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CENTRAL LANE SCENARIO PLANNING

Reference Case Results and Assumptions

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Introduction

In 2009, the Oregon Legislature passed House Bill 2001, the Jobs and Transportation Act (JTA). Section 38a of the JTA directs the Central Lane MPO to undertake scenario planning, and for the local governments in Central Lane MPO boundary to cooperatively select a preferred land use and transportation scenario. The local governments – the cities of Springfield, Eugene and Coburg, Lane County and the Lane Transit District – are working together to develop and evaluate scenarios to fulfill this requirement while testing strategies to address local economic development, public health and equity goals.

As an early step in the scenario planning process, the local governments have established a 2035 reference scenario. The reference scenario is the baseline to which alternative scenarios are compared; it approximates the future if current policy direction is carried out without significant changes. The reference case represents our best assumptions about how current policy direction could be implemented over the next 25 years. This memo outlines the assumptions that underlie the reference scenario and document the Metropolitan GreenSTEP outputs for the reference scenario. This work forms the baseline against which alternative future scenarios will be compared.

2035 reference scenario assumptions

Land use assumptions

- Envision Eugene and Springfield 2030 are adopted and implemented without major changes.
- 2010 Coburg Urbanization Study is implemented without major changes.

The reference scenario generally reflects current policy direction. Since Eugene, Springfield and Coburg are in the process of developing new land use plans, the reference scenario reflects current policy direction contained in those emerging plans.

Population and household assumptions

- Between 2010 and 2035, the population within the Central Lane MPO boundary is forecast to increase by nearly 64,000 residents. This assumption is based on state population forecasts and is provided to the region by state officials.
- Housing and land area supply is based on current policy direction. For 2035, households are matched to dwelling unit types based on reasonable assumptions about socio-demographic characteristics.
- Metropolitan GreenSTEP travel behavior estimates do not rely explicitly on the location of new employment areas, but the location of employment does affect population density and land uses. Land use assumptions are based on current policy direction.
- Household size is assumed to be the same as in 2010.

Pricing assumptions

- Federal gas tax is 18 cents per gallon – the same as today.
- State gas tax per gallon is 24 cents in 2005 and 2010, and 30 cents in 2035.
- Local gas tax is 4 cents per gallon.
- The average daily cost of parking is approximately $3.00 in 2035, slightly lower than in 2005.
- Locations with paid parking are limited to downtown Eugene and the University of Oregon in 2005 but expand to Springfield in 2035. The cost for parking in downtown Springfield is assumed to be half the cost to park in downtown Eugene.
- Zero households participate in pay-as-you-drive insurance, and the state does not have a vehicle miles traveled tax or carbon tax.

Marketing and incentive assumptions

- Participation in employer-based commute options programs stays the same as it is in 2005
- Participation in individualized trip reduction marketing increases slightly in Eugene, Springfield, and Coburg.
- Participation in individualized car sharing stays the same as it is today.

Fleet and technology assumptions[1]

- The region's auto and light truck fleet mix changes, with more people driving passenger cars and fewer driving light trucks and sport utility vehicles (SUVs) than today.

[1] Reference case is consistent with assumptions included in OAR 660-044.

- The Low Carbon Fuel Standard (as proposed by the Oregon Department of Environmental Quality) is adopted; carbon intensity of fuels will decline by 20 percent below today's average.
- For model year 2035, autos with internal combustion engines (ICE) reach fuel efficiency of 68 mpg while light trucks and SUVs reach 48 mpg.
- For model year 2035, plug in hybrid electric (PHEV) or electric vehicles (EV) comprise 8% of all autos and 2% of light trucks and SUVs. Of those vehicles, 26% of autos and 26% of light trucks and SUVs are electric vehicles (EV).

Transportation system assumptions

- The roadway system is relatively similar to today with minor increases in lane miles for freeways and arterials in Coburg and Springfield. Because the Eugene TSP is still in progress, the results do not reflect any changes in lane miles in Eugene. The Metropolitan GreenSTEP model is not detailed enough to capture changes to intersections, collector streets or pedestrian and bicycle network improvements.
- The transit system expands to include 5 bus rapid transit lines as detailed in the Regionally Adopted Transportation Plan. These lines include the West Eugene, River Road, Highway 99W, Main Street/McVay, and Lane Community College lines. In total, transit service grows from 12 revenue miles per capita to 18 revenue miles per capita with a total of more than 5.4 million revenue miles in the region in 2035.
- Twice as many miles travel by bike in the region as compared to today.

