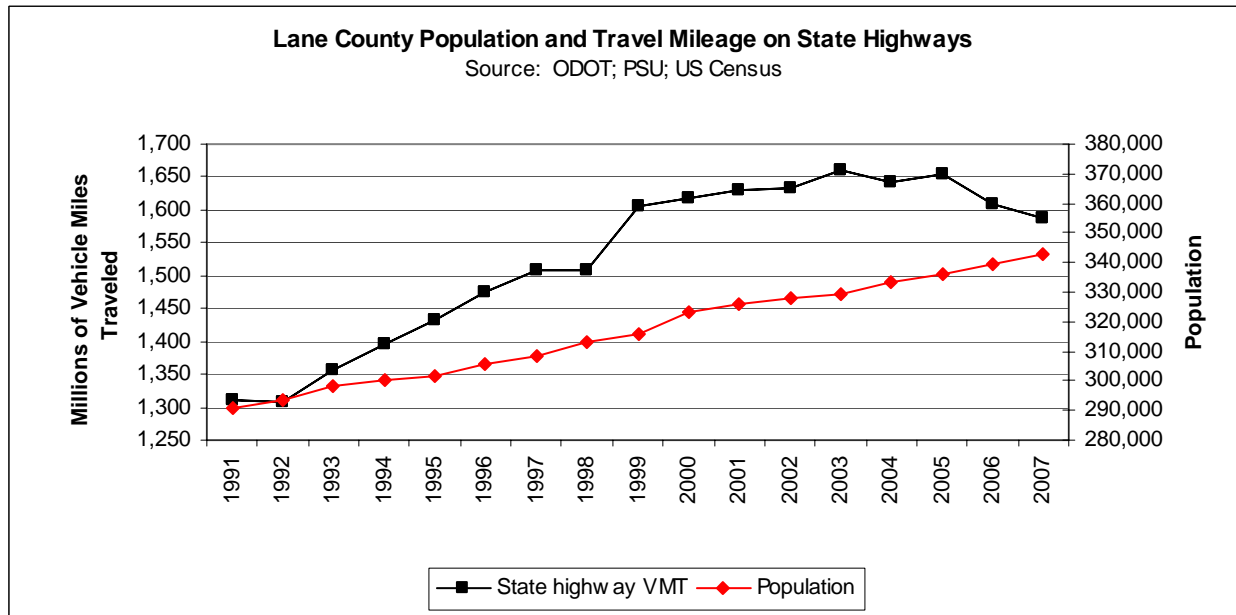


B. Vehicle Miles Traveled within Oregon: The following chart shows a 12-month running average of data reported by FHWA based on automatic recorders and statistical

analysis. As of *September 2008*, the reported miles were **94%** of the VMT estimated for July 2005.



C. Vehicle Miles Traveled on State Highways within Lane Co.: The following chart shows annual data reported by ODOT for state highways in Lane Co. based on automatic recorders and statistical analysis. As of *2007*, the reported miles were **96%** of the VMT estimated for 2005. During that period, population in the county increased by 2.1%. VMT/capita in 2007 was about equal to that of 1994.



Challenges

This area of work presents some significant challenges to this MPO:

1. There is a high likelihood that the MPO will be required to respond to regulations at both the state and federal levels. These may be inconsistent, or even in conflict with one another, as is the current situation with Air Quality Conformity regulations from DEQ and from EPA. Whether or not federal rules will trump state rules is not clear. Responding to two sets of regulations will be represent a significant resource challenge.
2. Current legislation at the state and federal levels is prescriptive in that specific modeling tools, data and targets are to be provided to the MPOs. This is likely to provide conflicting requirements which, again, could require extensive staff time and effort. In addition, differing approaches will produce differing results, leading to confusion.
3. While Metro is tasked with making their modeling tools available to us to use in scenario planning (per HB2001), it is not straightforward to implement these very complex models. Importing a model means accepting a framework within which an extensive amount of *local* analysis and data must be inserted. Models must be calibrated against the current conditions and then their forecasts validated. This is a non-trivial effort which is likely to take multiple years of work.
4. The basic travel demand model which all MPOs in Oregon use for their official work can not model many of the small scale strategies that may be a part of the alternative scenario planning. This has been recognized now at ODOT and at the national level. Metro is still probably a year away from having a working version of such an advanced tour-based model, and possibly two years before they are able to share the model with the other Oregon MPOs. We anticipate working with Metro and ODOT once that task is complete at Metro.
5. Model building and testing is a skilled profession. We will likely have to contract with private consultants to accomplish the work, regardless of the help provided by Metro. This will be expensive. It will thus be important to review our funding at the end of FY10 and assess our workload in light of these new and evolving requirements.
6. There is a significant coordination component to the development of rigorous greenhouse gas inventories. For example, there needs to be a protocol that is adopted statewide so that double counting of GHGs across jurisdictions does not occur. A decision as to using lifecycle costs must be made. Further, there needs to be a regular data conduit between the MPOs and the state agencies that manage fuels and passenger fleet information. This dialog has not yet included MPOs if indeed data management planning has begun.
7. The University of Oregon studies on climate change impacts indicate that the Willamette Valley may receive many “climate refugees” over the next 50 years. This may result in higher population growth than we typically expect from

historical and demographic trends. The difficulty in meeting any goal provided to us will depend on how the carbon “cap” is computed and whether adjustments are made over time as growth rates change across the state, and across the nation.

