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OREGON
Scenario Planning Guidelines

Resources for Developing and Evaluating
Alternative Land Use and Transportation Scenarios

Volume 1.1

Oregon Sustainable Transportation Initiative (OSTI)

August 2017

Oregon Department
of Transportation

Oregon Department of Land Conservation and Development

This document was initially published in 2013 resulting from legislative direction to provide scenario planning guidance and support to Oregon's Metropolitan Planning Organizations and local jurisdictions in order to help achieve Oregon's greenhouse gas reduction goals. In 2017 this document was updated to represent changes in legislative rulemaking and to incorporate the best information available to date. This document presents a potential path for application of a scenario planning process to meet Oregon's greenhouse gas reduction legislative targets, and is not the only manner in which to conduct a scenario planning process. Questions regarding this version or the previous version of this document can be directed to the Oregon Department of Transportation.

Oregon Scenario Planning Guidelines

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Metropolitan land use and transportation scenario planning is a powerful process for better understanding the long-term impacts of today's policy and investment decisions.

Scenario planning allows a community to evaluate the likely outcomes of existing plans and to explore possible benefits and costs of alternative futures. With scenario planning, a community can better realize its long term planning and development goals while also achieving important state and federal goals and requirements. If a preferred future scenario is selected, communities can choose to move forward by modifying existing plans or creating a new strategic plan.

The *Guidelines* detail a process to take a metropolitan area from developing the initial framework of a scenario planning process through analysis of alternatives and onto consideration of implementation strategies. Whether scenario planning is voluntary or mandatory for a metropolitan area, this process can help metropolitan areas make progress on a range of community goals, community needs and benefits, including GHG emission reduction.

There is no one-size-fits-all prescription for scenario planning. Metropolitan areas are encouraged to use the handbook as guidance to design a scenario planning process that best addresses local conditions and builds on other concurrent or recent planning efforts.

This handbook is provided as a resource to metropolitan areas. Nothing in the handbook is intended to impose a requirement, beyond any that might exist in statute or rule, to undertake specific actions or to do so in specific ways.

What Is Land Use and Transportation Scenario Planning?

Oregon has a long tradition of land use and transportation planning. Most cities and counties already have a comprehensive plan and a **transportation system plan (TSP),** and each **metropolitan planning organization (MPO)** works to coordinate transportation planning and funding within its region. This system of planning has served Oregon well, designating lands for urban development while protecting farm and forest lands and planning for transportation needs. However, with each individual community having its own UGB and TSP, existing plans do not always represent a coherent vision for the interrelated housing, jobs and transportation needs of an overall metropolitan region.

Land use and transportation scenario planning, as described in the *Guidelines*, does not replace traditional planning activities. However, scenario planning does allow a community to look long-term and envision the future it wants, rather than accept the trend line embodied in most existing plans. Scenario planning encourages policy makers, stakeholders and the public to think outside the box and consider a wider range of opportunities, challenges, and possible futures than typically considered in most traditional planning applications.

Scenario planning is not about predicting the future or providing a specific answer. Rather, it is a methodology for "seeing" alternative futures not easily estimated using past trends or assumptions. The expectation is that through the process of conceiving, developing, and evaluating a series of future scenarios and the outcomes they produce, a preferred and feasible course of action can be identified.

While standard planning processes tend to focus on processes and decisions under the control of the agency conducting the planning, scenario planning purposefully focuses on the combination of internal and external influences, including those statewide and national trends. Today, large- scale land use and transportation planning has evolved to include expanded public processes, involving a wide variety of stakeholders, conducted by a variety of organizations.

Scenario planning can also involve the use of newer tools that actively involve the public in envisioning possible futures, while at the same time developing **evaluation criteria** to help quantify the costs and benefits of different scenarios, e.g., housing costs or transportation costs.

Typically, scenario planning starts by evaluating base year conditions and then creates a **reference case** that estimates what the future would likely look like if current plans are carried out. Scenario planning then involves developing several significantly different **alternative scenarios** for the future to be evaluated and then presented to the public, stakeholders and policy makers for consideration. Armed with locally developed evaluation criteria, a community can then compare the reference and alternative scenarios and select a **preferred scenario** and a **set of implementation strategies.**

Why Do Scenario Planning?

Many regions and metropolitan areas around the country have engaged in scenario planning for a variety of reasons. Some have experienced rapid growth and are seeking to examine the long-range consequences of potential policies. Some are looking to develop economic strategies that might stimulate a depressed economy. Others are considering strategies to encourage more walking and biking trips to enhance the livability of their communities and the health of their residents. **Fundamentally, the scenario planning process is used to address issues that are not always dealt with by existing land use and transportation plans:**

- *What could the metropolitan area look like with different kinds of transportation and land use development?*

- *Are there different and better ways to manage change?*

- *How can land use and transportation strategies be used to increase the prosperity and well-being of communities without jeopardizing the environment?*

- *How can land use and transportation strategies reduce the emissions that contribute to climate change? What could happen if the metropolitan area grows in substantially different ways?*

- *How well will existing plans perform if there are major changes to conditions, or societal shifts on forces such as the economy, funding, demographics, housing, energy costs, etc.?*

There are compelling reasons for communities to undertake a scenario planning process beyond the legislative requirement to reduce GHG emissions from light vehicle travel. Scenario planning can help communities explore how plans and policies put in place today will affect their community in the future. What actions will best support revitalizing downtowns or other older commercial areas in a community? Which policies and investments can most effectively encourage a mix of uses and help increase the number of jobs and commercial services near where people live - thus helping to reduce VMT? How do these choices affect a community's finances by guiding investment choices more thoughtfully?

Local governments may also find scenario planning a useful way to explore the potential of alternative approaches to increase community health, reduce time in traffic, expand opportunities to bike and walk, preserve open spaces, and encourage vibrant local businesses and business districts. If a community can save taxpayer dollars, revitalize a beloved downtown, or boost economic development, while at the same time reduce auto travel and pollution, it becomes a much more attractive strategy.

What Will Scenario Planning Accomplish?

The scenario planning process described here will enable Oregon's metropolitan areas to evaluate their existing plans in light of recent trends and expected future conditions to:

- *Explore options to better address a wide range of community goals and needs*

- *Estimate how far current plans go toward achieving the target reductions in GHG emissions.*

The analysis, coupled with an effective public and stakeholder involvement process, will allow for creation and examination of alternative scenarios. These scenarios allow communities to assess an array of potential strategies for the achievement of local goals and GHG emissions reduction. Through the process, the communities making up the metropolitan area can arrive at an agreed upon collective vision for the future, and identification of land use and transportation strategies that can help the metropolitan area achieve the outcomes described by the vision. Though the vision will be shared, the steps to achieve it may be unique to each of the communities within a metropolitan area.

A regional scenario planning process can address a wide range of planning issues because it allows metropolitan areas to evaluate an array of subjects related to community goals. Metropolitan scenario planning, as described in the *Guidelines*, may include topics usually outside of traditional land use and transportation planning for some local areas. Land

use and transportation scenario planning specifically provides an opportunity to see how the mix of local land use plans, local and metropolitan transportation plans, and other plans would fare when evaluated together in a variety of future scenarios. Often a more integrated, cooperative system is developed as a result.

One of the most common findings of scenario planning is that better integration of land use and transportation plans can result in less congestion and less travel for the same amount of investment. The various land use attributes (e.g., community design, jobs/housing balance, etc.) contributing to reduced travel distances can be translated into regional policies and implemented in local plans in a variety of ways. Many of the regions that have completed a scenario planning process used their findings to modify existing local and regional land use and transportation plans. Additionally, the scenario planning process can help inform the tailoring of future investments to better support the selected strategies.

An Adaptive, Step-by-Step Scenario Planning Process

The *Guidelines* outline a step-by-step framework for conducting scenario planning. The steps are presented linearly, however, since there is no one-size-fits-all prescription for scenario planning, it might make sense to do steps in a different order, to omit some steps, and/or even to repeat some steps as part of an iterative process.

Metropolitan areas are encouraged to innovate and adapt the recommendations in the handbook to fit local conditions and the latest information. As new practices, tools and information become available this handbook will be updated to reflect current best practices.

Adapting the Step-by-Step Process for Different Planning Needs

The scenario planning process is not always linear or entirely predictive. Take a flexible approach, and when appropriate, revisit previous actions with new information gained during the process. This graphic highlights the potential for adaptation and interaction between the steps.

Step 1: Create a Framework for Your Scenario Planning Process

Step 1 describes getting started with scenario planning for the metropolitan areas. This includes identifying political and technical leadership for the process, defining the geographical scope of the process, identifying potential funding sources, making use of the Regional Strategic Planning Model to do a baseline assessment of existing conditions and plans, and preparing a public involvement strategy.

Step 2: Select Evaluation Criteria

Step 2 involves translating the key issues identified in Step 1 into a set of guiding principles that will serve as objectives to guide the process. Metropolitan areas will use these guiding principles to prioritize the evaluation criteria for analyzing the scenarios later in the process.

Step 1

Create a Framework for Your Scenario Planning Process

After some analysis, results and/or public input may indicate the need for additional or revised evaluation criteria.

Step 2

Select Evaluation Criteria

Step 3

Set Up for Scenario Planning: Evaluation Tools, Data and Building Blocks

Step 4

Develop and Evaluate Base Year Conditions and a Reference Case
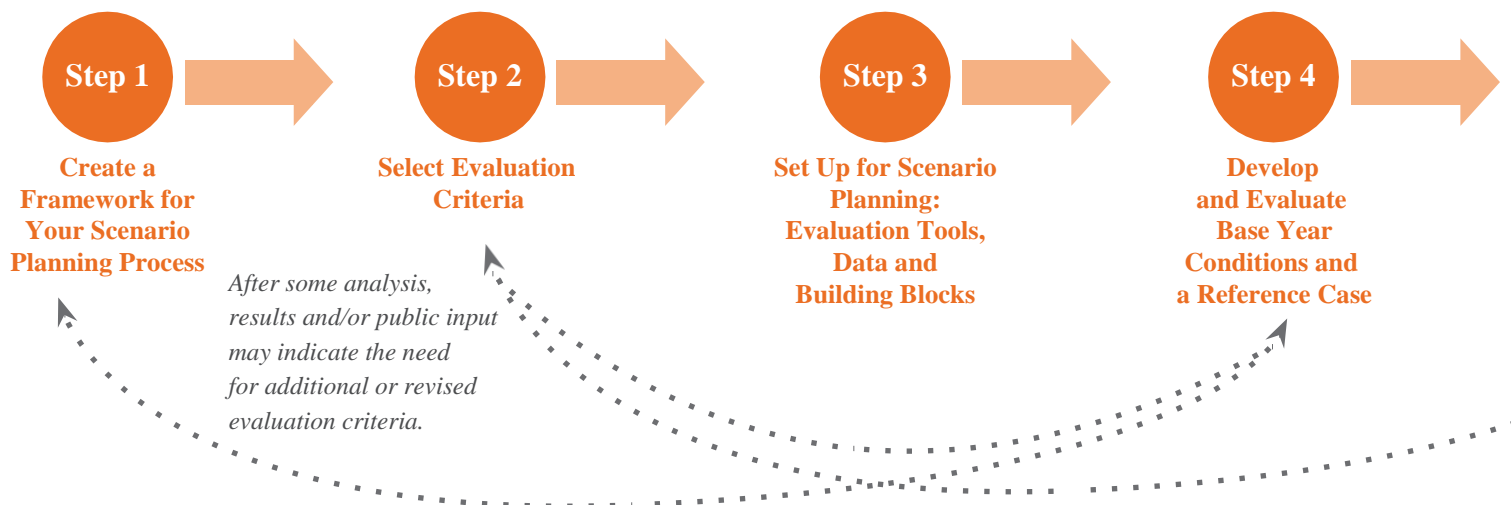
Step 3: Set Up for Scenario Planning: Evaluation Tools, Data and Building Blocks

Step 3 begins by selecting the scenario planning tool(s) to be used, and gathering the data and other information needed to create the scenarios. As part of this step, specific building blocks may be created for use in the development of scenarios with the chosen sketch planning tool.

Step 4: Develop and Evaluate Base Year Conditions and a Reference Case

Step 4 outlines the process for developing and evaluating both the current base conditions of the metropolitan area and a reference case based on current plans and policies.

Step 5: Develop and Evaluate Alternative Scenarios

Step 5 engages the public regarding options for the future and creating alternative land use and transportation scenarios. Each scenario is then evaluated and prepared for the selection of a preferred scenario in Step 6.

Step 6: Select a Preferred Scenario

In Step 6, the alternative scenario are presented for public feedback and a preferred scenario is selected or designed. The preferred scenario should include a concept map, a set of major programs, policies or general actions, and spatially distributed housing and employment forecasts.

Next Steps

If a preferred scenario was selected in Step 6, this section outlines several implementation approaches that can work with Oregon's planning system.

Step 5

Develop and Evaluate Alternative Scenarios

Step 6

Select the Preferred Scenario

Figure 1: Oregon's 2015
GHG Emissions by
Source

- Transportation
- Electricity
- Natural Gas
- Agriculture
- Industrial
- Residential & Commercial
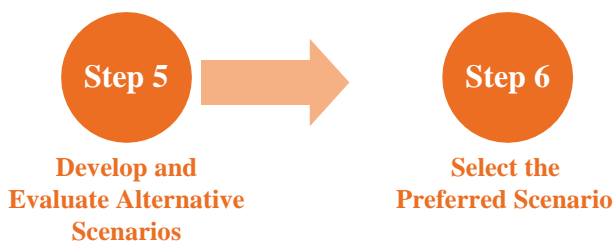
Reducing GHG Emissions Through Scenario Planning
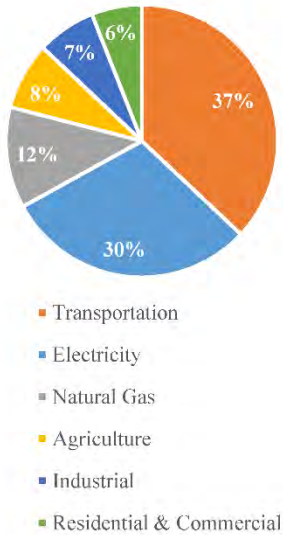
Although useful in its own right, land use and transportation scenario planning is an important part of statewide efforts to reduce energy use, promote a strong economy and reduce GHG emissions to sustainable levels. Scenario planning provides a way to explore the benefits and costs of possible local efforts in combination with state and federal efforts to reduce GHG emissions from light vehicle travel while at the same time advancing other important local and state goals.

Oregon's GHG Emissions Reduction Goals

In 2007, with House Bill (HB) 3543, the Oregon Legislature found that "Global warming poses a serious threat to the economic well-being, public health, natural resources and environment of Oregon..." and that "Actions to reduce [GHG] emissions will reduce Oregon's reliance on foreign sources of energy, lead to the development of technology, attract new businesses to Oregon and increase energy efficiency throughout the state, resulting in benefits to the economy and to individual businesses and residents."

The Legislature declared "it is the policy of [the state of Oregon] to reduce [GHG] emissions in Oregon pursuant to the following [GHG] emissions reduction goals:

- *By 2010, arrest the growth of Oregon's [GHG] emissions and begin to reduce [GHG] emissions.*

- *By 2020, achieve [GHG] levels that are 10 percent below 1990 levels.*

- *By 2050, achieve [GHG] levels that are at least 75 percent below 1990 levels."*

The Legislature also established the Oregon Global Warming Commission to "recommend ways to coordinate state and local efforts to reduce [GHG] emissions in Oregon consistent with the [GHG] emissions reduction goals."[1]

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1   HB 3543 is codified at ORS 468A.200 to 260

As Figure 1 shows, the transportation sector accounts for more than one-third of all GHG emissions in Oregon. Light vehicles (motorcycles, cars, SUVs, vans, and pickup trucks) account for roughly 60% of the emissions from the transportation sector, or roughly 20% of Oregon's total emissions.[2] Metropolitan areas are in a good position to take steps to reduce emissions from light vehicles using the scenario planning process.

Oregon Sustainable Transportation Initiative

Metropolitan land use and transportation scenario planning is part of the Oregon Sustainable Transportation Initiative (OSTI), which aims to reduce Oregon's GHG emissions from the transportation sector. Established by legislative approval of HB 2001 and Senate Bill 1059 this effort consists of several components:

• *Statewide Transportation Strategy*

• *Metropolitan Scenario Planning*

• *Support for Metropolitan Scenario Planning*

Statewide Transportation Strategy

Senate Bill (SB) 1059 directs the Oregon Transportation Commission to identify a "statewide transportation strategy on [GHG] emissions to aid in achieving [Oregon's GHG emissions reduction goals]."

The Statewide Transportation Strategy (STS), developed by the Oregon Department of Transportation (ODOT), with the assistance of advisory committees and consultants, envisions significant reductions in GHG emissions, both inside and outside metropolitan areas of the state, from all modes of transportation: light vehicles, heavy vehicles, air, rail and marine. The STS includes strategies to encourage the use of improved vehicle technologies and fuels; improve the state's transportation system and provide more options; and encouragements for people to drive less or travel in ways that produce fewer emissions.

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2   Legislative Concepts Report: Responding to House Bill 2186 Section 10, Metropolitan Planning Organization Greenhouse Gas Task Force, 1/11/2010, p. 5

Climate Change Initiative
This Scenario Planning Handbook and accompanying GHG Toolkit are part of a statewide effort to reduce GHG emissions and combat climate change. The Oregon Global Warming Commission was created by the state legislature in 2007 to recommend ways to coordinate state and local efforts to reduce Oregon's GHG emissions below 1990 emissions levels by 2020, and to recommend efforts to help the state, local governments, businesses and residents prepare for the effects of global warming. The State has also developed an Adaptation Framework to identify key risks and reduce Oregon's vulnerability to the effects of climate change. The Adaptation Strategy establishes short-term priority actions to address identified climate risks most likely to impact the state. Both initiatives are on-going with much work yet to do.

Metropolitan Scenario Planning

In 2009, with HB 2186,[3] the Legislature established the Metropolitan Planning Organization Greenhouse Gas Task Force which concluded:

> *Revising transportation and land use plans in metropolitan areas will be a necessary part of a broader statewide effort to meet state [GHG] reduction goals. Planning our metropolitan areas in ways that build in transportation options can reduce the need for travel and significantly reduce [GHG] emissions from automobiles. The Task Force acknowledged that revising plans will be a challenging, long-term effort, and also concluded that it is also necessary, doable, and should start now. Done soon, and done well, it can help create safer, healthier, and more prosperous communities and expanded transportation choices for Oregonians, and can avoid the need for more dramatic measures later.[4]*

Metropolitan scenario planning is a good way to explore the benefits and costs of possible local efforts in combination with state efforts. Alternative land use and transportation scenarios are developed outlining what a metropolitan area's land use and transportation systems could look like in the future, and suggesting actions to achieve such visions. The scenarios should assume and build on state and federal programs, including policies and incentives in the STS, such as actions to promote the use of improved vehicle technologies and fuels or local actions to change land use patterns and expand transportation options.

Finally, the scenarios should be detailed enough to enable estimates of the benefits and costs of implementation, including an estimate of the likely reduction in GHG emissions from light vehicle travel inside the metropolitan area.

