



VisionEval Model

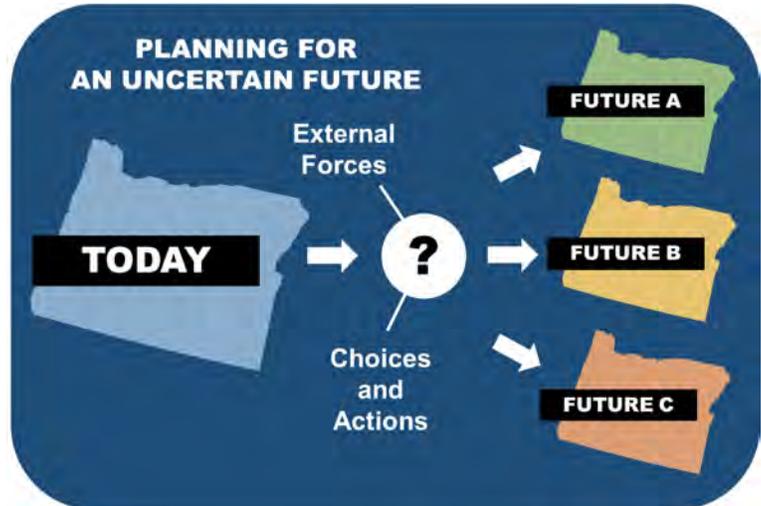
A Long-Range Scenario Planning Model

What is VisionEval?

VisionEval is a version of Oregon's statewide GreenSTEP model, which was developed by the Oregon Department of Transportation (ODOT) to conduct long-range strategic planning.

The ability to examine many possible futures is especially important today in an environment of limited funding and future uncertainties.

VisionEval demonstrates how community development and transportation investment choices could influence planning goals, land use goals, and other community livability factors. The model forecasts how different factors interact, such as the effect that parking policies may have on transit use, or how different development types could affect trip lengths.



Using VisionEval, planners can:

- ◆ Determine key paths to reaching greenhouse gas emissions reduction targets
- ◆ Test the resilience of current plans under alternative conditions
- ◆ Determine total household vehicle travel, energy consumption, and greenhouse gas emissions regardless of where the travel occurs
- ◆ Analyze the effects of dozens of different factors on vehicle travel and greenhouse gas emissions levels
- ◆ Calculate household walking trips, bicycling potential, total household vehicle travel expenses, and road user fee revenues

VisionEval Comparison to Traditional Travel Demand Models

- Easier inputs and shorter run times—good for visioning and screening multiple future scenarios.
- Ability to test policy impacts not available in most travel demand models (see inside for VisionEval input examples.)
- Accounts for the affects of household income, pricing policies, shifts in vehicle technologies, and changes in future fuel costs on travel behaviors.
- Can use travel demand model and/or land use model assumptions for consistency.
- More detailed models are still needed to determine how best to implement a preferred scenario.

How does the model work?

VisionEval can test the effects of a variety of community, land use, and transportation inputs, including demographic changes, policy and investment choices, and other factors.

INPUT				
Regional Context	Local Actions		Collaborative Actions	
	Community Design	Marketing & Incentives	Vehicles & Fuels	Pricing
<ul style="list-style-type: none"> Demographics Income growth Fuel price 	<ul style="list-style-type: none"> Future housing (single and multi-family) Parking fees Transit service Bicycling 	<ul style="list-style-type: none"> Travel demand management strategies Car sharing Education on driving efficiency Intelligent transportation systems 	<ul style="list-style-type: none"> Vehicle fuel economy (mpg) Fuel types Commercial fleet information 	<ul style="list-style-type: none"> Pay-as-you-drive insurance Gas taxes Road user fees

VisionEval simulates the demographic attributes (such as income, age) of every household in the region. It then adds:

- ▶ Land use information (mixed use /suburban, dwelling type)
- ▶ Participation in travel demand management programs, workplace parking fees, or car share membership programs
- ▶ Household vehicles (number, age, electric, MPG)

Household and land use information is combined with regional measures of road and transit service, intelligent transportation systems, and pricing (such as road fees, carbon tax, pay as you drive insurance). National travel survey information is used to estimate vehicle miles travelled under these circumstances.