8. There are four major efforts to be considered: a) inventory, b) development of strategies and analysis of impacts (“mitigation”), c) development of plans to adapt to environmental changes, d) incorporation of sequestration and offset options.

Next Steps

After several years of discovery and study, the roles and responsibilities of the various state, federal and local agencies are being decided. Over the next six months, the MPO Greenhouse Gas Emissions Task Force, created under HB 2186, will meet to further define the process, impediments, and resources needed to address GHGs within all six Oregon MPO areas.

The Central Lane MPO will begin the process of determining how to create defensible and realistic GHG inventories due to all transportation sources within the MPO area or other boundary, as agreed to by the State.

The grant award from the American Recovery and Reinvestment Act (ARRA) for the integrated land use-transportation modeling system is currently at ODOT awaiting FHWA approval. This is expected in the next month. This project will implement an advanced land use model – one half of the integrated land use-transportation model that is required under the legislation.

Summary

This memo serves as an introduction to this topic. Staff will be providing MPC, TPC and CAC with further information as the work progresses.

Attachment 1
Central Lane MPO Staff Activities concerning Climate Change: 2007-2009

- August 2007** Assisted City of Eugene with city's greenhouse gas inventory.
- Fall 2007** Attended DEQ Greenhouse Gas Advisory Committee meetings.
- January 2008** Attended NW Conference on Climate Change.
- MPO-DEQ-LRAPA-ODOT-USDOT-USEPA: Central Lane MPO staff organized this interagency meeting to bring awareness of the climate change issues to other MPOs and agencies.
- May 2008** Worked with ODOT staff to appoint a representative from Oregon MPOs and from local government to the Oregon Global Warming Commission Transportation and Land Use subcommittee. The Salem/Keizer MPO manager and Eugene's Planning Director were appointed.
- June 2008** Attended Global Warming seminar at Portland State University.
- Undertook EPA MOVES model training at 17th International Emission Inventory Conference (this was a very early release of this model followed by a meeting with EPA modelers to obtain feedback from local MPOs).
- July 2008** Initiated Oregon Modeling Steering Committee discussion of capability of modeling tools to address pricing and congestion effects on VMT and traveler behavior. These strategies are likely important to curbing trips.
- October 2008** Attended University of Oregon Climate Initiative workshop developing the Upper Willamette Basin report.
- Attended Energy, Water and Climate Change discussion at EWEB.
- Attended FHWA Peer Workshop on Climate Change in Seattle.
- December 2008** Worked with UO Climate Initiative to support grant application to encourage local mitigation and adaptation efforts (unsuccessful).
- Attended Oregon Modeling Users Group meeting concerning GREENSTEP, the ODOT modeling tool to estimate the impacts of strategies to reduce GHGs at the state (and, perhaps, the county – to be determined) level.
- January 2009** Attended Oregon Modeling Steering Committee meeting to underline need to support work on the climate change issues of data collection and modeling advances.
- Spring 2009** Began research to identify advanced land use models for use in scenario planning.

- February 2009** Facilitated UO Climate Initiative presentation concerning climate change impacts on the Upper Willamette Basin to LCOG Board and Regional Managers.
- Represented MPOs at Oregon Global Warming Commission (OGWC) Transportation and Land Use subcommittee meeting as alternate for Salem/Keizer MPO manager.
- Attended FHWA climate change webinar.
- Developed UPWP work plan including climate change planning and model/data work program.
- Consulted with Eugene's sustainability manager concerning future work on the city's climate action plan.
- April 2009** Attended webinars on climate change by National Association of Regional Councils, FHWA, Transportation for America.
- May 2009** Met with University of Oregon Climate Initiative leadership group to review an approach to adaption and mitigation issues within the MPO area and Lane County.
- Attended AMPO (Association of MPOs) climate change webinar.
- June 2009** Reviewed DLCD Climate Change Planning work program.
- Met with University of Oregon Climate Initiative, Lane County Public Health, Lane County Commissioner, City of Eugene, LRAPA, to continue discussion on climate change and adaptation approaches.
- Began research concerning the potential of using The Climate Registry protocols for mobile source inventories.
- Attended training on the latest release of the MOVES model which is expected to be formally approved for use by December.
- Tracked legislation concerning MPOs and climate change planning.
- Collaborated with local cities and University of Oregon on EPA grant opportunity for regional climate change planning efforts.
- Attended OGWC Transportation and Land Use subcommittee meeting.
- Prepared prospectus and submitted ARRA grant for integrated land use-transportation model to ODOT. Awaiting FHWA approval.