Metropolitan GHG Reduction Targets

In January 2017, LCDC adopted updated GHG reduction targets for the state's eight metropolitan areas: Portland, Eugene-Springfield, Salem-Keizer, Rogue Valley, Bend, Corvallis, Albany, and Grants Pass. The targets, codified as OAR 660-044, are designed to guide metropolitan areas as they explore ways to reduce GHG emissions from light vehicle travel by considering changes to land use and transportation plans through scenario planning.

Figure 2: Metropolitan Area Light Vehicle GHG per Capita Reduction Targets for 2040– *Based on Percent Reductions from 2005 Levels.*
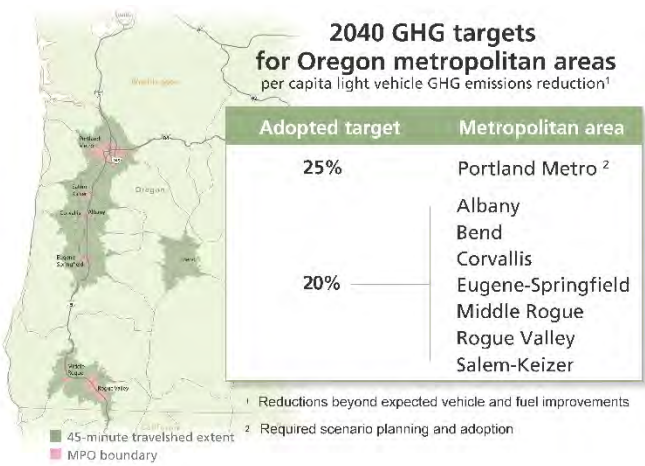
Source: DLCD

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3   HB 2186 was signed into law as Oregon Laws 2009, chapter 754

4   Legislative Concepts Report: Responding to HB 2186 Section 10, Metropolitan Planning Organization Task Force

Some key points on targets:

- *Targets are based on the estimated reduction in GHG emissions from light vehicle travel needed in each metropolitan area to meet the state goal of a 75 percent reduction in such emissions from 1990 levels by the year 2050. Targets are set as per capita reductions. This recognizes and allows for population growth and avoids setting higher targets for areas expected to grow more rapidly.*

- *Based on the technical information provided in the STS, the targets incorporate assumptions about future vehicle technology and the fleet mix. The baseline assumptions anticipate significant improvements in vehicle efficiency, as well as changes to the fuel mix and vehicle fleet. Therefore, targets are for reductions above and beyond expected reductions from these changes.*

- *Targets should be explored in long-range plans and can be addressed through a combination of actions and programs.*

- *Local governments can anticipate some state and federal actions and programs that may help reduce emissions.*

Support for Metropolitan Scenario Planning

Senate Bill 1059 directs ODOT and DLCD to provide various kinds of assistance to local governments conducting metropolitan scenario planning, including:

- A Toolkit to assist local governments in developing and executing actions and programs to reduce GHG emissions from light vehicles. *https://www.oregon.gov/ODOT/Plannning/Pages/GHG-Toolkit.aspx.*

- Technical assistance and funding for metropolitan areas to conduct scenario planning activities.

Resources and Examples

Oregon Sustainable Transportation Initiative

Statewide Transportation Strategy (STS): The STS is a long-term vision for reducing Oregon's GHG emissions from the transportation sector through changes to transportation systems and operations, improved vehicle and fuel technologies, and changes in urban land use patterns by 2050. The STS provides a statewide vision for transportation, identifying a range of actions and policies intended to help the state meet its reduction goals.

Transportation and Land Use Greenhouse Gas Reduction Toolkit:

https://www.oregon.gov/ODOT/Planning/Pages/GHG-Toolkit.aspx

- **Database of actions and programs:** *A searchable database of programs and actions that could be implemented to reduce GHG emissions from light vehicles.*

- **Case studies:** *Examples of the implementation of some of the actions and programs included in the database; describes a community's experience.*

- **Modeling and Analysis Tools Report:** *Summaries of the technical tools currently available to evaluate packages of programs and actions intended to reduce GHG emissions.*

- **Communications guide:** *Information about involving the public in a dialogue about the costs and benefits of reducing GHG emissions from light vehicle travel.*

Cool Planning Handbook

This handbook produced by Oregon's Transportation and Growth Management Program provides a complement to the Toolkit for land use oriented strategies to slow climate change.
https://www.oregon.gov/LCD/TGM/docs/ cool_planning_handbook. pdf

Regional Strategic Planning Model

The Regional Strategic Planning Model, is able to evaluate a range of different policies and factors affecting GHG emissions from the transportation sector. It is intended for use at the metropolitan level for scenario planning. It can be used independently or in conjunction with a sketch planning tool.

Place Types used in Regional Strategic Planning Model:

Place Types are used to quantify neighborhood characteristics by the role that they play in the region, proximity to destinations, and availability of various travel options. Through comparing the existing built environment characteristics with the expected future environment, decision makers are able to better understand how changes to infrastructure and land use might influence travel behavior. Place Types can be beneficial in local processes to forecast future land use inputs for travel models which in turn estimate the impact of future changes to transportation and land use policies.
https://www.oregon.gov/ODOT/Planning/PTVSV/ PlaceType_Flyer.pdf

Scenario Planning Outside Oregon

Many other places outside of Oregon have initiated scenario planning to explore issues not addressed through conventional planning.

Envision Utah (population 1.1 million)

The Salt Lake City region undertook a regional scenario planning effort called Envision Utah. Through the process, they learned that the future they were headed towards – their reference scenario – would not achieve their goals. In particular, a growing population was straining their existing infrastructure. Envision Utah found that modifying development patterns and expanding transit could reduce the need for billions of dollars of roadway improvements. With strong public support for the preferred alternative, Utahans opted to tax themselves to have the resources to make the future they wanted a reality. Now, with help from the federal government, the construction
of the Sugar House Streetcar line should be complete by late 2013. And local funding is making possible the expansion of the bus rapid transit system into a new line that would connect to TRAX light rail and FrontRunner Commuter rail. Envision Utah selected a preferred scenario from a range of alternative scenarios, they amended their RTP to enable them to build the transportation projects called for by the preferred scenario.

Envision Missoula (population 67,290)

Envision Missoula in Montana was conducted as part of the 2008 Long Range Transportation Plan update. It provided the community with an opportunity to consider how their planned transportation investments and land use policies would shape the community over time with the development of a "business as usual" scenario. Through public input, two additional scenarios were developed. A preferred scenario was not selected, but the exercise proved fruitful, influencing planning conversations on Urban Fringe Development Areas, the Missoula Urban Transportation District Transit Development Plan, and other efforts.

Albany, New York (population 870,716)

A desire to investigate alternative transportation solutions resulted in the New Visions Plan in Albany, NY which looked at four alternative scenarios. Big ticket initiatives were identified as transportation and transit projects – encompassing the travelshed area – that could catalyze a more concentrated regional development pattern. New Visions recommended expanding the existing bus rapid transit system to cover a total of 100 miles and locate new development near transit stations.

Sacramento, California (population 1.5 million)

Concern that recent trends, if continued, would lead to dispersed future growth patterns with negative impacts on housing, transportation, air quality, and the ability to accommodate expected growth, one California region developed the Sacramento Regional Blueprint project. The preferred Regional Blueprint scenario informed the Metropolitan Transportation Plan for 2035 and was the basis for deciding which transportation investments would be made. The State of California learned strategies to curb traffic congestion from the Regional Blueprint, and developed statewide policies on growth, transportation and climate change.

Traverse City, Michigan (population 143,372)

A controversy over a highway project near downtown Traverse City led to an examination of land use and transportation alternatives. Some funds from the highway project were reallocated to a planning process called The Grand Vision. With additional funds from other organizations, six counties were able to collaborate in a visioning process in which 12,000 citizens voted on scenarios for the future of their communities, with 75% asking that growth occur in existing developed areas. Following the Grand Vision, the region was awarded a grant from the Housing and Urban Development (HUD) agency to provide additional planning assistance to cities and counties.

Step 1

Step 1: Creating a Framework for Your Scenario Planning Process

Summary

To lay a solid foundation for the scenario planning process, good preparation is the key. Step 1 outlines how to organize and facilitate a scenario planning process. This includes establishing who will be involved, defining the geographical scope of the process, determining political and technical leadership, identifying potential funding sources, and preparing a public involvement strategy.

In This Chapter

Preview

This chapter describes **how to set up a scenario planning process** and get started. It describes some of the ways organizations including MPOs, local governments, agencies and non-profits might choose to set up their scenario planning process, and the importance of partnerships and cooperation. This section also discusses **key public and private funding sources** that could be used to support the scenario planning effort. Finally, because a successful scenario planning process includes public input and comment, it describes the recommended elements of a **public involvement process.**

There are several parts of Step 1 intended to assist agencies and communities in deciding whether to employ scenario planning and how to do it:

- *What are the benefits -why do scenario planning?*

- *What is to be achieved - what will scenario planning accomplish?*

- *How to get started - how to do scenario planning.*

Designing the Scenario Planning Process: How to Do Scenario Planning

A successful scenario planning process will rely on a sound organizing structure, local and community leadership and public support. Some of the major issues to address are:

- *Who needs to be involved?*

- *What is the planning area?*

- *What organizational structure should be employed?*

- *Who will be responsible for the technical work and analysis?*

- *How will funding be secured?*

- *Who will be responsible for the financial and logistic aspects?*

- *How will the process ensure broad participation?*

Finding Common Ground

Cultivation of a shared desire to engage in collaborative planning to address challenges and opportunities faced by the metropolitan area can be an effective precursor to initiation of a scenario planning process. Other communities have used events, conferences and other techniques to help identify community desires or needs and likely participants in the upcoming scenario planning process. These techniques can also help to build greater awareness of the potential benefits of regional scenario planning. Some examples include:

- A speaker series, such as TGM sponsored events, focusing on local policy issues.

- Sponsored speakers at civic organizations such as the City Club or Rotary.

- Public surveys or focus groups to review public attitudes and concerns related to community growth and climate change.

- A conference of community leaders to discuss climate change and community.

- City council or planning commission work sessions focusing on long-range planning issues and goals.

Establishing the planning process structure includes developing the procedural arrangements for how scenario planning will be conducted and memorializes the arrangement in a scope of work, an intergovernmental agreement (IGA) or a contract. This also entails identifying the people and organizations in a region who can either make or influence land use and transportation decisions. Equally as important as including the decision makers is including stakeholders who represent a variety of interests important to your community, such as business leaders and environmental justice and equity proponents.

Develop Local Support

A successful scenario planning process needs local leadership to carry out the process. Having respected local leaders involved, expressing their support and enthusiasm, gives the process credibility and will help garner support and maintain momentum during the process. This is described in more detail below in the sections titled Determine Technical and Logistical Leadership and Determine Civic Leadership.

The specific focus of the legislation that initiated the development of the *Guidelines* (HB 2001 and SB 1059) is the planning needed to reduce light vehicle GHG emissions that contribute to climate change. However, local agencies undertaking this activity voluntarily are often more interested in other issues that address broader benefits for their communities. Scenario planning can address these other issues, and also address topics usually outside of traditional land use and transportation planning. Examples include: household transportation costs, health impacts, levels of congestion, and energy use, which are direct outputs of the scenario planning tool. The planning area for a scenario process can cover a larger geographic area – beyond city or metropolitan boundaries in order to address regional issues or to coordinate planning among a number of different jurisdictions.

Building local support for scenario planning requires an understanding of local issues that are of the greatest concern; a process designed to address those concerns openly will earn local support. Scenario planning is an opportunity for local jurisdictions to build on past and current planning efforts to build momentum towards defining and achieving a long term vision for the community's future. It should include a clearly defined

process, with clearly identified goals. The process should be both exciting and dynamic, rather than a dry academic exercise. Even if there is no commitment to action, engaging in a scenario planning process will provide useful information for communities' long range planning needs.

Identify Key Planning Issues

It is recommended at this stage to conduct a series of in-depth interviews with stakeholders and review existing plans to help get a comprehensive picture of the region's key issues. In-depth interviews are best conducted by a person independent of the MPO or local jurisdictions, and are most effective if they can be conducted confidentially or anonymously. This will allow for open communication by opinion leaders and potential stakeholders in a metropolitan area. The results of these interviews can help guide:

- *The composition of an advisory committee.*

- *The topics that need to be addressed in addition to GHG emissions.*

- *The networks available to engage the public in the process.*

A review of existing plans can uncover guiding principles, goals, objectives and issues identified in past planning efforts. These values and goals found in past planning efforts will help inform the development of guiding principles in Step 2. Additionally, as part of Step 4 an analysis of existing plans using both the Regional Strategic Planning Model and a sketch planning tool will be conducted. This may also reveal local and regional planning issues that could be also analyzed as part of a scenario planning process.

Figure 3: Rogue Valley Metropolitan Planning Area
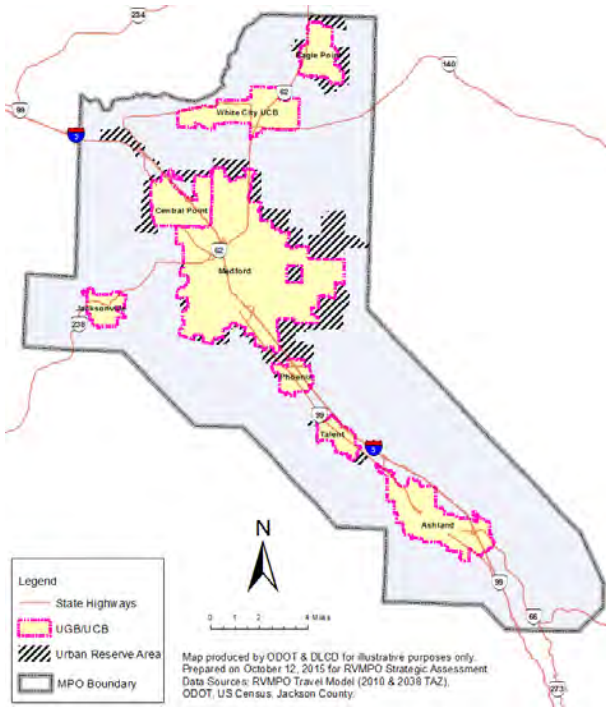
This figure shows the Rogue Valley MPO planning area boundary which is the geography used in the Regional Strategic Planning Model.

Define the Planning Area

Determining the geography of the planning area is a necessary starting point in the scenario process. It defines both the likely participants in the process and sets parameters for data collection and analysis. The MPO planning area boundary is likely the appropriate scale to use in scenario planning since a common consideration of scenario planning is the location of present and future jobs and households in the MPO planning area. The minimum planning area should be based on 2010 metropolitan planning area boundaries, which were used to establish the GHG reduction targets.

Selecting the area of involvement is more complicated. The jurisdictions within the MPO boundary should be involved and in a leadership role. However, it may also be beneficial to invite interested leaders and community members of adjacent jurisdictions to participate and/or be regularly briefed on the process. This is solely an invitation to be part of the modeling exercise, data gathering and conversation - it is not a requirement to edit plans or participate in implementing strategies.

Determine an Organizational Structure for the Scenario Planning Process

A successful scenario planning process relies on building and maintaining a partnership from the outset. The various agencies, interest groups, the general public, and even any consultants who might be involved, will need to come together at the beginning of the process to identify and collaborate for a common purpose. There will no doubt be times where compromise is required. The process must be transparent and inclusive to ensure that the partners will trust the process and support the outcomes. Developing the partnership can feel like a daunting task and may take up significant time in the beginning of the project. However, this partnership needs to be in place for the metropolitan area to commit to a scenario planning process, and to reap the rewards of implementation. After making the collective decision to initiate a scenario planning process many different organizing structures can be employed.

Using MPOs

MPOs are a natural host agency for initiating a regional scenario planning process, especially for the early strategic assessment phase using the Regional Strategic Planning Model. They may already have many of the technical skills, data and tools needed for scenario planning, or the ability to obtain these services. They are familiar with federal and state planning processes relating to transportation, and already develop and update the regional transportation plans. They have the financial and accounting expertise to receive and expend funds in accordance with the regulations governing the expenditures of public funds. Local cities and counties may collectively decide their MPO should staff and help lead the scenario planning effort. The MPO can help guide the process by developing a work scope and budget approved by the governing board.

On the other hand, though MPOs can provide important organizational structure and resources to the scenario planning process, it is the local governments within the MPO that have the authority and the obligation, to implement a preferred scenario in terms of transportation and land use. For those areas required by the legislation to participate in scenario planning, the local governments within the MPOs have the ultimate responsibility to comply.

SCENARIO PLANNING STRUCTURES

190.010 Authority of Local Governments to Make an IGA

A unit of local government may enter into a written agreement with any other unit or units of local government for the performance of any or all functions and activities that a party to the agreement, its officers or agencies, have authority to perform. The agreement may provide for the performance of a function or activity:

1. By a consolidated department.

2. By jointly providing for administrative officers.

3. By means of facilities or equipment jointly constructed, owned, leased or operated.

4. By one of the parties for any other party.

5. By an intergovernmental entity created by the agreement and governed by a board or commission appointed by, responsible to and acting on behalf of the units of local government that are parties to the agreement.

6. By a combination of the methods described in this section.

Many scenario processes have included a leadership or advisory group that goes beyond the MPO, including other local officials, and leaders from business, education, environmental organizations, developers and builders, and citizen groups. Even where the process is housed in the MPO, it is often considered desirable for the process to be led by a more broad-based advisory committee than the MPO board.

Councils of governments (COGs), which may also be their region's designated MPO, can be useful for bringing local elected officials into the scenario planning process, and for coordinating later implementation efforts. Additionally, COGs also have the skills and procedures to accept and expend public funds.

Forming a New Consortium

In the absence of an already established vehicle for reaching agreement in a metropolitan area, forming a new consortium is an option. A cooperative process among all of the affected local governments is critical in ensuring they are engaged throughout the scenario planning process. Active engagement leads to ownership that will be needed in development of alternative scenarios, and ultimately in the selection of a preferred scenario. Under this model, an Inter-Governmental Agreement (IGA) provides a useful tool for organizational structure and securing funding. Oregon law (ORS 190) provides broad authority and a great deal of flexibility for local governments to develop IGA's for almost any conceivable purpose.

Local governments in Oregon have successfully used the IGA authority for a range of activities, from providing for jointly-owned and operated utilities, to urban renewal agreements, to the design, construction, and operation of facilities. In the case of a scenario planning process, the IGA may be advisable if a new entity is to be created and if funds from several governmental agencies are being pooled to finance the effort. A sample IGA document for a scenario planning process is included in the Technical Appendix.

Using an Existing Non-Profit Organization

It is also possible for a scenario planning effort to be led by a local non-profit organization. Several nationally recognized regional scenario planning processes have been led by regionally-based non-profit organizations. These organizations often have a broad base of local leaders they rely on, are typically funded by corporation or foundation grants (along with public funds) and are in a good position to identify potential planning issues. They rarely have the skills or tools needed for scenario analysis, but in other states they have contracted with the MPO or COG to accomplish these tasks. They often delegate receiving or expending public funds to a MPO, COG, city or county.