An iterative process is used to balance likely household vehicle choices, vehicle miles travelled and household transportation costs. For example, when gas prices increase, driving drops. Households in compact, mixed-use areas tend to make shorter trips. Given the current range limitations of electric vehicles, these households are more likely to buy an electric vehicle.



PROCESS

1. Define households
2. Estimate vehicle miles travelled
3. Characterize vehicles

Recalculate to balance vehicle miles travelled and travel costs



REPORTING MEASURES	
<ul style="list-style-type: none"> Vehicle miles travelled (VMT) per capita Vehicle delay and road congestion level Walk, bike and transit travel indicators Household travel costs by income group 	<ul style="list-style-type: none"> Future vehicle attributes (MPG, percent electric vehicles, emissions per mile) Energy/fuel usage by personal and freight vehicles Greenhouse gas (GHG) and other vehicle emissions Implied social costs of travel (often unpaid)

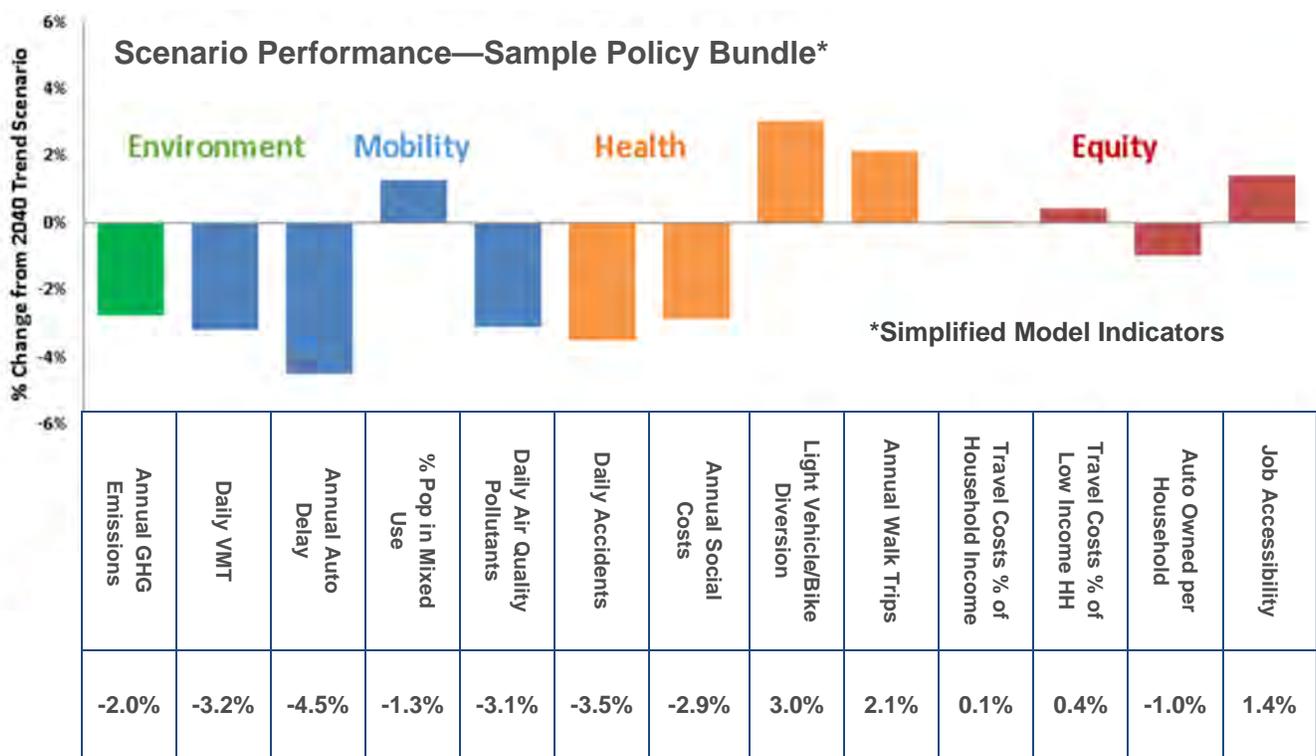
Scenario Planning with VisionEval

Scenario planning can help state departments of transportation and metropolitan planning organizations (MPOs) to develop a long-range vision for the future. The process improves understanding of the impacts and tradeoffs of different policy options, and promotes community resilience as lifestyle and travel paradigms change.