2035 reference scenario outputs

The Central Lane MPO analyzed the changes expected between 2010 and the 2035 reference scenario using Metropolitan GreenSTEP. The results are presented below.

Category	Measure	2010	2035	2035 (% change compared to 2010)
Greenhouse Gas Emissions	Per capita greenhouse gas emissions from light vehicles including reductions from fleet changes (metric tons)	3.47	1.32	-62%
Fuel Consumption	Annual per capita fuel consumption (gallons)	339	150	-56%
Travel and System Performance	Daily vehicles miles traveled per capita	21.7	22.2	3%
	Annual vehicle delay per capita (hours)	30	37	23%
	Transit revenue miles per capita	12.8	17.9	40%
Active Travel	Per capita annual walk trips	120	123	3%
	Daily miles traveled by bicycle per capita	0.27	0.53	153%

Category	Measure	2010	2035	2035 (% change compared to 2010)
Land Use and Natural Resources	UGB area (acres)	49,737	52,858	6%
	Households living in mixed use areas (%)	12.9%	14.4%	12%
	Per capita water use (gallons)	256	219	-14%
Taxes, Fees and Expenses	Annual household fuel costs (per capita)	$1,863	$1,866	0%
	Annual household vehicle operating costs (fuel, taxes, parking)	$2,383	$2,208	-7%
	Annual vehicle ownership and maintenance expenses	$5,521	$6,485	17%
	Annual local gas tax revenue	$4.18 million	$2.38 million	-43%
Public Health	Clean Air Act criteria pollutants (Metric Tons)	61	25	-59%
	See active travel for additional public health indicators.			
Other	External social costs per capita[2]	$446	$327	-27%

Note: All dollar values use $2005 dollars.

Because of uncertainties about future land use plans in the region, several minor variations in land use were tested to confirm that outputs were consistent. Through this work, it has been confirmed that using Metropolitan GreenSTEP, a strategic analysis model, these minor variations in UGB expansion or local development patterns do not significantly change overall light vehicle travel or derived emissions at the regional level.

Greenhouse gas reduction targets

In May 2011, The Land Conservation and Development Commission (DLCD) adopted a per capita roadway greenhouse gas emissions reduction target for light-duty vehicles for all six metropolitan areas[3]. The target for the Central Lane MPO area is 20% reduction over 2005 levels. This 20% target should be considered without accounting for fleet and technology changes. The region is not required to meet this target through scenario planning, but is required to consider it.

When fleet and vehicle changes are excluded, the reference scenario shows a 3% decrease in greenhouse gas emissions as compared to 2005. This forecast of greenhouse gas emissions includes both commercial and household light duty vehicles. Because of the method of

[2] External costs include, air pollution, other environmental resources, safety, noise, climate change, energy security. Source: White paper: Costs of Motor vehicle Travel – Cambridge Systematics.
[3] http://www.oregon.gov/LCD/docs/rulemaking/trac/660_044.pdf

calculation, this scenario cannot be directly compared to the reference scenario described above.

Lessons learned

The Metropolitan GreenSTEP outputs show that the region is making progress in many areas based on current policy direction. Under current policy direction, the region's greenhouse gas emissions from light vehicles decreases by 3% from 2005 levels when fleet and technology changes are not included. If fleet and technology changes are included, the reduction is more than 60%.

Under the reference case, biking and walking increase, and air pollution and fuel consumption decrease. While vehicle ownership and maintenance costs increase, vehicle operations costs for households decrease. Per capita vehicle miles traveled and delay increase on the transportation system.

Based on input from the TAC and PMT, the project team will test variations of the reference case to better understand how different inputs affect the Metropolitan GreenSTEP indicators. This sensitivity testing will answer questions about how changing individual and bundled inputs affects key indicators and will influence the development of alternative scenarios. During this sensitivity testing step, the project team will explore what inputs are contributing to the performance on individual indicators like greenhouse gas emission reduction.