However, this is logistically the most complicated way to conduct a scenario planning process. In some cases, a non-profit may have to be formed from scratch, which can take many months. Since the MPO and local governments are likely to be involved as well, a combination of methods may be needed: the MPO work program for MPO technical services, an IGA to coordinate local government involvement and the handling of government funds, and the use or formation of a non-profit to conduct part or all of a scenario process (such as the public involvement process).

Creating an Ad Hoc Organization

Sometimes no regional organization is able to bring together the broad coalition of groups necessary for a successful regional scenario process. In these cases a new ad-hoc organization can be formed, often supported tactically and financially by other organizations such as MPOs and regional non-profit foundations. The advantage is that a broad-based coalition can be formed without a pre-conceived agenda in the minds of the public, and draw on support and funds from a broad base. If following this approach, it will be important to identify the parties responsible for implementation following the completion of the scenario planning process. There are examples of this model being used successfully. Perhaps the most well recognized example is Envision Utah, which has maintained a staff and contracts with both public and private entities, since the completion of its scenario planning process, to regularly engage in planning and implementation activities.

There are innumerable combinations of these methods. Metropolitan areas should consider the pros and cons of each, and collaboratively design a plan that best aligns with the metropolitan area's own goals.

Option for a Phased Approach

A scenario planning process may span one to three years, with outcomes difficult to predict. Agencies and stakeholders, if reluctant to sign on to a project of this scale all at once, may opt for a process with additional checkpoints and opportunities for decisions. By committing to portions of the process, agencies and stakeholders can use feedback in the form of initial modeling results and impacts on existing workflows and budgets to help select subsequent phases. Following is a sample of an optional phased approach. This would allow participants to take time to consider the next steps each time a significant discovery is made.

A Step by Step Approach to Determining a Structure and Roles

Looking ahead from this first step, the scenario planning process may seem daunting. One option, to get the process initiated sooner, is to approach it in phases, with decision points along the way. In this way, the larger decision of how to organize the process can be put on hold while momentum and agreement are built among stakeholders. During the starting phase the affected jurisdictions and stakeholders could convene a series of working sessions to discuss the questions:

1. What can the metropolitan area gain from scenario planning?

2. What concerns are present that must be addressed?

3. Who has the capability to perform the analysis?

4. Who will lead the effort?

5. What are the next steps?

Addressing these questions could be accomplished with a short, to the point work plan spanning just a few short months. An ad hoc group could host a work session or summit to bring stakeholders together to find out the hopes, concerns, and skill sets they can bring. The ad hoc group could then develop a work plan to cover the next steps. This workshop should be structured to address the hopes and aspirations of the stakeholders, while specifically steering away from issues that could derail the process. With the work plan in hand, the group can return to the stakeholders to discuss moving forward, and request buy-in for the remainder of the process, or even just the next few steps.

Phase 1: Agree to hold a work session or summit to decide on the structure of a scenario planning process. The result of the work session or summit may be an abbreviated work plan that lays out the process through Step 4 where the metropolitan areas can learn how current plans are expected to perform. Move forward with the identification of guiding principles and evaluation criteria in Step 2 and technical staff moves forward with the setup of modeling tools in Step 3.

Use the Regional Strategic Planning Model to develop a baseline assessment to communicate where the metropolitan area is likely headed based on existing plans.

Phase 2: Host a second work session or summit to review the Regional Strategic Planning Model report and decide what to do next. At this point, the metropolitan areas will have a sense of whether current plans will achieve community goals, and what sorts of challenges to expect. With this knowledge, the metropolitan area can determine what level of stakeholder or community member engagement is most appropriate
for the scenario development work that occurs in Step 5. Depending on the decisions about how to move forward, additional tasks can be added to the work plan as needed.

Phase 3: Another key time to revisit the organizational and operational structure is after analysis of the scenarios in Step 5. Scenario analysis will result in a detailed reporting of how differing policies, investments and development patterns may affect a range of issues important to the people living and working in the metropolitan area. Check in and decide how to select a preferred scenario and whether to move forward on implementation strategies.

Developing a structure and work plan for a scenario planning process may seem daunting at the outset. However, breaking the process up into small commitments of time and resources, with an understanding that the work plan will evolve as discoveries are made can remove some of the barriers and help to get the process started.

Determine Civic Leadership

A successful scenario planning process requires effective leadership. A local elected official can often play the role of champion for scenario planning, or in some cases the MPO board can assume that champion role, since it is composed of representatives of multiple local jurisdictions.

For effective community engagement and investment, citizens and stakeholders must be able to trust the opinions and skills of the leadership. The leaders need to be able to effectively convey the benefits of scenario planning, the process and its potential outcomes. It is equally important that community members and stakeholders trust that the leadership believes scenario planning can make desirable changes for the community.

In some scenario planning processes, local officials have delegated leadership to an outside agency due to a desire to include a wider array of community leaders than exist on an MPO board - or due to the potentially controversial nature of the process. When this is the case, as described above under Determining an Organizational Structure, the most common outside agency is either an existing nonprofit organization, or an ad-hoc group that includes a broader coalition of leaders. This gives more community members a seat at the table and opens the process to non-governmental stakeholders who can be crucial in crafting and implementing a strategy.

Overall, the leaders who represent the citizens and stakeholders must ensure they fairly represent them and that interested citizens and stakeholders have an opportunity to be heard throughout the process.

Establish a Policy Advisory Committee

The recommended approach is to form a policy advisory committee that includes a broad array of community representatives. In addition to the leaders and champions identified above, it is important to include members who represent some or all of the following interests on the advisory committee:

- *Participating jurisdictions (an elected Officials or high-level staff person)*
- *Community leaders*
- *Community-based organizations*
- *Environmental organizations*
- *Tribal leaders (if tribal lands are impacted)*
- *Business community members*
- *Chambers of commerce*
- *Media organizations*
- *Hospitals and health care organizations*
- *Public and private utilities*
- *Development interests*
- *Local colleges or Universities*

Determine Technical and Logistical Leadership

The MPO, a county, or a large city are all logical candidates to be contracted to provide the technical or logistical support, including the staff who will be creating the actual scenarios. This selected agency will need to be able to receive, budget and expend state and federal monies, and have sufficient financial procedures in place to be successfully audited.

The tasks of overall project management, direction, and coordination describe the second piece of technical and logistical leadership. A consultant or area-selected project manager may best fulfill this role. The lead organization(s) for the planning process should be able to bring together the disparate parts of their community and provide a forum where disputes are resolved, policies are tested, and a strategy can be crafted.

In addition to identifying and engaging the core players essential to moving the process forward, the net should be cast widely to invite as many entities as possible to join in the scenario planning process. The cooperation and peer review of local technical experts is needed. It is recommended that a technical advisory committee be formed; an existing technical committee that performs similar functions for the MPO can also be utilized.

The structure of a technical committee needs a dedicated group of multiple people. One successful approach to maintaining many diverse representatives on a committee, while simultaneously allowing for productive work sessions, is to have one large committee meeting infrequently coupled with a core committee meeting more frequently. Given that scenario planning typically looks at a broader array of issues than most MPO and local planning processes, the technical committee should include a diverse

group of stakeholders from many of the agencies and organizations listed below to ensure a variety of interests and viewpoints are represented:

- *Local land use and transportation planners*
- *State government representatives (e.g., DLCD, ODOT)*
- *Transit districts*
- *Transit, bike, and pedestrian experts*
- *Community non-profits*
- *City and county administrators*
- *Developers*
- *Environmental organizations*
- *Public health organizations/advocates*
- *Small and large businesses or representatives*
- *Transportation organizations*
- *Tribal government officials*
- *Universities and schools*
- *School districts*
- *Freight*

Identify Funding Sources for the Planning Process

There are many potential funding sources, including some non-governmental sources not covered here. An important component of the IGA will be identifying those funding sources and getting commitment from funding parties.

State Funds

The extent of state funding support for scenario planning - and other transportation programs - is decided by the Oregon Transportation Commission as it develops and updates the Statewide Transportation Improvement Program.

Local jurisdictions are also eligible to compete for Transportation Growth Management (TGM) program funds to conduct scenario planning as part of their TSP update process. The TGM program provides grants to local governments to update TSPs and prepare integrated land use and transportation plans. Many regional and local TSPs have received TGM funding

Federal Funds

MPOs receive federal metropolitan planning funds that can be used for scenario planning. If scenario planning is done in conjunction with an RTP update, there may be an economy of scale advantage. Doing the two projects in conjunction, rather than paying for two separate projects may cost less overall.

Local Government Funds

In many regional scenario planning examples from other states, local governments are asked to contribute a portion of the funds, in proportion to their size and ability (this can be in-kind too). This has ranged from a nominal to a significant proportion of the funding, but the intent is that local governments can help demonstrate their commitment to the process by contributing funds. This can also help fulfill any matching requirements of state, federal, and private funding sources.

Foundations, Utilities and Large Companies

Another source of funding commonly used outside Oregon is philanthropic foundations. Projects such as Envision Utah and Chicago Metropolis 2020 were almost entirely funded by foundations. Again, this source of funding requires a non-profit, tax-exempt entity to receive and expend the funds. Local utilities or large companies may also fund a portion of the project, especially the outreach component. Utilities often have an in-house print shop, and might contribute the printing and sometimes distribution or materials. They may also have extensive Internet design and web hosting capabilities, and could contribute to the web design and hosting needs of a project.

Design a Meaningful Public Involvement Plan

Regardless of the organizational model selected, the process should begin by designing an active, two-way approach to communicating with community members. Communication in terms of scenario planning should be a broad, double-sided style of engagement—true give and take between planners and the community that continues throughout the process. Before designing a public involvement process, read through this entire guide, including the Step-by-Step Public Involvement section of the Technical Appendix, to identify the right moments and methods to reach out to the public.

The scale of public involvement effort will depend on the size of the metropolitan area and the scale of the scenario planning project. For instance, the Grand Vision, in the Traverse City area of Michigan, a community of six counties and 100,000 people, included an ambitious public involvement effort that garnered input from 15,000 citizens. Over a period of three years, the Grand Vision utilized workshops, surveys and a public rollout event. A scenario planning workshop focused on gathering general themes and visions of the community. Small area workshops focused on localized community planning. A transportation workshop focused on desired connections and improvements throughout the region and in local communities. A survey presented a decision scorecard of the scenario results to ask the public to decide on their priorities. It resulted in 12,000 votes. The Grand Vision rollout event presented the final Vision to inspire community members and leaders to become involved in and start work on Grand-Vision inspired projects.

Step 1

Public engagement allows citizens to share their visions for the future through a meaningful process.

When deciding on the scope and scale of the public outreach effort consider factors such as the level of the community's involvement in past planning efforts, expected levels of community interest, the type of proposals likely to be considered in the scenario planning process and the available budget for outreach.

In order to bring the community into the planning process, it is important to describe scenario planning in terms of the livability criteria, or benefits, that the community will be considering. Many community goals – such as livable communities, health concerns, safety for children and others, walking and biking – have the additional benefit of also addressing GHG emissions. On a local level, Oregon communities have been actively engaged in conversations about land use and transportation for many years. Many ongoing or recurrent planning efforts will likely gain new interest and excitement from using the scenario planning process, and then can also lend their credibility and constituency to scenario planning.

Understand the Community's Values and Opinions

A successful scenario planning process begins with an accurate representation of community values. Gaining an understanding of what they are through values research is critical to ensuring that plans reflect local and regional culture. Comprehending the shared ideals of the metropolitan area is a first step toward defining big ideas and creating specific messages for targeted audiences. Existing comprehensive plans and TSPs typically provide guiding principles, goals and a vision summarizing a community's values. This is a good place to begin the assessment of regional values.

In addition to existing written sources, it is often useful to conduct research on the area's values. Public values research has evolved over the years to become a quantifiable science. Values research can be conducted using various tools, such as; online qualitative surveys, focus groups, in-depth interviews, online panels, and phone and mail surveys. Interestingly, while each region's values are different, some nationally shared values and principles appear in many regions. Values research and analysis provides a means to ensure that a plan reflects the core values of a diverse regional community. It also allows planners to

design a plan with benefits for the broadest segment of the community, not just motivated citizens involved directly with the planning process. The results from values research can also be shared with the community as a means for helping all citizens, motivated or not, better understand their own community and reconsider long-held assumptions. An understanding of the values held by people within the metropolitan area can be helpful in drawing in the partners required for the collaborative scenario planning process.

Figure 4: Public Engagement Recommendations for Each Step

Step 1: Create a Framework for the Scenario Planning Process
Develop a public involvement strategy.
Step 2: Select Evaluation Criteria
Conduct forums and community values research.
Step 3: Set up for Scenario Building
Provide updates for those following a project website.   Provide updates on values from Step 2.
Step 4: Develop/Evaluate Current Base Conditions and Reference Case Scenario
Presentations to elected officials and appointed committees.   Create fact sheets or "report card."   Host an open house to share results or a workshop (end of Step 4).
Step 5: Develop and Evaluate Alternative Scenarios
Consult with elected officials.   Hold an interactive visioning workshop.   Reach out to key stakeholder groups.   Provide newsletters, fact sheets, articles.   Use social media tools such as websites or surveys.   Utilize online scenario building.
Step 6: Select the Preferred Scenario
Share results of the alternative scenarios with the public.   Use public input to help identify preferred strategies. *Formats for engagement include: summary brochures, newsletters, websites, forums, open houses, small focus groups and short videos.*   Use a focused stakeholder group.
Next Steps
Hold multi-agency meetings.   Other public engagement opportunities will occur as implementation measures are proposed and considered as part of local plan updates.

Conclusion

At the completion of Step 1 the framework for the scenario planning process should be established and presented in a work plan that will be used to guide the remaining steps of the process. At this point, the participants should have been identified and have a good understanding of why they want to embark on scenario planning, how it will benefit the area, and the general range of potential options and strategies. Decisions will have been made about who will be involved in the process, what geographical area it encompasses, who the project leaders and champions are and how the public will play a role. Moving into Step 2, the *Guidelines* recommend a process for discovering, gathering, and prioritizing community goals and establishing scenario evaluation criteria.

Step 2

Step 2: Selecting Evaluation Criteria

Summary

This step involves translating the goals identified in Step 1 into a set of guiding principles that will serve as the objectives to guide the process. Metropolitan areas, or local jurisdictions within the area, may have recently developed guiding principles from comprehensive plans, TSPs or community visions that already support scenario planning goals. If so, it may not be necessary to develop new guiding principles, but rather assemble existing guiding principles. This step also discusses the process for establishing the evaluation criteria that will be used to analyze the alternative scenarios and communicate their results in Step 5. The guiding principles established in this step will be used to help develop and prioritize the evaluation criteria.

In This Chapter

Preview

The benefit of scenario planning is the ability to objectively compare a range of possible futures. This step discusses how to measure success by creating **guiding principles** and translating them into a set of **evaluation criteria** to measure scenario outputs. While the reduction of GHG emissions will be a central evaluation criterion, measuring and communicating other important local priorities and criteria will be essential to garnering widespread community interest. A common set of evaluation criteria are recommended in this step, but should be adjusted or augmented to fit the community.

Develop Guiding Principles

One of the keys to scenario planning and implementation is clearly defining the outcomes that will signify the success of the project. In order to do this, development of a series of guiding principles for the scenario planning project is recommended. Guiding principles are broadly stated objectives or precepts to guide the scenario planning process. Developing a set of guiding principles will help to identify and prioritize evaluation criteria that will be used later to assess and compare scenarios. The guiding principles will serve as a touchstone throughout the project in all circumstances, irrespective of changes in goals, strategies, type of work, or management. These can be new guiding principles developed specifically for the scenario planning process or assembled from objectives identified in existing plans.

First, comb through existing plans for guiding principles shared by the participating jurisdiction(s). Work with the advisory committee developed in Step 1 to expand that list by brainstorming other potential guiding principles. It is best to select and organize the guiding principles into categories, such as: economy, transportation, environment, equity and opportunity, and community and housing. Following are four examples of guiding principles, a full sample list is located in the Technical Appendix.

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Selecting the Guiding Principles

Selection of guiding principles can serve as an early stakeholder and advisory committee engagement activity. A simple six step process could resemble the following:

1. Project staff draw preliminary guiding principles from existing sources and categorize them based on regional values.

2. Staff develops new guiding principles for goals that arise from values research.

3. Hold a brainstorming session with the advisory committee to add principles if needed.

4. Conduct a prioritization exercise with the advisory committee.

5. Publish the project's guiding principles and share them with the general public.

6. Optionally, calibrate with a scientific poll to ensure that the guiding principles are widely held objectives in the community.
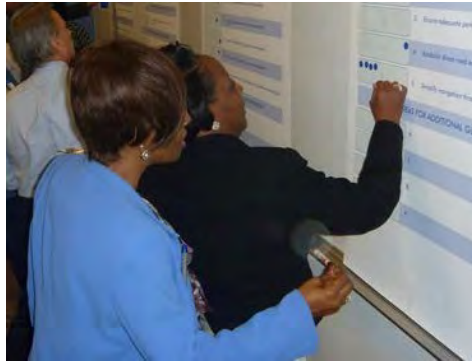
At a committee meeting for the Dallas TOD, Investing in Transit Neighborhoods project, committee members prioritized potential guiding principles for the planning process and were given the opportunity to provide specific ideas for additional guiding principles.

Example Guiding Principles

- *The transportation network should ensure efficient and cost effective movement of goods and people.*

- *The transportation network will ensure safe and timely access to housing, jobs, shopping, services, and recreation.*

- *The metropolitan region promotes a full-range of housing types to fit every income, household and preference.*

- *Ensure there are parks, trails and open spaces easily accessible to residents throughout the community.*

Establish Evaluation Criteria

A set of evaluation criteria is a benchmark or yardstick against which the performance of the scenarios can be measured. Establishing evaluation criteria that resonate with members of the community is essential to a successful process. Develop criteria tailored to the needs and values of the participating local jurisdiction(s) using the key issues identified in Step 1 and the guiding principles.

Effective evaluation criteria can be measured objectively and are meaningful to stakeholders. Objective measures allow for clear assessment of scenario performance and highlight tradeoffs between policy choices. Evaluation criteria should address a range of community objectives such as public health, a stronger local economy, average household fuel expenditures, access to transit, access to bicycle and pedestrian routes, and preservation of natural areas, as well as GHG reduction. Many of the strategies that help meet the evaluation criteria will have more than one benefit. For example, an evaluation criterion calling for calculating the reduced amount of driving one might experience in a scenario can resonate with many members of the community primarily in terms of money saved on fuel and secondarily on benefits to the environment through reduced fuel consumption.

The evaluation criteria in the scenario planning process are not designed to assess specific impacts and precise outcomes such as congestion at a specific intersection or roadway level of service. Specific impacts and outcomes typically are assessed when developing an implementation plan or updating existing plans as part of an implementation phase. The evaluation criteria will be used to gauge big-picture items such as the amount of daily driving or the potential consumption of land. Objective evaluation of scenarios will provide a general sense of the potential impacts of actions and programs, such as those described in the Oregon GHG Reduction Toolkit, as they pertain to the guiding principles. Through comparison of several evaluation criteria, tradeoffs between actions and programs can be examined and better understood.