Transportation and land use decisions made today may significantly impact a region’s future livability. Models like VisionEval help communities to not only prepare for the possibility of alternate futures, but also to steer growth toward a preferred future through strategic policy and investment choices.

During the scenario planning process, agencies can use VisionEval to assess whether adopted plans and policies are sufficient to achieve their planning goals. If policy shifts or more ambitious actions are needed to achieve goals, VisionEval can be used to test and identify strategies which offer the most beneficial impacts. Model results can then inform the development of transportation plans and investment priorities.

Estimates of the amount of future travel, emissions, household transportation costs, energy use, and health impacts that could result from different choices and actions can be helpful to decision-makers.



VisionEval merged the successful GreenSTEP family of strategic planning models into a common open-source programming framework supported by a multi-agency partnership to share its use and development. VisionEval family includes two national tools supported by the Federal Highway Administration, that have been used by Washington DOT; Maryland DOT; Philadelphia, PA; Raleigh, NC; and Atlanta, GA among others. These models and their applications have received multiple national awards. For more information on model development, data sources, assumptions and research, see VisionEval.org.



Understanding Tradeoffs

Community understanding of VisionEval forecasts is key to a successful decision-making process. Interactive online tools can help communicate VisionEval findings to local agency stakeholders and members of the public.

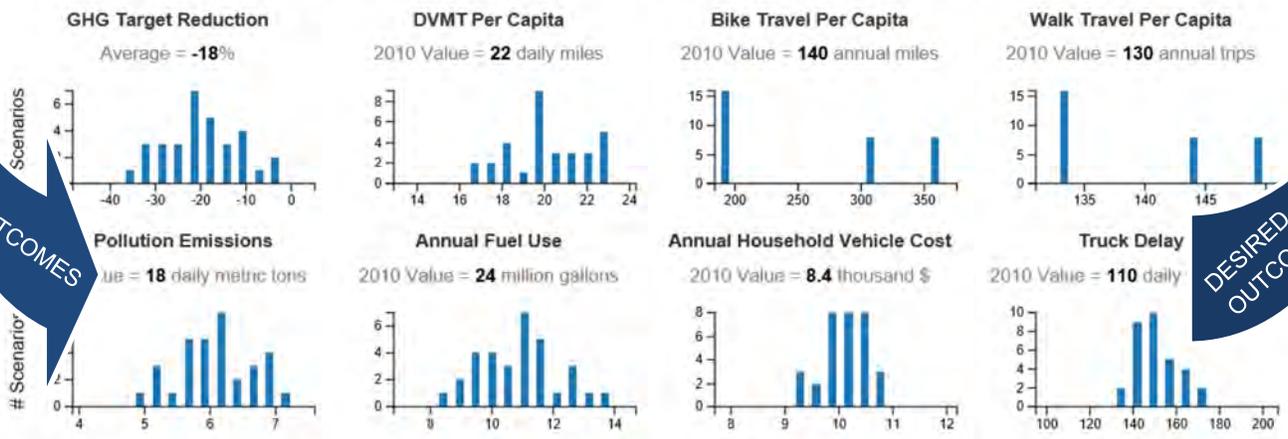
Using the VisionEval scenario viewer, online participants can indicate how much change they would like to see in major land use and transportation policy areas, and then view how their choices would affect various regional indicators. The process can also be reversed, allowing participants to choose desired outcomes and then view policy scenarios that reflect those outcomes.

Example Metropolitan Planning Area Online Viewer

Scenario Input Levels



Model Outputs *



*Simplified Model Indicators

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