Potential Evaluation Criteria

Scenario planning tools create the potential to develop and apply dozens of different evaluation criteria. The ability to construct computer simulations of metropolitan areas has advanced tremendously over the past two decades. However, even prior to recent technological advances in modeling, the Oregon planning system required planners to develop an estimate of future conditions (e.g., land consumed by urbanization). The federal transportation planning system also requires that future modeling demonstrate compliance with the Clean Air Act and other legislation. Existing plans in Oregon jurisdictions include many evaluation criteria, so the notion of using predictive evaluation to analyze plans is not new. It will be helpful to carry forward some of the evaluation criteria the metropolitan area is currently using into the scenario planning process. Tracking some consistent measures will aid in communicating the scenario analysis with stakeholders already familiar with some of these well-established criteria.

This step also recommends new evaluation criteria that can be employed in the scenario planning process. The evaluation criteria will be used to track a range of potential outcomes expressed by the scenarios and evaluated through the sketch planning tool and the Regional Strategic Planning Model. The scenarios will express the future in terms of land uses, including the types, locations and intensities of uses, and the transportation network with its accompanying infrastructure from roads and trails to trains and buses. The scenario comparison can include measures such as: residential and transportation- related GHG emissions, land consumption, land use patterns (e.g. housing and job distribution, density), mobility (e.g., delay and travel times), travel behavior (e.g., vehicle miles traveled, walking, bicycling, transit ridership, carpooling, drive alone trips), mobility corridor performance and regional travel patterns.

Recommended Evaluation Criteria

The process of comparing multiple future scenarios should employ a set of criteria that addresses the full range of needs and desires expressed through the guiding principles. This set of criteria should be used consistently for apples-to-apples comparisons of scenarios. The best practice is to select the number of evaluation criteria based on the guiding principles and what is important to the community. The same evaluation criteria may apply to multiple guiding principles. Use of too many indicators can overload the team as they may start to focus too much on mathematical evaluations, rather than the bigger picture planning concepts being discussed. When sharing results with the community, a smaller subset of the selected evaluation criteria may be more appropriate. Step 6 discusses in greater detail guidelines for effectively communicating the evaluation criteria to the public.

The final set of evaluation criteria should be drawn from measures established in existing plans, and calculated by the Regional Strategic Planning Model and the chosen sketch planning tool. The accompanying table presents a suggested set of criteria likely to support the selected guiding principles. However, as always, this list will need to be adjusted to address the community's specific guiding principles. For example, the Envision Central Texas project added measures related to the health of the region's aquifer because water quality was a top priority for the public and stakeholders.

Figure 5: Recommended Evaluation Criteria, Corresponding Unit of Measure and Source*

EVALUATION CRITERIA	UNIT OF MEASURE	OUTPUT SOURCE
Land Consumption and Density		
Land consumption	acres	sketch planning tool
Density	housing units/acre and jobs/acre	sketch planning tool
Development uses	square feet	sketch planning tool
Parking area	square feet	sketch planning tool
Housing and Affordability		
Housing mix by type (single-family, multi-family, townhome)	percent of units	sketch planning tool
Housing tenure (rental or ownership)	percent of units	sketch planning tool
Housing cost	average rent and sales price	sketch planning tool
Housing affordability by income level	number of units and % of units	sketch planning tool
Economy and Prosperity		
Employment by sector	# and %	sketch planning tool
Housing and transportation costs	$ and % of average income	sketch planning tool
Development value	$/acre	sketch planning tool
Costs of providing parking spaces	$	sketch planning tool
Household auto ownership costs	$	RSPM
Fuel and electricity costs per capita	$	RSPM
Transportation and Health		
Light vehicle miles traveled (*e.g., total, per capita*)	miles and miles/capita	RSPM
Vehicle delay (time lost due to congestion)	hours/capita	RSPM
Travel mode split, average trip time, average trip distance	%, time and distance	sketch planning tool/travel demand model
Accessibility to transit	households and jobs within 1/4 mile walking distance	sketch planning tool and GIS
Transit service levels	service miles/capita	RSPM
Walkable areas	households and jobs within areas of well-connected street or path networks	sketch planning tools and GIS
Complete neighborhoods	ratio of households to jobs	sketch planning tool
Households within walking distance of parks, schools, cultural amenities, etc.	households and %	sketch planning tools and GIS
Fuel consumption	gallons/capita	RSPM
Non-motorized travel per capita	miles/capita	RSPM
Environment, Sustainability and Public Health		
Sensitive lands developed (*growth in Goal Five lands, prime and secondary agricultural and forestry lands*)	acres	sketch planning tool
Hazard mitigation (*growth in hazard prone areas*)	acres	sketch planning tool
Building energy consumption	btu/housing unit or employee	sketch planning tool
GHG emissions (*building and transportation emissions*)	tons CO_2/year	RSPM

* A more comprehensive list of potential evaluation criteria is available in the Technical Appendix.

Link Guiding Principles and Evaluation Criteria

Evaluation criteria can help community members and stakeholders understand the benefits or trade-offs of a scenario as they relate to guiding principles. In some instances, evaluation criteria can be used to assess the performance of a scenario in relation to more than one guiding principle. In this section, four examples of guiding principles are linked to related evaluation criteria examples to highlight their relationship.

Guiding Principle Example #1:

The transportation network should ensure efficient and cost effective movement of goods and people.

Associated Evaluation Criteria:

- *Vehicle miles traveled per capita*
- *Average trip time*
- *Vehicle hours under congestion or vehicle hours of delay region wide*
- *Amount of new development located within proximity of transit*
- *Average speed by travel mode*
- *Cost of transportation improvements and maintenance*

Guiding Principle Example #2:

The transportation network will ensure safe and timely access to housing, jobs, shopping, services, and recreation.

Associated Evaluation Criteria:

- *Number of people with 20-minute access to employment centers*

- *Average trip time*
- *Vehicle hours under congestion or vehicle hours of delay*
- *Amount of new development located within proximity of transit*
- *Total time traveled per capita, by travel mode*

Guiding Principle Example #3:

The metropolitan region promotes a full-range of housing types to fit every income, household and preference.

Associated Evaluation Criteria:

- *Housing mix by type*
- *Housing tenure*
- *Housing affordability by income level*
- *Housing costs*

Guiding Principle Example #4:

Ensure that there are parks, trails and open spaces easily accessible to residents throughout the community.

Associated Evaluation Criteria:

- *Households within a ¼ and ½ mile walk distance of parks, trails and open space*

EMERGING INDICATORS

The practice of linking community goals to measurable evaluation criteria is expanding as modern technology introduces new data and tools for analysis. The following case studies describe examples of indicators other regional efforts selected to measure.

Salt Lake City Region Scenario Planning Process

One of the reasons it is now easier to link broad community goals with land use and transportation planning is that there has been a great deal of research over the last decade correlating urban form to a number of measures. These measures range from travel behavior, to health and obesity, to employment resilience. The Salt Lake City region recently received a $5 million dollar HUD Sustainable Communities grant, which included a substantial portion being used by the University of Utah to build 18 modules to calculate a host of new evaluation criteria. These modules are open source and will be usable with Envision Tomorrow and other sketch planning tools (described further in Step 3):

- Growth location prediction
- Transportation effects using seven factors (more accurate than current five factors)
- Return on investment
- Housing transportation costs
- Air quality and CO_2 impacts
- Fiscal impact
- Public health
- Employment growth
- Employment resilience
- Development capital attraction
- Redevelopment timing
- Water consumption

- Transportation safety
- Workforce housing production
- LEED-ND
- Arts and public amenities impacts
- Local jobs-housing balance

Metro's Scenario Planning Process

One example can be seen in Metro's Climate Smart Communities scenario planning process. Metro's honeycomb graphic illustrates the six desired regional outcomes that serve as guiding principles for its Climate Smart Communities project. Metro's scenario planning process identified evaluation criteria that could assess scenario performance on all of the region's six desired outcomes.[5]
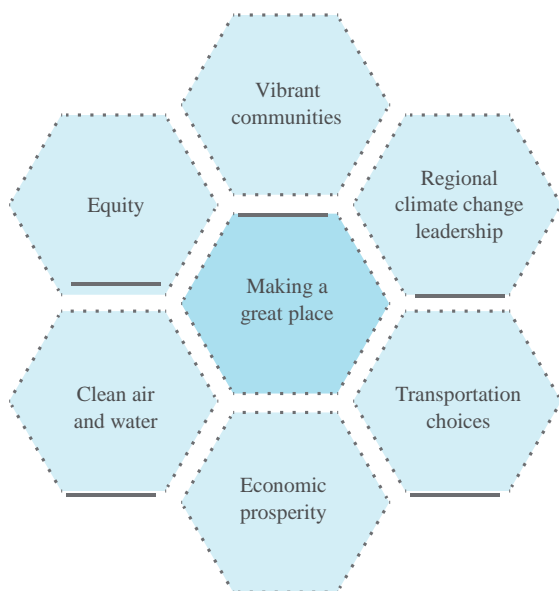
Cumberland Region Tomorrow Scenario Planning Process

Another example of planning for multiple objectives can be seen in the Middle Tennessee region. A multi-faceted coalition brought together by the non-profit Cumberland Region Tomorrow identified six issues of regional importance:

- Transportation/transit
- Land use/quality growth/sustainable development
- Infrastructure
- Open space conservation
- Air and water quantity and quality
- Economic competiveness

The region has worked together, planning and implementing through workshops, plans, handbooks and lobbying. They consider these six key issues and how the region handles them vital to Middle Tennessee's continued economic success, community health and resource sustainability.

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5 Metro's Climate Smart Communities, https://www.oregonmetro.gov/climate-smart-strategy

Refine the Evaluation Criteria

It is likely that a large number of evaluation criteria will be employed for the technical scenario analysis. However, when communicating the results of the scenario comparisons with residents of the community, the list should be pared down. Key criteria, most closely linked to the highest priority guiding principles, should be identified. At the same time, it is important that the full range of issues within the guiding principles be addressed. Measures communicated to the community should be those that affect their lives, and be communicated in terms to which they can relate. For example, in estimating transportation outcomes, it would be useful to report on annual transportation costs per household, or time spent behind the wheel in addition to VMT per capita. A short list of well-chosen evaluation measures will help the public relate to the scenarios.

In addition, since many evaluation measures are calculated from a small number of model outputs, these measures are likely to be closely related and increase or decrease together. For example, land consumption and density are closely related and likely to communicate similar messages when charted or graphed. While both may be useful for a few stakeholders, it is better to pick a single measure to represent the related ones, and use the measure the public can relate to the most.

Conclusion

Completion of this step results in the selection of a series of guiding principles that provide the focus for the scenario planning effort. Evaluation criteria, linked to these principles, will be used to measure the relative performance of the alternative scenarios in Steps 4 and 5. A subset of the evaluation criteria, which best resonate with the community, will be selected to be used in communications describing scenario performance. These criteria will communicate to the community members, stakeholders and decision makers the benefits, impacts and tradeoffs of different policy choices and investments within each alternative scenario, based on the metropolitan area's goals and values.

With guiding principles identified and evaluation criteria established, the next step is to prepare for actual scenario planning by choosing and calibrating planning tools, then collecting and preparing the needed data.

Step 3

Step 3: Set Up for Scenario Planning: Evaluation Tools, Data and Building Blocks

Summary

Step 3 of the scenario planning process begins by selecting tools that will be used in subsequent steps to assemble and evaluate a range of scenarios in order to compare the estimated outcomes. Two types of evaluation tools are recommended: the Regional Strategic Planning Model, a strategic long-range planning model developed by ODOT, and a land use sketch planning tool. Using these tools requires deciding a geographic scale for analysis, compiling data and other information needed to create scenarios, and setting up the tools for scenario building. Some new planning concepts and analysis processes are presented here.

In This Chapter

Preview

Step 3 provides an overview of the tools recommended for the scenario planning process and their interrelationships. This chapter also describes setting up the tools and the types of data needed. Setting up the tools and gathering the data in this step will set the stage for developing and evaluating scenarios in Steps 4 and 5. Recommended scenario planning tools include the state's long-range strategic planning tool, the Regional Strategic Planning Model, and sketch planning tools that allow for creation and comparison of land use and transportation scenarios.

The Regional Strategic Planning Model allows planners and decision makers to analyze the effects of a large number of state and local actions and other trends on transportation related outcomes of value to communities (e.g., GHG emissions, household travel costs, biking and walking, vehicle delays). The Regional Strategic Planning Model has the ability to quickly test hundreds of high-level policy scenarios. It can also be coupled with a sketch planning tool to more easily estimate outcomes of detailed land use scenarios. Sketch planning tools involve creating land use types, called building blocks, which are then used to construct different detailed land use scenarios in order to evaluate alternative future land use patterns. The Regional Strategic Planning Model aggregates the detailed building types of the sketch planning tools into inputs know as Place Types to describe land use and built form in the model.

Use of the recommended scenario planning tools will be described in three steps, which can be ordered to best suit the needs of the community:

1. *The Regional Strategic Planning Model is used to model a number of high-level policy scenarios for impacts on various outcomes defined by local community values, and test adopted plan resilience to future uncertainties. This is an opportunity to assess the range of possibilities and to use the results in building a coalition to spearhead the scenario planning process. This tool operates at a neighborhood level of analysis.*

2. *A land use sketch planning tool is used to develop scenarios at a more detailed scale. In this step, the process moves from a neighborhood-level analysis to refining data at a more detailed geographic scale.*

3. *Geographically detailed scenarios from sketch planning tools, can be aggregated in the Regional Strategic Planning Model to evaluate transportation impacts or other various measures valuable to the community.*

As with most analytical tools, an initial setup is required prior to using the tools. A **base year** will need to be established as the starting point for scenario planning along with a **planning horizon year** representing an end date for the future scenarios. The tools will require designation of a **planning unit** size, reflecting the geographic scale at which the scenarios will be designed. A part of the setup for both tools will be collecting **data** about existing conditions and plans in place, along with future forecasts.

Set a Base Year and Future Planning Year

Selecting a base year is an essential first step to define the process and to gather the data needed for the tools. A base year scenario will approximate existing conditions in the metropolitan area using data from that time period, which officials and public stakeholders can verify and confirm. The base year provides a benchmark for comparison of existing conditions with the reference case and future alternative scenarios.

2010 is the recommended base year for conducting scenario planning because the state and most local jurisdictions have comprehensive and available data for that year. If there are significant studies, inventories or other published data (such as the Census) that would enable more accurate or in-depth analysis, a more recent base year may be chosen.

However, since the adopted targets for metropolitan GHG reduction are based on decreases from 2005 emission levels, some additional work would be needed to properly account for changes in emissions from that 2005 base year.

The minimum future planning year for the reference case and alternative scenarios should be 2040. Because most local land use and transportation plans currently extend to this date, or close to it, making needed information readily available. The adopted metropolitan area GHG reduction targets are set for the years 2040 through 2050. However, scenario planning is also an opportunity to engage in a long-range visioning process that looks beyond normal planning processes and timelines. Using a longer planning period enables a community to see the cumulative impacts of current trends more clearly. It also allows the community to consider a broader range of options, which may take more funding and time to implement major changes in land use and transportation patterns.

Evaluation Tools

The *Guidelines* recommend and focus on two analytical scenario planning tools. First, the Regional Strategic Planning Model used to estimate the effects of a large number of policies including, but not limited to, land use and transportation outcomes. Additionally, a sketch planning tool used for efficient creation and evaluation of alternative future land use patterns, which can provide data for the Regional Strategic Planning Model evaluations.

Applying the Evaluation Tools: Using Sketch Planning Tools and the Regional Strategic Planning Model Together

The Regional Strategic Planning Model and land use sketch planning tools each have many strengths and can greatly inform the planning process as stand-alone tools. However, using these tools together to fully benefit from the unique strengths each provides allows for the most comprehensive analysis for scenario planning. The recommended process and use of these tools for scenario planning involves three phases.

The Regional Strategic Planning Model is used to conduct long-range strategic tests of a range of policy scenarios for impacts on community desired outcomes, including transportation emissions. This large set of scenarios allows stakeholders to select and focus on the types and combinations of policies that meet their desired outcomes and overall community goals. This is an opportunity to gauge the range of possibilities, test their resilience under alternative futures, gauge the contribution of state actions, and to use the results in building a local support for the planning process. Land use inputs at this stage are generalized and large scale (i.e. regional transportation service levels not specific projects).

Sketch planning tools can be used to further detail future land uses and scenario concepts for additional analysis by the Regional Strategic Planning Model. In this step, the process moves from the general to the specific, using a more detailed geographic scale, possibly as specific as parcels. The sketch planning tools described in the *Guidelines* build on the functionality of GIS to allow testing of different land use and transportation options for the future. These tools are also set up to use in outreach and input by the community, committees through workshops using the tool in groups.

At this point, the outputs from the sketch planning tool can be used to define new Regional Strategic Planning Model inputs for a select number of alternative scenarios. After developing geographically specific scenarios using land use sketch planning tools, the data is converted to translate the outputs from the sketch tool to be usable in the Regional Strategic Planning Model. Using the Regional Strategic Planning Model and sketch planning tools together provides the flexibility to evaluate how detailed proposed land use scenarios will perform in relation to the policies the state has assumed, as well as the outcomes and aspirations defined by a local community.

Through aggregating the more detailed land use scenario into the Regional Strategic Planning Model, the land use concepts, non-land use concepts, and policies an area is planning on pursuing will be accounted for and allowed to impact one another in the analysis. Sketch planning tools do not take into account federal or statewide policies, such as the fuel efficiency of the future vehicles or taxing policy and household budget impacts on VMT. The land use sketch planning tools can provide initial estimates to help refine land use scenarios (development visions) as they are being created by planners or the community in Step 5. A final evaluation should occur with the land use information from those scenarios combined with other polices in the Regional Strategic Planning Model to get more accurate outcomes, including measures of GHG comparable to the state GHG target rule.

Figure 6: Example application of the Regional Strategic Planning Model with the Sketch Planning Tool

1. Regional Strategic Planning Model

Resilience testing of a range of policies for impacts on transportation GHG emissions and other transportation related evaluation measures.

Generalized data includes:
- **Urban design characteristics**
- Roadway characteristics
- Marketing characteristics
- *Possibly fleet and pricing*

Urban design inputs go from general to more specific.

2. Sketch Planning Tool

Use a sketch planning tool to conduct stakeholder outreach and **develop more detailed urban design (land use and transportation) scenarios and concepts,** thus improving the urban design inputs that go into the Regional Strategic Planning Model

High-level geographic analysis can be done during the early organizational steps of scenario planning without using sketch planning tools.

3. Regional Strategic Planning Model

Test a select number of alternative scenarios using alternate urban design inputs, which can be variations of the initial generalized data or come from the detailed outputs of the sketch planning tool, converted for use in RSPM.

Geographically specific information gets converted into usable inputs for RSPM.

4. Final Evaluations

How do the outcomes line up with community values? RTP goals?

Regional Strategic Planning Model

The Regional Strategic Planning Model was developed by ODOT for the purpose of estimating and forecasting the effects of various long term policies and other influences on the amount of vehicle travel, the types of vehicles and fuels used, and the resulting greenhouse gas (GHG) emissions among other things. As the name indicates, the Regional Strategic Planning Model is a model which supports strategic planning processes, such as Strategic Assessments and scenario planning, at a regional level, often when few details are available.

The Regional Strategic Planning Model[6] tool helps regions assess policy actions along with fundamental shifts underway that will affect future travel. The tool captures how adjusting one factor can impact others. For example, the number and type of vehicles owned influences the amount of vehicle travel. Electric vehicles are much cheaper to operate and produce few emissions idling in congestion. The way the transportation network is managed and priced effects future vehicle purchases and where people and businesses locate. The resulting impact on trip distances influences the market penetration of electric vehicles and the ability to use alternative modes. These are just a few examples of how different factors impact and influence one another.

To capture these complicated interactions the Regional Strategic Planning Model is constructed to work at a very disaggregate level, modeling decisions at the household and vehicle level. The Regional Strategic Planning Model first builds a database of of each household in the study area in significant detail. Attributes of household income, age mix, are supplemented with whether members of the household are involved in programs such as car sharing or TDM. From this information, the Regional Strategic Planning Model estimates the household's travel directly. Vehicles are assigned and then an iterative process adjusts vehicular travel depending upon the cost of driving. So while the inputs only need to be high-level regional approximations, the computations occurring within the Regional Strategic Planning Model estimate how individual households will make decisions based on different conditions.

The Regional Strategic Planning Model can test a range of scenarios and policy actions that a local area may want to pursue, including:

• ***Urban characteristics:*** *density, mixed use, public transportation, non-motorized transportation, parking management.*

• ***Road characteristics:*** *the supply of freeways and other arterials and the management of operations.*

• ***Marketing characteristics:*** *such as the deployment of employer-side and household-side travel demand management programs, eco-driving, low-rolling resistance tires, and pay-as-you-drive insurance.*

• ***State-led actions:*** *policies that typically require state and/or federal action such as household and commercial vehicle mix, renewable fuels programs, landfill-capture of CNG for vehicle use, pay-as-you-drive insurance, state gas taxes and other fuel or mileage based fees.*

• ***Resilience to future uncertainties:*** *external factors outside of the control of local influence such as population growth, future fuel price, and income growth directly impact choices made related to mobility, livability, and air quality. Testing differing levels of these variables demonstrates the resiliency of a region's adopted plans to a future uncertainties.*

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[6]RSPM was formerly known as GreenSTEP. The name change reflects expanded capabilities for metropolitan area application while addressing a more general set of transportation and land use considerations in addition to greenhouse gas emissions.

The resulting outcomes cover a range of mobility, economic, and environmental measures. The Regional Strategic Planning Model differs from traditional travel demand models that support planning in most urban areas. Urban travel demand models are designed to model the effects of specific transportation projects or groups of projects on specific parts of the transportation system. The Regional Strategic Planning Model, in contrast, operates at a strategic level and is less detailed but considers a wider range of potential policies and outcomes. An important capability of the Regional Strategic Planning Model is that it considers a more complete cost of travel, including gas prices, congestion charges, pay-as-you-drive insurance, parking charges, etc. and compares these costs to a household's total budget, with impacts on travel. This allows testing resilience to changes in costs including vehicle fuel efficiencies, as well as the effectiveness of pricing policies to manage transportation system demand, aspects that are not currently accounted for in most urban travel models.

The Regional Strategic Planning Model also differs from land use sketch tools. Land use sketch tools operate from a building perspective, calculating the impact of buildings, their occupants, and built environment on travel as well as reporting building energy, water use, etc. The Regional Strategic Planning Model, in contrast, centers on households and their attributes including elements of the built environment and dwelling type which influence their transportation choices (number and type of vehicles) and travel behavior.

These models are complementary. The Regional Strategic Planning Model supports discussions of a region's long term future, evaluating many scenarios relatively quickly to help identify a mix of policies that might meet the region's vision. An urban travel demand model can then be used to evaluate and effectively implement specific elements of this vision. Land use sketch tools can assist in the development and public input on alternative land use patterns critical in estimating travel from both the Regional Strategic Planning Model and urban travel demand models.

Sketch Planning Tool Outputs Useful in the Regional Strategic Planning Model

Land Use by TAZ:

Activity - Count of households, population, university group quarters; employment (total and retail/ service share)

Housing - Dwelling unit mix (RSPM uses: Single Family Detached, Single Family Attached, Apartments 2-4 units, Apartments 5+ units, Manufactured Home, University Group Quarters)

Multi-modal improvements: An indication of places with changes relative to the base year in (could indicate that an area will look like another existing area does today).

Design - intersection density, pedestrian-oriented street miles per acre, walk/bike facility upgrades

Transit - new/improved transit service with service frequency

Figure 7: Major Factors Affecting Light Vehicle GHG Emissions Addressed in GreenSTEP
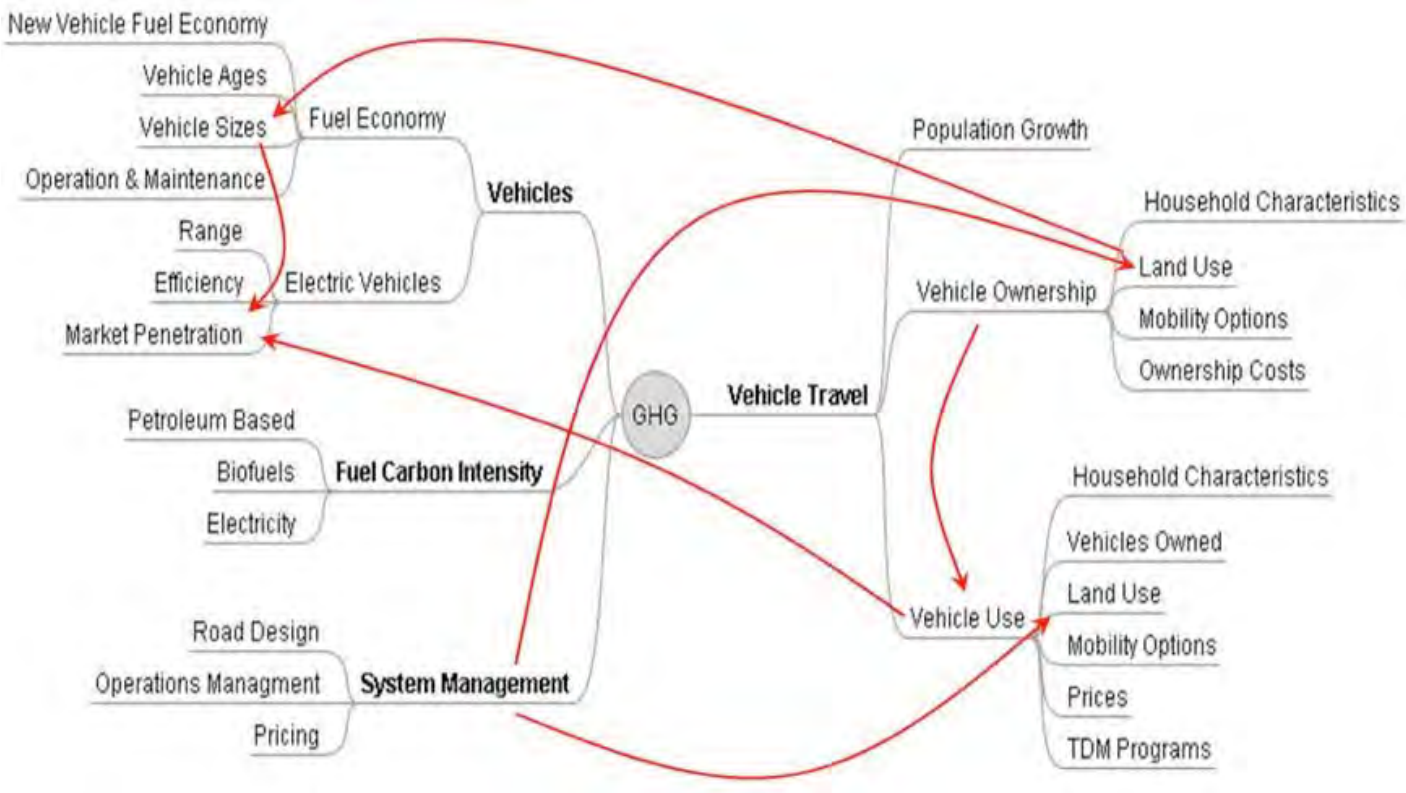
This Figure illustrates the many factors influencing GHG emissions that are built into the GreenSTEP and RSPM evaluation tool. The red lines indicate just some of the inter relationships between factors; many more such relationships are considered by the models.

Performance Based Planning using Strategic Tools:

Using strategic tools like the Regional Strategic Planning Model for long range planning is becoming increasingly valuable as a means to help state and metropolitan area governments select policies and actions to address pressing issues that are fraught with uncertainty. Strategic tools are designed to address a wide range of trends and policies, rather than focusing on details, and report on a wide range of outcomes of interest to communities such as sustainability, health, household costs, and mobility. As a result, many alternative futures and policies can be evaluated, enabling planners to reason more effectively about intended and unintended consequences of prospective policies and test plan resilience to uncertain external influences. Performance metrics set in a strategic phase may be incorporated into subsequent planning, programming and project prioritization processes, as well as monitor plan performance that can in-turn influence long range planning decisions.

Regional Strategic Planning Model Awards

The development of the Regional Strategic Planning Model was reviewed extensively by state, national and international travel and emissions modeling experts in multiple venues. In 2010, the American Association of State Highway and Transportation Officials (AASHTO) awarded ODOT its 'Presidents Award for Planning' for the development of the GreenSTEP model, and again in 2013 for the Statewide Transportation Strategy using GreenSTEP. In 2015, the Strategic Assessment Report in Corvallis using the Regional Strategic Planning Model was awarded the FHWA Environmental Excellence Award.

The Regional Stragetic Planning Model has been adapted for use by other states in the form of the Federal Highway Administration's (FHWA) Energy and Emissions Reduction Policy Analysis Tool (EERPAT). Portions of the model became the underlying basis of the SHRP2 C16 Rapid Policy Assessment Tool (RPAT, formerly SmartGAP). A partnership with ODOT, FHWA and other users is underway to merge the related tools into an open source software framework called VisionEval and further develop the tool, which will make it easier to share updates and collaborate to improve performance-based planning efforts across the country.

Portland Metro Climate Smart Communities Findings from Phase 1

In its initial use of GreenSTEP, Portland Metro ran 144 high-level scenarios through the model. The results produced an understanding of the region's land use and transportation options for reducing GHG emissions while advancing community goals. It also gave them a sense of whether they are looking at a mountain of challenges that would discourage even the heartiest of planners, or a hill of smaller efforts that instead would provide the region with inspiration. Through GreenSTEP, Metro found that 93 of the 144 scenarios met the 2035 GHG emissions reduction target of 20 percent per capita.

The Major Findings:

The cursory analysis with Metropolitan GreenSTEP provided some certainty for the region by showing them that the GHG reduction targets are achievable. It also helped them better understand the challenges ahead, knowing that they will need to look at a range of strategies to accomplish the goal.

- The reduction target is achievable but will take additional effort and new strategic actions.

- Community design and pricing play a key role in how much and how far people drive each day and provide significant GHG emissions reductions.

- Fleet, technology and pricing strategies provide similar significant GHG emissions reductions but no single strategy is enough to meet the region's target.

In addition, the Regional Strategic Planning Model can be used to evaluate the implications of changes in the vehicle fleet, vehicle and fuel technologies, and various types of pricing. However, these are typically viewed as factors that require state and/or federal action and are not actions that a local area would generally pursue.

The Regional Strategic Planning Model can also be used as a strategic level tool to evaluate many scenarios relatively quickly. This approach is the first phase of the three phases.

Many interrelated factors influence GHG emissions, and adjusting one can directly impact others. For example, vehicle ownership relates to how the vehicles are used. The way the transportation network is managed and priced effects future land use development. Land use development affects how vehicles are used. Vehicle use, especially the distance vehicles are driven, impacts the market penetration for electric vehicles. These are just a few examples of how different factors impact and influence one another. (Figure 7 provides an illustration of these relationships.)

Because of these complicated interactions, the Regional Strategic Planning Model is constructed to analyze the interactions at a very disaggregate level, modeling decisions at the household and vehicle level. So while the inputs only need to be high-level regional approximations, based on state and national data on travel behavior, the computations occurring within the model estimate how individual households will make decisions based on different conditions.

However, as detailed later in this step, land use sketch planning tools can be used to help communities compare and agree on varying development strategies at a very detailed level, even specific parcels if desired. The detailed land use visioning done with sketch planning tools can be aggregated into Place Types, which allows the Regional Strategic Planning Model to estimate impacts of specific land use patterns developed with the sketch planning tool, while also accounting for the interactions and potential synergies of all the other (non-land use) policies.

Place Types

Place Types are data-driven ways to define and visualize the many aspects of land use-transportation interactions embodied in our land use plans. They are then used as an input to the Regional Strategic Planning Model, allowing users to measure the impact of future changes to transportation and land use policies. To better understand land use and transportation interactions and to make more informed policy decisions, neighborhood characteristics can be analyzed by the role that they play in the region; a more comprehensive view than parcel changes, but more specific than zoning and comprehensive plans. These neighborhood characteristics influence the transportation choices that individuals make, and ultimately affect the overall amount of vehicle travel in the region. By comparing the existing built environment characteristics to what is expected to occur in the future, users can explore how changes to the built environment can affect travel.

Area Type (or Regional Role) describes the interdependencies of each neighborhood compared to the rest of the region, e.g. how centered is it to jobs in the region. The Area Type is a measured by the accessibility to Destinations (jobs accessible from TAZ), Density (jobs and households per acre), and walkable street Design (multi-modal network links). Development Type (or Neighborhood Character) is used to describe the physical characteristics of each neighborhood in isolation. Development Type is determined by the Density (jobs and households per acre), walkable street Design (multimodal network links), land-use Diversity (ratio of jobs to households), and presence of transit (service level) within each neighborhood district.

Step 3

Sample Area Types Corvallis Area MPO

Sample Development Types Corvallis Area MPO
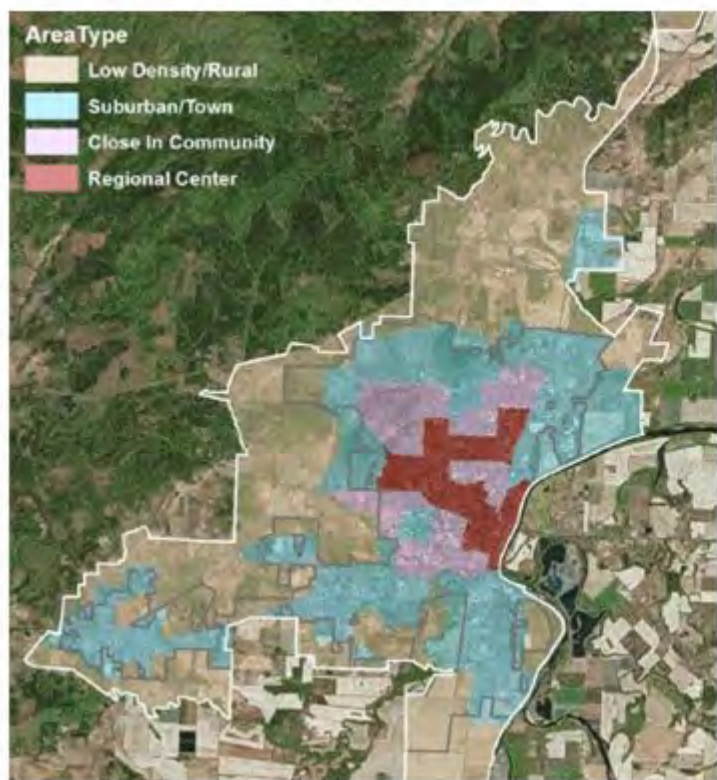
Place Types Support in Sketch Planning Tools

Place Types and RSPM Sensitivity Tests can be used to inform sketch planning tools used in public workshops.

In the development of the Corvallis Area MPO's 2017 Regional Transportation Plan, RSPM sensitivity tests were run for various levels of assumed population living in mixed use areas, a policy action that was desired to be tested in public workshops. The results enabled planners to create a "Mixed Use Design Tool" where workshop participants could paint neighborhoods with a multi-modal/ mixed use design, and see real time outcomes, as well as other associated benefits from the RSPM runs such as bike/walk modes, and reduced VMT.

Baseline Planning Assumptions

The Regional Strategic Planning Model uses a large number of inputs to model GHG emissions. However, some of the inputs will be used from the data developed for the analysis of metropolitan GHG target rules and for the STS. The default assumptions address:

Pricing

- *Fuel prices*

- *Statewide policies on pricing and finance (e.g., gas tax, VMT tax, carbon fee, tolling)*

- *Pay-as-you-drive insurance*

Vehicle Fleet Mix and Technology

- *Fuel economy goals*

- *Advanced vehicles in the fleet (e.g., electric vehicles)*

- *GHG production from Oregon's electricity generation*

- *Future fuels and fuel standards (e.g., low carbon fuel standard, amount of GHG produced per unit of fuel)*

Metro and Metropolitan GreenSTEP

Metro utilized a version of Metropolitan GreenSTEP with 20 sub-regional geographies. Metro delineated these minimum geographic units based from its 18 district TAZ map and then adjusted them to Census boundaries to be consistent with Metropolitan GreenSTEP data inputs. Each metropolitan area will be able to delineate the minimum geographic units, or sub-regional geographies that it feels work best for the land use scenario development using sketch planning tools.

Metropolitan GreenSTEP and sketch planning tools are described in greater detailed in the *Modeling and Analysis Tools Report* in the Oregon GHG Reduction Toolkit.

Figure 8: Metro's 20 GreenSTEP Geographies
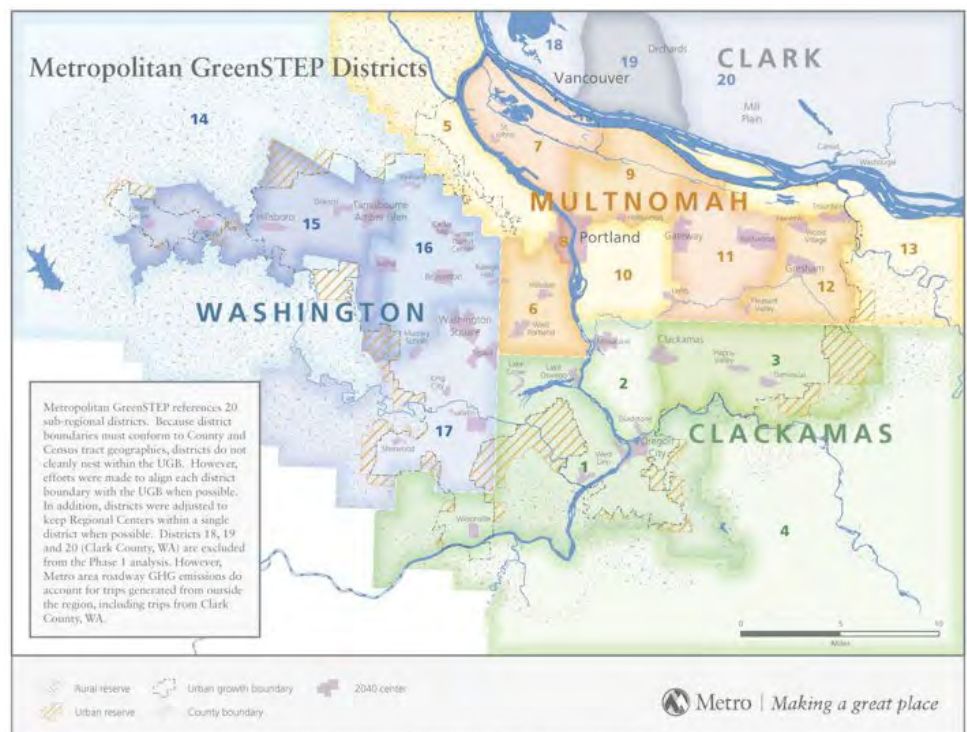
Selecting the Geographic Scale for the Regional Strategic Planning Model

A level of detail needs to be selected for use in the metropolitan area and incorporated into the Regional Strategic Planning Model. The statewide GreenSTEP model uses counties and whole metropolitan areas as the minimum geographic units. For metropolitan-level scenario planning using the Regional Strategic Planning Model, the MPO boundary should be employed to make the model more sensitive to localized details. Much of the data required for the tool is available at this geographic level, or within smaller geographic areas such as traffic analysis zones (TAZ), which often nest within the tracts.

The goal in determining the geographic scale is to find areas small enough to reflect significant differences between sub-areas within the metropolitan area. For example, residents in downtown, be it Bend or Medford, are likely to have different travel patterns, and other characteristics, than people in neighborhoods dominated by single-family homes, such as South Eugene or West Salem. At the same time, there is no significant benefit of smaller sub-geographies if there are few differences between the residents' travel behavior and lifestyles throughout the area.

Figure 9: Corvallis Area MPO Census Tract Boundaries
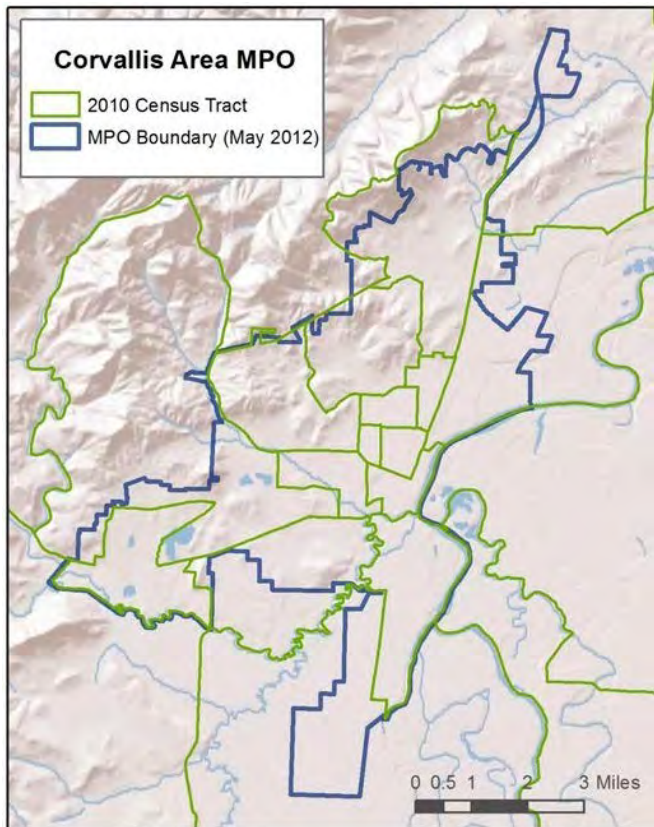
Scenario planning analysis using the Regional Strategic Planning Model is typically done at a high-level that divides the metropolitan area into 15-20 subareas or districts. Census tracts, like those shown here, provide a good starting point: tracts relate well to different neighborhood and land use patterns, and allow planners to tap into detailed Census data to help understand and evaluate different policies and options.

Collecting Data for the Regional Strategic Planning Model

To model prospective land use and transportation policies at a local or district level, a number of inputs are required for each policy area. Figure 10 provides a list of inputs that will be calibrated and selected for the local jurisdictions. The Community Design, Pricing, Marketing and Incentives, and Roads inputs will be locally generated and therefore do not have standard values for all metropolitan areas. The Fleet and Technology inputs use values from the Target Rule as a starting point for all metropolitan areas. (Input values can be found in the Target Rule Appendix).

Figure 10: Policy Area Inputs to choose from for use in Base Case, Reference Case and alternative scenarios.

INPUT
COMMUNITY DESIGN
Urban growth boundary (UGB) *(rate of expansion relative to rate of population growth)*
Households in mixed-use areas by census tract or county *(percent)*
Rate of growth of public transportation service *(revenue mile growth per capita compared to base year level)*
Bicycle or light vehicle mode share
Work and non-work parking extent and cost
PRICING
Pay-as-you drive insurance *(percent households and cost)*
Gas tax *(includes state and federal gas tax, reference scenario assumes HB 2001 gas tax increase)*
Carbon emissions fee
Vehicle travel fee
MARKETING AND INCENTIVES
Households participating in individualized eco-driving marketing programs *(percent)*
Participation rate in individualized marketing and employer-based commute programs *(percent)*
Extent and participation in car-sharing
ROADS
Rate of growth of freeway and arterial lane miles
VEHICLE FLEET
Fleet turnover rate/ages*
TECHNOLOGY
Auto fuel economy - internal combustion engine*
Light truck fuel economy - internal combustion engine*
Auto fuel economy - plug-in hybrids*
Light truck fuel economy - plug-in hybrids*
Carbon intensity of fuels *(CO$_2$e grams/magajoule)*
Percent of autos that are plug-in hybrids or electric vehicles*
Percent of light trucks that are plug-in hybrids or electric vehicles*

*   As defined in State Agency Technical Report and assumed in the Metropolitan GHG Reduction Targets Rule.

Land Use Sketch Planning Tools

Land use sketch planning tools facilitate the development and evaluation of a variety of land use and transportation alternative scenarios and can be effective public outreach tools. They are particularly useful for public outreach and workshop setting development of alternative land use scenarios that can also be used as input in other tools. The discussion in this guidance document focuses on the sketch planning tools that are software extensions to GIS and allow planners to "paint" building blocks (descriptive land use types described in detail below) and "draw" transportation improvements on the landscape to create unique land use and transportation scenarios, a more detailed land use exercise than the place types used in the Regional Strategic Planning Model noted above.

The land use sketch planning tools are used to report various land use, housing and environmental measures based on designated building blocks. This process allows convenient comparisons of the impacts of different land use and transportation arrangements.

A major benefit of using land use sketch planning tools is the ability to conveniently develop many possible future land use scenarios with detailed information describing the locations, types and intensities of land uses. This land use information can then be output and used by other evaluation models and tools in the planning process, like long range scenario planning using the Regional Strategic Planning Model or a travel demand model. These other models include traditional traffic analysis zone (TAZ) based travel demand models, transportation post-processing models that estimate vehicle trip reductions (also known as traffic calculation models), energy models, land use models and infrastructure models. As discussed earlier, the Regional Strategic Planning Model uses more simple Place Types description of land use in its input, which can be aggregated from the land use building blocks used in the sketch planning tool to ease passing data between the tools. Complex market-based land use models which predict land development in response to market conditions such as Metroscope and Land Use Scenario DeveloperR, or LUSDR, are also a potential source of information for the scenario planning process and can assist in allocating the growth forecast, if available.

Collecting Data for Land Use Sketch Planning

Development of base year and reference case scenarios – using land use sketch planning tools - relies on compiling and developing accurate, region- wide land use and transportation data for the base year and the future planning year. Some of this data, such as the transportation network and the geographic scale are displayed on a base map that will serve as a guide when painting scenarios.

Buildable Lands Inventories

City and county Buildable Lands Inventories (BLIs) need to be combined and their information transferred, within GIS, to the planning units selected for the geographic scale upon which scenarios will be developed. Filtering out environmentally or physically constrained lands (e.g., water, parks), the BLI conveys how much land within each planning unit is vacant or potentially available for redevelopment (unprotected acres). BLIs are typically developed at parcel level geography, so translating their values to the selected planning units should be a fairly straightforward GIS process. One of the likely challenges will be coordinating all of the BLIs within the metropolitan area to provide quality data for the selected base year. Where available, BLIs may be outdated or for years other than the base year. Thus, the BLI will likely need to be updated or adjusted to provide a reasonable and consistent baseline for analysis.

In considering whether to update the BLI to support scenario planning, planners should assess whether there have been significant changes in areas that are likely to be considered for higher density development in the scenario planning process. Up-to-date information in these areas is key to evaluating their potential. As discussed below, the level of detail in the BLI also affects the geographic scale available for use by the sketch planning tool. In short, having more detailed data allows the use of smaller planning units.

Current Land Use Inventory

This data shows the occupied land in the metropolitan area and the land use associated with it. Like the BLI, the current land use inventories are best when accurate to the parcel level. The current land use inventory, commonly referred to as existing land use, should portray what was on the ground for the selected base year. This data can then be used in the scenario development process to determine where redevelopment opportunities may exist.

Existing and Planned Transportation Network

The transportation network for a metropolitan area is the supporting skeleton for all of the region's land uses. The RTP and TSPs within the metropolitan area will include infrastructure that exists today, as well as budgeted and planned infrastructure, and infrastructure that is planned but not yet funded. These components could include available networks ranging from arterials to sidewalks which will be used as a backdrop for the scenario design process. The characteristics of the transportation network are coded into the base map and can be used for analysis in addition to the network. The transportation network is also included in the base map as a guide for urban design and allows the testing of changes in future land use and transportation scenarios.

Land use sketch planning tools generate estimates of vehicle travel and travel by other modes, but do not allocate or estimate trip distribution on the network as a travel model would. Consequently, while these tools can be used to compare the overall level of vehicle travel that is likely to be generated by different development patterns, they are not intended or well adapted to estimating details of performance on the roadway system. Generally, these estimates are expressed as increases or decreases in driving, transit use and sometimes walking and biking. At the core of land use sketch planning tools is the ability to locate household and job growth prior to analysis within the Regional Strategic Planning Model or travel demand models.

Detailed information about the transportation network is important to constructing and evaluating different scenarios. For example, most sketch planning tools will estimate the amount of employment and housing within walking distance of transit. Consequently, to construct a scenario that maximizes access to transit, the base maps used in the sketch tool need to show the location of existing or planned transit stops.

Existing Comprehensive Plans

GIS versions of city and county comprehensive plans will need to be gathered and combined together to create a digital map of the expected long-range land uses within the metropolitan area. Written descriptions of each designation that includes density, land use type, and land use mix should accompany the GIS maps from the local governments. The building blocks used to develop the scenarios will be based in large part on the written descriptions of the plan districts including expectations relating to use, mix, intensity and urban form.

Household and Employment Forecasts

Typically, metropolitan areas will want to use the housing and employment allocations from the adopted RTP as the basis for scenario planning. RTPs typically provide the most detailed and up-to-date estimate of the base year and future year housing and employment distribution within the metropolitan area. In the RTP both are allocated to the TAZs. The distribution for the base year will need to be allocated to the established planning units, based on the existing land use conditions in order to develop the base year scenario.

Later in the process, building blocks will be used within the sketch planning tool to build the reference case and to test different land uses by examining alternative allocations of the expected housing and employment to different locations within the planning area. During that process, the user will have to ensure that assumed demographic and employment totals remain constant for all future land use scenarios developed and tested, if they are to be compared apples-to-apples. An area might also want to do some sensitivity testing to better understand the effects of population changes. That type of scenario testing would not need to maintain the same control totals. However, all scenarios intended to be compared against one another should match on key demographic totals (e.g., household size, age, income) when the entire analysis area is summed.

Selecting the Geographic Scale for Land Use Sketch Planning

Scenario planning analysis can be conducted at a variety of geographic scales. The land use sketch planning tools rely heavily on geographic data in order to allow for testing different geographic combinations of land uses. The size of the metropolitan area and the resources available often dictate how coarse or fine the geographic planning units should be. For instance, a regional scenario project for a large MPO like Portland Metro may use either an acre-sized grid cell planning unit or census blocks, while a project for a smaller MPO could make use of aggregated parcel data (if the data resources are available) to create planning units smaller in scale and more finely grained.

Regardless of what level of detail is chosen, the geography should be designed to nest into available larger geographic units used for planning or analysis – including census tract, block and group boundaries, TAZ boundaries, plan or zoning district boundaries. Make sure that the units of geography used in the sketch tool can be easily aggregated to the larger areas or units of analysis used by the Regional Strategic Planning Model.

Grid Cell Based

A grid cell based approach is the most straightforward method for painting the scenario landscape. It results in planning units of consistent size throughout the metropolitan area, in both urban and rural areas. The cells can be scaled to a familiar size, such as a typical city block or group of blocks. These grid cells will be a new geography introduced to metropolitan areas as part of scenario planning and will require adapting existing data to match the grid cells. This means either aggregating or disaggregating existing data to fit the grid cell. The primary benefit to the grid cell approach is that it can be adapted to allow for a fine scale that can approximate real world development, or cover larger areas, and avoids the need to subdivide large parcels in the future. This granularity can also cause raise concerns; some may worry that the scenarios represent proposals that are intended to affect specific properties, which is not the purpose.

Census Block Based

Census blocks will vary in size between urban and rural areas in the metropolitan area. In rural or suburban areas where census blocks are larger, there will be less precision and control over design in the scenarios. Smaller census blocks in the urban areas will provide greater design control. The advantage of a census block based approach is the convenient availability of consistent data for all of the metropolitan areas. Additionally, they are familiar to people and large enough to be abstract and avoid any misconceptions that the scenarios contain proposals intended to affect a given persons property.

A census block based example. The San Diego Foundation initiated a regional planning process in early 2011. They utilized census blocks because of consistency, timeliness and data availability.

Parcel (or Tax Lot) Based

Scenario planning done at a parcel level provides the most precision in design, particularly in urban areas where parcels are smaller. This requires assessor's parcel level data, which is available for most counties. However, data quality is highly variable at the parcel level due to variable methods for coding and maintaining data. This is the least abstract of the three methods, as such, it presents potential for overly detailed critiques based on specific designs and concerns that the scenarios represent proposals intended to affect specific properties, which is not the purpose. It could also create over-burdensome scenario creation processes, as the long-term future is too unknown to predict how specific parcels will develop or transform overtime.

Combined Approach

A combination of grid cells, census blocks and parcels, can also be used. This is particularly useful in adding precision in both developed areas with small parcels as well as large undeveloped areas. For instance, if census blocks or parcels are the selected geography these are typically large areas toward the urban edge and more detail may be desired. For example, an

Figure 11: Geographic Scale Options

Parcel Based Scale   Census Block Based Scale   Grid Cell Based Scale   Combination Scale

Depending on the size of the metropolitan area and available data, choose to build your scenarios at the parcel level, using census blocks or grid cells, or a combination of scales.

Developed Land   Vacant Land   Water
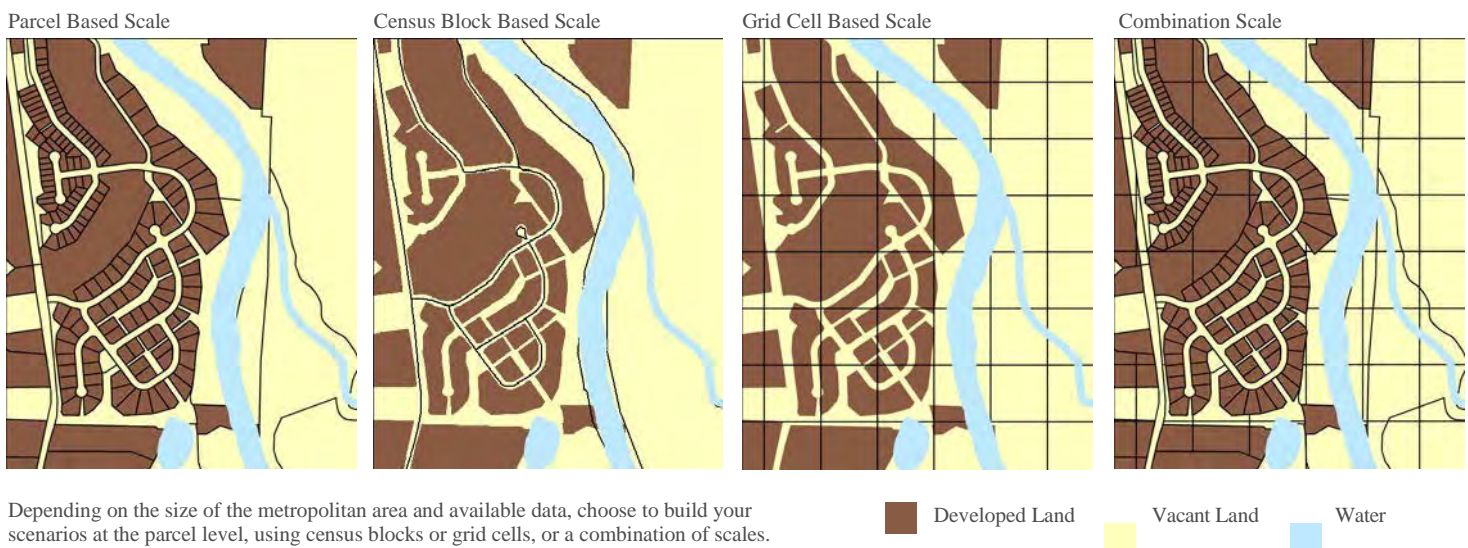
urban reserve could easily exceed 1,000 acres in size while being comprised of only a small handful of parcels, or even just a portion of one census block. Parcels or large census blocks can be split into smaller polygons, or grid cells in specific locations.

Downtowns, transit areas or main streets provide an example of where a process based on census blocks, or grid cells, may wish to shift to the small ownership parcels typically found in these areas. This extra precision will allow for scenarios to reflect discrete properties based on the knowledge of local planners. This combination of planning units allows for increased precision and greater detail in specific areas.

Figure 12: Options and Considerations for the Geographic Scale of Land Use Sketch Tools. This table illustrates advantages and disadvantages of each approach.

GEOGRAPHIC SCALE/ Level of Detail			
CENSUS BLOCK **Coarse or General**	**GRID CELL** **Variable Scale**	**PARCEL** **Fine or Detailed**	**COMBINATION** **Variable Scale**
Advantages			
• Uses readily available and familiar data • Analysis can be done quickly; allows multiple alternatives to be evaluated	• Uniform detail of analysis • Can be a variety of sizes – depending on need	• Can produce very detailed alternatives and estimates of outcomes	• Provides ability to add precision in specific locations
Disadvantages			
• Results are general • Difficult to refine	• Requires work to adapt existing data to match new grid cell boundaries	• Requires more resources to construct and run alternatives • Quality of assessor's parcel data may vary among jurisdictions • Parcel level discussions can become political	• Requires setup of data at two geographic scales
Best for			
• Preliminary analysis or a quick assessment of existing plans • When resources are limited • More detailed data is not available	• Communities where more detailed information is not available • Uncertainty about how scenario planning fits into long-range planning and analysis	• Communities with detailed GIS data and capability • Sketch planning tool or scenario planning will be incorporated into ongoing community planning and analysis	• Areas where there is a mix of large and small census blocks, grid cells, or parcels do not provide the level of precision desired

Example Building Blocks

Example building blocks that can represent different development types in a region.

- Central Business District
- Office District
- Residential District
- Urban Residential District
- Regional Commercial District
- Commercial District
- Neighborhood
- Historic Area
- Urban Transit Corridor
- Regional Corridor
- Main Street
- Urban Neighborhood
- Suburban Neighborhood
- Heavy Industrial
- Light Industrial
- Rural

Developing Building Blocks for Sketch Planning

Sketch planning tools use building blocks that describe the different types of land uses that exist within the metropolitan area or are planned for the future. Each building block is comprised of a mix of different types of buildings along with assumptions about characteristics such as the amount of land devoted to streets, parks, and civic areas. The building blocks represent the places people are familiar with, such as main streets, town centers, and residential neighborhoods. Communities that have engaged in scenario planning have typically used between 10-25 different building blocks depending on the size of the area, and diversity of places within the area. Comprehensive plan land use categories will inform the building blocks. When assembling the building blocks within the sketch planning tool, refer to the comprehensive plans of local jurisdictions for ideas on the types of places that should be represented in the scenarios. The purpose is not to create a category to match every city's comprehensive plan category, but rather a description of all of the places that exist today, and those that may exist in the future. These building blocks should nest within the more general Place Type categories used in the Regional Strategic Planning Model.

Once the building blocks are constructed, they are painted onto the base map of the metropolitan area using the sketch planning tool. Each building block carries with it values that describe the characteristics of the places they represent.

Through a land use sketch planning tool, building blocks are used to estimate likely outcomes, and comprise the foundation of the future land use scenarios used in the Regional Strategic Planning Model and other tools. Baseline data and information about each building block used in the sketch planning tool allows the sketch planning tool to calculate results for many of the evaluation criteria discussed in Step 2. Examples of the outcomes that sketch planning tools estimate include: employment and housing densities, new impervious surface (e.g., rooftops and parking lots), the amount of land developed and redeveloped, total number of parking spaces, mix of housing types, mix of employment types, and if calibrated to local markets, the relative value of new development, along with other measures. Each sketch planning tool handles building blocks a little differently, but their fundamental variables are related to housing and employment densities and urban design. (See the Technical Appendix for more detailed discussion and examples.)

After applying these building blocks across the planning area, for the base conditions and the reference case scenario, household information is extracted from the building blocks, through a conversion process (described later in Step 3, *Preparing the Sketch Planning Results for Analysis with the Regional Strategic Planning Model*) to enable to the model to calculate additional, more detailed evaluation criteria. The scenario produces data that can be transferred to TAZs or census tract-size districts for the Regional Strategic Planning Model, including population, housing units and employment by type. This data can also be used as land use inputs in the more detailed regional travel demand model.

Each building block will be assigned a mix of building types, each having an associated job and housing density. Examples of **building types** include: mixed use residential four- stories, garden apartment, compact single family home, office, main street retail, and business flex. Because building blocks make it possible to measure evaluation criteria that rely on information tied directly to individual buildings and uses, many of the assumptions are built into the individual building spreadsheets (called prototype buildings), which are then linked to the building block spreadsheet and grouped together to form **building blocks**. (Be sure to show the key characteristics of building blocks needed to generate estimates of key outcomes, especially land use and transportation related outcomes, e.g., street network, density, parking.)

Building blocks are primarily used in the land use sketch planning tools to perform the land use analysis. While building blocks themselves do not include measurable transportation characteristics, they are intended

to match or complement specific transportation investments included in the scenario. The transportation design and assumptions serve as a guide so that placement of building blocks is consistent with, and takes advantage of, planned transportation improvements and programs. For example, it may not be highly effective to locate auto-oriented, low-density building blocks in an area of the region where transit investment is already in place or planned. Conversely, it could be effective to place high-density and mixed- use building blocks in areas along transit lines and in areas with well-connected streets. The sketch planning tool itself will not incorporate the transportation infrastructure in delivering its evaluation criteria. The sketch planning tools which produce transportation estimations are based on just a few land use factors such as density, use mix, the connectedness of the street network, and availability of transit service.

The base and reference case scenarios should be based on the financially-constrained transportation network. Assessing various scenarios' performance relative to community goals and budgets can be a productive way to evaluate and prioritize other, non-funded investments, and test plan resilience under alternative futures (e.g., population growth or fuel price forecasts).

Developing Building Blocks

These are the basic steps for developing **building blocks.** More details can be found in the Technical Appendix.

Develop prototype buildings:

1. Devise a list or selection of buildings that match or represent the **current and potential future characteristics of the metropolitan area.**

2. Populate the prototype building spreadsheets with **data relating to the physical form, intensity and mix of uses and financial attributes (such as construction costs and sales prices)** if available. This data will be entered for each prototype building.

Group and assemble prototype buildings into building blocks:

3. Select a set or mix of buildings that would likely be found in each building block. Some building blocks will be fairly homogenous. For example, a typical lower density residential neighborhood is likely comprised of four or fewer prototype buildings. Other building blocks, such as urban corridors may require a mix of more than ten types of buildings to adequately represent the range of uses found today, let alone the future.

4. Assign each building a percentage to indicate the portion of the building block that is comprised of each prototype building.

5. Add in net land reductions to account for streets, civic space and parks. The values for these reductions can usually be found in any previous land use capacity developed by the jurisdictions.

Building Types

Key Building Stats		
	Housing Units	2
	Housing Unit Density	12.9
	Jobs	-
	Job Density	-
	Floor-area Ratio	0.63
	Net Building Square Fee	3422

Site Area	7000	square feet
	0.16	acres
Site Gross-to-net Ratio	1	
Landscaping or Open Space	0.36	
Building Height	1	stories
Under-build	1	

Building Uses	
Residential	Multifamily Owner
Market-rate	100%
Affordable	0%
Retail	0%
Office	0%
Industrial	0%
Public	0%
Total	100%

Average Residential Unit Size or Gross Square Footage per Employee by Sector		
Market-rate Residential (Unit Size)	1,650	net square feet/unit
Affordable Residential (Unit Size)	750	net square feet/unit
Retail	1,246	gross square feet/unit
Office	434	gross square feet/unit
Industrial	601	gross square feet/unit

Building Blocks

Building Block	Building Type							
	MU Residential 30	MU Residential 15	MU Residential 6	MU Residential 3	Multifamily 15	Multifamily 6	Garden Apartment	Cottage Homes
Metropolitan Center	3%	11%	15%	5%	8%	15%	8%	
Urban Center		6%	20%	10%	6%	15%	10%	3%
Town Center		2%	10%	10%		10%	22%	9%
Community Center							35%	20%
Rural Village								5%
Multi-Family Residential					5%	10%	37%	10%
Traditional Neighborhood							12%	15%
Master Planned Community								
Single Family Residential								

Recommended Building Blocks

Oregon's metropolitan areas have similar land use patterns. Each region includes a primary downtown area, a number of smaller town or neighborhood centers, and larger single-use areas like residential neighborhoods, commercial strips, industrial areas and parks. Similarly, each of Oregon's metropolitan areas is planning for some newer development types, like transit-oriented developments and mixed-use neighborhoods. The recommended building blocks are suggestions that represent both existing forms of development common in the metropolitan areas of Oregon and new types considered possible over the next 10-20 years. Much more detail about the recommended building blocks (i.e. building types, FAR, number of stories, parking factors, street network, level of transit service or other key characteristics used by sketch planning tools to generate estimates of outcomes) is provided in the Technical Appendix.

Figure 13: Recommended Building Blocks with Corresponding Housing and Employment Densities

PLACE TYPE		BUILDING BLOCK	DWELLING UNITS/ACRE	JOBS/ACRE
Area Type	Development Type	Mixed-Use		
Regional Center	TOD, Mixed High, Mixed	City Center (similar to downtowns in Eugene, Corvallis, Bend, Salem, and Medford)	25-40	60-100
Close in Community	TOD, Mixed High, Mixed	**Town Center** *(similar to downtowns in Ashland and Coburg)*	20 -30	30 - 50
Close in Community	TOD	Transit-Oriented Development	30-50	8-10
Close in Community	Mixed	Mixed-Use Neighborhood Center	15 -25	0 - 15
Close in Community	Residential	Town Neighborhood	15-25	0-2
Close in Community	Mixed High, Mixed	Main Streets	15-25	20-30
		Single-Use		
Close in Community	Residential	Compact/Neotraditional Neighborhood	8-9	
Suburban Town	Residential	Single-Family Residential Area	4-7	
Close in Community	Residential	Multi-Family Residential Area	12-24	
Suburban Town	Employment	Strip Commercial		15-35
Suburban Town	Employment	Office Park		25-40
Suburban Town	Employment	Industrial Areas		8-10

Residential Subdivision

Compact/Neotraditional Neighborhood

Strip Commercial

Town Center

Preparing the Sketch Planning Results for Analysis with the Regional Strategic Planning Model

Transferring data from a sketch planning tool to the Regional Strategic Planning Model may require some additional post processor formatting and analysis depending on the type of sketch planning tool and the number of the Regional Strategic Planning Model policy areas incorporated into the sketch planning tool interface. Data produced by the sketch planning tool will need to be analyzed and aggregated before entering the data into the Regional Strategic Planning Model. Land use sketch planning tools assign dwelling units to land uses, whereas the Regional Strategic Planning Model is household based. Therefore, the results measured in dwelling units produced by the land use sketch tool need to be translated into households (essentially occupied dwelling units) for use in the Regional Strategic Planning Model. The Regional Strategic Planning Model then generates a synthetic household data set.

For instance, if there are 100 dwelling units in a particular census tract in the sketch planning tool, that data is stored as one record of data. Within the Regional Strategic Planning Model, 100 separate records are created from that one record – one for each of the households, with each household record containing a specific mix of individuals by age, a combined household income, a home of a certain type, etc. The process for analyzing and aggregating the data for transfer between sketch tools and the Regional Strategic Planning Model should include at a minimum a density of households and whether or not it is in a mixed-use environment. The geographic scale of the Regional Strategic Planning Model or a regional travel demand model must be considered when aggregating the sketch planning results to the appropriate geography (e.g., TAZ, census tract, district, county).

A Note on Modeling

An important step in using modeling tools is to calibrate the tool by comparing outputs from the model to other available information. Much time goes into calibrating models such as the Regional Strategic Planning Model to ensure that they accurately estimate likely future conditions. When possible, the results obtained by the sketch model or the Regional Strategic Planning Model should be compared to other known and reliable models. It is unlikely that any two models will deliver the exact same results when making estimations based on different techniques, so any calibration that can bring the results closer together will help provide consistency.

Land Use Model or Tool: An Optional Step

An optional step is to use a market-based land use model, tool, or process to better inform the scenarios developed with the sketch planning tool. These tools use land market conditions and regional transportation accessibilities to influence the location and type of development. As an example, Metro's land use model Metroscope, can predict how an area will likely grow given economic realities, which can help to provide a reality check on land uses being developed with the sketch planning tool. Another example is the Land Use Scenario DeveloperR (LUSDR) tool, which was used in the Rogue Valley MPO to build and evaluate many plausible future land use scenarios.

Additionally, land use sketch planning tools (and the Regional Strategic Planning Model) offer the ability to estimate a range of other benefits and outcomes. Most land use sketch models use national or state level studies or information to estimate different factors. Local planners are encouraged to review the data in the model and, where appropriate, substitute available local data. For example, most local governments have access to detailed information about average household water and building energy consumption that should be gathered to calibrate these model components. For example, water bureau data can be categorized by type of use by combining consumption data and land use data together. Other items such as building energy consumption may require further research, factoring in variables such as climate patterns, construction types and consumption data from the local utility. Calibration for some of the measures that can be tracked falls beyond the expertise of most planning professionals. Accordingly, it may be necessary to consult with experts from the fields in question.

Conclusion

This step of the scenario planning process involved selecting the tools and assembling the data to be used in succeeding steps to develop and evaluate alternative scenarios. Deciding which combination of tools to use depends on the data and resources available, and how scenario planning fits with other local and regional planning work. The Regional Strategic Planning Model (developed by ODOT) provides metropolitan areas with a powerful tool to evaluate the outcomes of a broad range of regional policy actions from a transportation-perspective, is recommended. Land use sketch planning tools enable local planners to construct and evaluate detailed land use and transportation options, based on compilation of detailed information about local conditions and construction of data from a detailed land use perspective. With these tools in place, local planners can use them in Step 4 to quantify existing conditions and estimate the likely result of currently adopted plans in relation to community goals and values, including GHG reduction targets.

Step 4

Step 4: Develop and Evaluate Base Year Conditions and a Reference Case

Summary

Before a metropolitan area develops and evaluates alternative scenarios for its future, it is important to understand existing conditions and the likely outcomes of its currently adopted plans. In this step, information about existing or recent conditions in the planning area are compiled to create a base year conditions report. Growth forecasts from existing plans are then added to the base year conditions to develop a "reference case" for the selected planning period. Key products of this step are a technical report and outreach documents, such as a report card. They show both performance today and how well current plans are expected to perform in achieving various objectives, including reducing GHG emissions, by the end of the planning period. The development and evaluation of the base year conditions and the reference case are useful for engaging decision-makers, advisory committees, and the public in discussions about potential strategies for the future that meet the region's values and vision, which would be tested later in the alternative scenarios.

In This Chapter

Preview

Scenario planning starts with developing an understanding of current conditions, or "where the metropolitan area is today," and then evaluating the likely results of existing adopted plans and policies in a reference case. Use of the Regional Strategic Planning Model to perform an early high-level baseline assessment is recommended before embarking on a more detailed analysis utilizing a land sketch planning tool.

The **base year conditions** (or current conditions) are the conditions that exist in the metropolitan area in the base year (determined as part of Step 3), including factors related to population, employment, mix of land uses, transportation system, travel patterns, infrastructure, etc. This step involves assembling the information about base year conditions and building a base year conditions report as the benchmark for comparison with the reference case and alternative future scenarios. Using the data and information collected in Step 3, a base year can be described and modeled in the Regional Strategic Planning Model. The results of the Regional Strategic Planning Model analysis will provide a benchmark accounting of today's transportation behavior and GHG emissions.

The **reference case** is the default or starting point for developing future scenarios. It is an estimate of where **current adopted land use and transportation plans** are likely to lead the metropolitan area over the selected long-term planning period.

Baseline assumptions include assumptions about future conditions likely to affect people's travel habits. These include estimates about the price of gasoline, forecasts about future vehicle technologies, and estimates about expected state and federal policies and programs, including state and federal funding for transportation.

Using the Regional Strategic Planning Model initially, and later a sketch planning tool, along with the associated data developed in Step 3, the conditions in the base year scenario and the outcomes of the reference case at the end of the planning period will be estimated. The process will include the use of evaluation measures (identified in Step 2) that indicate how well the metropolitan area is doing – and is expected to do in the future – in terms of household transportation costs, travel delay, amount of open space, and GHG reduction, for example. This information can be presented to the community as a **report card**. This report card provides an opportunity to engage stakeholders in a discussion about where the community is heading based on current trends, and identify key issues or problems that the community may want to explore further.

Base Year Conditions

A crucial element of scenario planning is estimating a metropolitan area's base year conditions, which provides a known reference point. As discussed in Step 3, the recommended base year is 2010, unless more current comprehensive data are available. Because of today's rich data availability and variety of state-of-the-art technical tools, we can better understand, visualize and evaluate existing conditions. Measuring what conditions are like today (in the agreed upon base year) makes it possible to describe the future in comparative terms that make sense to people.

Build the Base Year Conditions

Oregon's metropolitan areas have a wealth of data available related to housing units, households, commercial uses, employment and existing transportation networks. Due to the availability of data the recommended base year of 2010, although a 2005 year is needed to evaluate against the state GHG reduction targets. Unless a different base year was selected in Step 3. These datasets form the backbone of defining the base year conditions. However, this data needs to be organized and translated by the user first to be entered into a sketch planning tool. Use of the sketch planning tool then allows for a visual representation of the base conditions. The result is an accurate, realistic and visually displayed base year. This virtual present is now in a format that can be easily compared to the reference case and future alternative scenarios built in Step 5.

To build base year conditions for use with a sketch planning tool, or other GIS-based methods, translate what is on the ground in the adopted base year into a GIS layer by applying the building blocks described in Step 3. Paint the building blocks on the GIS base layer in the sketch planning tool by matching the building block types as closely as possible to the existing land use on the ground, that existed in the base year. The process can be automated by simply assigning building blocks based on comprehensive plan designations and TAZ numbers.

At this point, select either an automated or manual input method depending on needs and time requirements. Although the automated method can be refined and adjusted, the manual method is typically more accurate, but significantly more time consuming. Each of these methods is explained in further detail in the sidebar to the right and the Technical Appendix. This base year provides a distribution of housing and jobs that will serve as the base upon which future housing and jobs are added to form land use scenarios.

Understand Base Year Conditions

Once the base year conditions have been compiled, the next task is to analyze them. Documenting the base year conditions provides a point of reference for comparing future conditions in the reference case and in any alterative future scenarios developed later. Results of the analysis will include the outputs of the Regional Strategic Planning Model, the sketch planning tool and any other models used. For example, by documenting how many miles the average household traveled in the base year, the evaluation of future scenarios can report how much more or less households are expected to travel in the future planning year.

Input Methods for Building the Base Year Conditions for Land Use Sketch Tools

The automated method relies on calculations within GIS to create the base year. First, each planning unit needs to be assigned with one of the building block designations developed in Step 3. The recommended method is to assign each planning unit with the comprehensive plan designation for which it is spatially co-located. Then, make a list of all possible current plan designations and assign each planning unit the building block that most closely matches its plan designation. The second step is to assign the number of households or jobs to the planning unit. This is done by prorating the number of units known to exist within TAZs or census blocks based on the relative densities of the building blocks. The resulting GIS scenario will likely not compare exactly when looking at an individual parcel, but the numbers of jobs or households will match the control total of the parent geography, be it TAZ or census block. While the precision may be reduced from the level of data available at the parcel level, this step allows for a consistent comparison of the base year against future scenarios.

For the manual method a user will manually assign building blocks to planning units by making the best assessment of which building block is most similar to existing conditions. As planning units are assigned with building blocks, the corresponding jobs and housing units are also assigned. The user will need to be sure to keep the total jobs and housing within each TAZ or census block consistent with the source data.

Reference Case

The reference case builds from the base year conditions to forecast how today's plans and policies are likely to play out in the future planning year. The reference case will reflect future development consistent with current local comprehensive plans.

The reference case developed with the Regional Strategic Planning Model will show the likely results of current plans on the evaluation criteria in the future planning year. The reference case expressed through the sketch planning tool illustrates future conditions based on comprehensive plans, using the population and employment allocations included in the adopted Regional Transportation Plan (RTP).

Build the Reference Case
Regional Strategic Planning Model

The initial run of the Regional Strategic Planning Model, described in Step 3, painted a general picture of where the metropolitan area may be in the future planning year based on various policies. The approach used in Metro's Climate Smart Communities initiative was an initial Regional Strategic Planning Model base future scenario, as well as alternative future scenarios based on staff-developed variations designed to see how outcomes might vary if anticipated vehicle and fuel technology changes occur at a different rates than expected.

Using the Regional Strategic Planning Model to Model GHG Reductions

ODOT created GreenSTEP to help estimate GHG outcomes of different policy choices for the state, and developed the Regional Strategic Planning Model, a refined version of the model for metropolitan areas. Portland, Eugene-Springfield, Corvallis, and the Rogue Valley in Oregon have used the Regional Strategic Planning Model in their long range scenario planning efforts, including evaluation to the state-set GHG reduction targets.

The Regional Strategic Planning Model was created in part because existing land use and transportation models were not capable of analyzing GHG emissions and the policy levers that affect GHG emissions. The Regional Strategic Planning Model:

- Evaluates a large number of different policies and other factors on GHG emissions such as land use, transportation, prices, vehicle characteristics, and fuels.

- Evaluates interactions between factors: e.g., density > vehicle ownership > vehicle travel.

- Includes modeling components that can be combined with other models, statewide and urban, for estimating GHG emissions.

The Regional Strategic Planning Model was built with detailed assumptions about state and federal policies and assumptions expected to be in place over the planning period, as described in Step 3 and the Technical Appendix. The Regional Strategic Planning Model accounts for the combined effect of all these factors to estimate a series of transportation related outcomes, including GHG emissions.

Future Land Uses

As described in Step 3, a land use sketch planning tool can be used to create the reference case by assigning building blocks based on planned land uses for each specific sub-area or planning unit (i.e. census block, grid cell, parcel etc.). Sources for the growth numbers within the RTP, and subsequently the reference case, should come from adopted comprehensive plans and the county coordinated population forecast. The sketch planning tool reference case provides evaluation of future conditions based on a variety of land use evaluation criteria established in Step 2.

The TAZ employment and household allocations from the RTP provide the recommended starting point for the reference case. It is important to make sure that housing and employment assigned to each TAZ correspond with the assignments in the RTP – this assures that the sketch tool version of the reference case is consistent with the RTP (and the comprehensive plan). This process can be automated, just as in the development of the base year conditions, by assigning building blocks based on comprehensive plan designation and distributing growth proportionately by TAZ to planning units assigned with growth. For greater precision, current plans can be used as a guide to manually assign building blocks to individual planning units with developable land until the future household and employment totals within the TAZs in the RTP scenario are reached.

Following the initial run of the Regional Strategic Planning Model, staff with modeling and programming experience can import the reference case land use data from the land use sketch planning tool into the Regional Strategic Planning Model.

Future Transportation Network

In order to represent the metropolitan area's planned future transportation network, including road and transit improvements, the base year conditions and reference cases should be calibrated to the financially constrained network from the currently adopted RTP. The data to develop the base map was collected in Step 3. The future network may be different than the current network and therefore will require modifying the transportation network based on current plans or the RTP, such as calling for increased funding for transit. If so, the transportation network used in the reference case and alternative scenarios should reflect those adopted plans.

The transportation network will be employed in several ways during scenario planning.

- *It will act as a backdrop to guide scenario design in Step 5 such that potential land uses can be directed to areas with the appropriate amount and types of transportation investments.*

- *Distance to transit and intersection density can be used by sketch models and Regional Strategic Planning Model place types to estimate travel behavior.*

- *It will be utilized by the travel demand model, if that additional step is taken.*

Step 4

VEHICLE MILES TRAVELED
PER PERSON PER DAY

U.S. AVERAGE (2005)	
BASE CONDITIONS	16MI.
REFERENCE CASE	13MI.

0   10   20
MILES
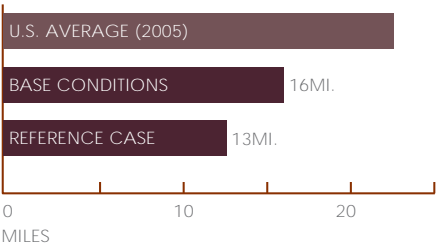
Evaluate the Reference Case

Performance of the reference case is evaluated initially using outputs from the Regional Strategic Planning Model and subsequent outputs from the sketch planning tool. The recommended approach for applying these two tools together involves three analysis phases. First, conduct a high-level baseline assessment with the Regional Strategic Planning Model. Second, develop detailed scenarios with a sketch planning tool. And third, further evaluate the scenarios by running the Regional Strategic Planning Model a second time. (Each of these phases is described further in Step 3.) The outcomes of the reference case should be organized and interpreted based on the metropolitan area's own evaluation criteria and other community objectives.

The evaluation criteria do not necessarily focus on goals or targets, but on results described in quantifiable terms that provide a basis for comparing outcomes of different scenarios. These evaluation criteria may include jobs to housing balance, vehicle miles traveled, land consumption, housing and jobs mix and GHG emissions. For instance, when measuring congestion and emissions, it is generally considered that lower is better. Housing split, however, has no proscribed target and the goal may vary among jurisdictions.

Comparing the reference case to the base case, using a consistent set of evaluation criteria from Step 2, will provide important perspective for community residents and stakeholders in understanding the magnitude of the changes anticipated. Evaluating the reference case in this way will answer the important question of where the metropolitan area is likely headed in terms of community objectives, including GHG emissions reduction.

The activities leading to this evaluation task have focused on setting up models and tools, gathering data and scenario development. The evaluation of the base and reference cases provides the first set of answers to the overarching questions about how the metropolitan area is doing and where things are headed based on current plans. A wealth of evaluation data will have been produced. Some results will be expected, while others may come as a surprise. With this new information the project enters a new phase – sharing the numbers from the evaluation among staff, elected officials and with community members.

Share the Base Year Conditions Report and Reference Case Evaluation

The outcomes of Step 4 can be used to tell a story about the community's future based on current trends. This task now involves communicating that information in a compelling manner. The evaluation criteria provided a way to evaluate the performance of that scenario. The next step is to engage the community in a dialogue and lay the groundwork for developing alternative scenarios.

Technical Report and Presentation

A technical report can represent the work done in Steps 1 through 4, including the evaluation of the base year and expected performance of the reference case scenario in addressing the evaluation criteria and the adopted GHG reduction targets. The report should describe the scenario process used, illustrate the base conditions and reference case scenario, and include a detailed assessment of how the base conditions and reference case scenario performed against the evaluation criteria.

In particular, the report should identify techniques that may help the community achieve its community values and goals (as described by the guiding principles and the evaluation criteria) and lead to measurable achievement of community goals. These techniques would be tested in Step 5. The outputs of the Regional Strategic Planning Model are used here to identify potential land use, transportation, economic, and environmental policy options that seem to be working, or are not working as expected. Outputs include estimates of vehicle ownership, travel by mode, fuel consumption, travel costs, congestion, and GHG emissions at the individual household level. This information will be useful in engaging people in dialogue, and in the development of the alternative scenarios in Step 5.

Presenting this information in a manner that translates the technical findings into everyday language and concepts is an important task: doing this effectively will help illuminate choices for the public and decision makers. A report card can also be an effective tool to summarize and convert complex technical information into meaningful communication material.

Customize the Public Engagement Process

As described in Step 1, this could be a point in the process for involved stakeholders and agencies to take stock, regroup, and consider modifying the work plan based on what has been learned through Step 4. Up until now the work has been technical research and these results from Step 4 can be used to get people excited and invested in Step 5 where the process extends past technical research.

Some metropolitan areas may have chosen to develop a workplan to get to this point without any specific types of public engagement efforts planned past Step 4. This is the time to decide on the most effective and appropriate methods for engaging and learning from stakeholders and the public.

Public Engagement Materials

At this point in the scenario planning process, a realistic portrayal of what the future may hold based on the plans and practices of today should have emerged. For many people, it will be the first time they will have seen estimates about how their communities might be different in the future and how it might affect them in their daily lives, such as the amount of money they will spend on housing and transportation or how future growth patterns may affect nearby farms, forests and open spaces.

The analysis and lessons learned in this step should form the basis of a public engagement effort that occurs for the most part in Step 5. To create a report card, the guiding principles established in Step 1 should be used to help group the findings in ways that will resonate with the community. From the analysis of the base year conditions and reference case, capture the messages that link to the guiding principles. The results of the evaluation criteria can then be reframed into a more useful communications tool and utilized to excite people for alternative scenario development in Step 5.

RELATING THE GUIDING PRINCIPLES

Sharing Key Results with the Public in a Report Card

The following example guiding principles and evaluation criteria were identified in Step 2. A report card can show the types of measures and information that may be useful and interesting to the public and still based on the evaluation criteria.

Guiding Principle Example #1:

The transportation network should ensure efficient and cost effective movement of goods and people.

Associated Evaluation Criteria:

- Vehicle miles traveled per capita
- Average trip time
- Vehicle hours under congestion or vehicle hours of delay regionwide
- Amount of new development located within proximity of transit
- Average speed by travel mode
- Cost of transportation improvements and maintenance

Report Card:
- Average fuel cost savings per household

Guiding Principle Example #2:

The transportation network will ensure safe and timely access to housing, jobs, shopping, services, and recreation.

Associated Evaluation Criteria:

- Number of people with 20-minute access to employment centers
- Average trip time
- Vehicle hours under congestion or vehicle hours of delay
- Amount of new development located within proximity of transit
- Total time traveled per capita, by travel mode

Report Card:
- Average Annual Daily Vehicle Miles Traveled (AADVMT)
- Percentage of households within walking distance (¼ to ½ mile) of a transit stop.

Guiding Principle Example #3:

The metropolitan region promotes a full-range of housing types to fit every income, household and preference.

Associated Evaluation Criteria:

- Housing mix by type
- Housing tenure
- Housing affordability by income level
- Housing costs

Report Card:
- Percentage of each type of housing
- Number of new units affordable to median income
- Average cost of new housing

While the technical report should describe all of evaluation measures employed, a smaller set of evaluations can be used during public engagement, either by consolidating concepts or by drawing out the issues of most interest. There is no magic number of measures that should be presented in the report card. Rather, the task involves selecting key results from the analysis which can interesting and helpful in making the process meaningful to the public.

COMMUNICATING THE RESULTS WITH A REPORT CARD

A report card can be an effective tool to distill complex technical information into easy to understand graphics. These graphics used in the report card from the Grand Traverse Vision in Michigan helped the public understand the tradeoffs between scenarios.

Transportation Indicators

The following charts show each scenario's performance relating to getting around the region.

Land Use and Housing Indicators

The following charts show each scenario's performance relating to land consumption, housing choices and walkable neighborhoods.

Total Cost of Lane Miles Needed

Annual Tons of CO2 Emissions

Acres of Farm and Forest

New Housing Units in Walkable Areas
Walkable Areas = mixed use and

New Homes and Multifamily Units
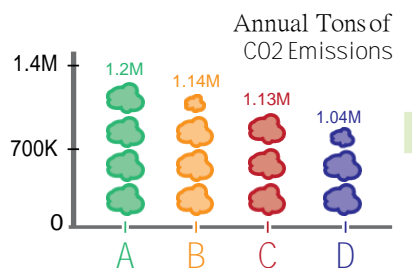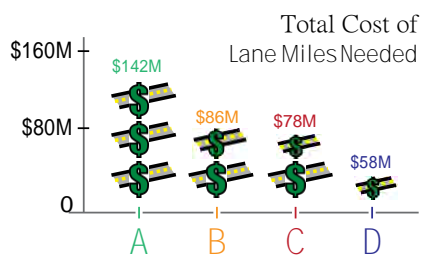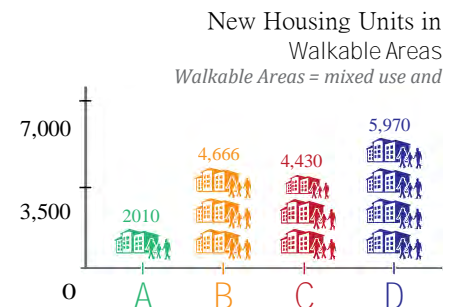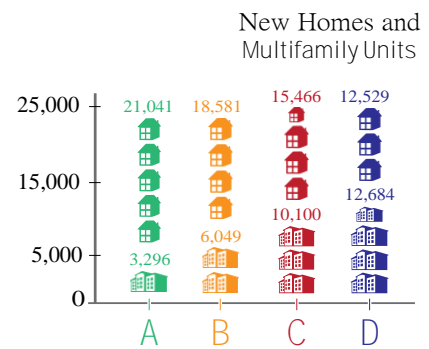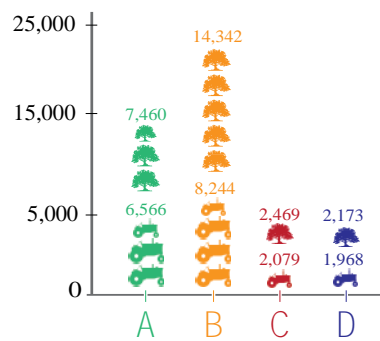
Three Part Approach to Assembling Materials for Use in Discussions with Board or Advisory Group or a Full Public Engagement Process

The level of detail addressed in the approach described below will vary depending on the evaluation processes chosen. If only the initial baseline assessment has been completed to this point, the land use and transportation system results will be relatively general and likely shown in tables, charts, and graphs. If a more detailed process has been utilized, then the land use and transportation network results will be more detailed and likely shown on maps, as well as tables, charts, and graphs.

1. Describe where the metropolitan area is today. In particular, the results of the base year conditions analysis should be communicated in terms that resonate with the community, such as the cost of housing and transportation. People are curious to learn more about the place they love and call home including some comparisons with other places may help to draw the reader into the materials

2. Describe the region's possible future based on current plans and policies. The reference case should be communicated using narrative and data from the report card that will resonate at the individual level, along with illustrative visualizations and graphics. The report should highlight major findings about future conditions likely to be different than those people experience today. The objective is to help community members understand and visualize the likely outcomes

of existing plans. It will help them recognize the value of their participation, especially if they see issues they will want addressed or further considered as part of alternative scenarios.

3. Encourage the community's feedback related to future direction. The scenario planning process will have the most potential to bring positive results to the metropolitan area if the public and stakeholders are actively engaged. The Step 4 analysis, when shared in an engaging fashion will be highly useful in bringing participants into the process. A newfound understanding of what the future may hold presents a key opportunity for members of the public, and elected officials, to think about how policy decisions made today and tomorrow could impact the community and their lives over the next 20-25 years.

The Technical Appendix contains details and examples of these techniques and others appropriate to this step. The Greenhouse Gas Reduction Toolkit Communications Guide provides best practices for communicating around GHG related issues.

Conclusion

Development of the base case and the reference case provides a key starting point for stakeholder and public dialogue to consider options for the future. Documenting base year conditions gives the decision-makers and the public a clear picture of current conditions, which provides a convenient yardstick for assessing whether things are likely to get better or worse in the future – either in the reference case or in the different alternative scenarios that are developed in the next step. Using the Regional Strategic Planning Model in the beginning to perform a high-level assessment, and then using the more detailed sketch planning tools later to evaluate the reference case, also provides important new information by estimating the likely outcomes from existing adopted plans. With this information in hand, communities are positioned to take the next step – considering ways land use and transportation plans and policies might be changed to create a better future for the community.

Step 5

Step 5: Develop and Evaluate Alternative Scenarios

Summary

Step 5 is the essence of scenario planning: engaging the public, stakeholders and decision-makers in a broad public discussion about different options for the area's future. Involving the public is critical to evaluating the pluses and minuses of different choices, and identifying realistic options. This step also invites the community to consider how changing economics, demographics and social conditions affect the community's prospects and options for the future. Finally, public involvement in evaluating a range of choices sets the stage for developing and selecting a preferred scenario in Step 6 that best achieves community goals and objectives.

In This Chapter

Preview

Step 5 of the scenario planning process involves developing and evaluating **alternative scenarios** to better understand the long-term results of a variety of different policy decisions and assumptions, as well as to test **land use and transportation strategies** known to reduce GHG emissions from light vehicles. These alternative scenarios are evaluated and compared against each other, and against the reference case developed in Step 4. Such alternative scenarios allow testing of policy options such as adjusting land use allocations and codes, different transportation investments, expanded bicycle and pedestrian programs, and other possible changes, to evaluate their effectiveness and feasibility based on issues most important to the community. The Regional Strategic Planning Model can be used to perform a baseline assessment of potential alternative scenarios before embarking on a more detailed analysis utilizing a land use sketch planning tool. In this step, alternatives go from a theoretical discussion of themes that address the needs and interests of the community to the actual testing of specific policy choices through evaluation of alternative scenarios. This step also describes how **public engagement** can assist in developing themes and methods to compare the effects of different strategies and policy choices.

Public Engagement

At the close of Step 4, the *Guidelines* recommended ideas for presenting the base year conditions and the reference case to the public. The goal was to inform the public about the findings and to consult with them about what should come next. The results of that conversation set the stage for this step: developing alternative scenarios. At this point, a preliminary run of the Regional Strategic Planning Model can be used to assess a wide range of scenario theme options, which can inform to help make decisions about selecting alternative scenarios, before embarking on a more detailed and time consuming process.

During the creation of alternative scenarios, public and stakeholder engagement should take a prominent role and feed directly into the scenario building process. Elected officials can play a role in the process at this time as well. Through work sessions, they can help to develop scenario concepts, review concepts generated through public workshops, or both. They should also be called upon during this step to help bring stakeholders to the table. Their involvement will help to lend an air of legitimacy to the process in the eyes of their constituents.

Creation of several different alternative scenarios is a key point in the process, and public involvement is important. People care about their neighborhoods and their community's future, and typically have strong feelings about what they would like that future to be. Therefore, it is important they have a role in designing the choices to be considered. Building public understanding ensures that participants have a common frame of reference and understand what is in current plans and policies. An expanded understanding of existing plans and their likely outcomes also helps those involved formulate and evaluate options.

Scenario creation is one of the high points of the entire scenario planning process. With the report card in hand, the public and stakeholders are provided with valuable insight on what the future may hold. The ability for potential participants to help reshape, or even confirm some of those expected outcomes, can provide a powerful motivation for their involvement.

The important public engagement goal of this step is to solicit ideas from the community that would be useful in building scenarios of the future. This input can be informed by the evaluation of the base conditions and reference case presented in the report card from Step 4. To begin the

Metro's Climate Smart Communities

Metro's Climate Smart Communities project described their Phase I work as "understanding choices". During that phase, Metro staff primarily worked with Metro's regionally elected and appointed bodies by keeping them informed and consulting with them as they worked through the Regional Strategic Planning Model. As Phase 1 drew to a close, Metro council members, supported by staff, conducted individual briefings with jurisdictions and key stakeholders.

Phase 2 of the project focused on shaping the choices to combine the most effective strategies to define three alternative scenarios that could achieve community and regional goals. The work plan called for working closely with local governments, community leaders and other partners to identify scenario options to be tested and outcomes to be evaluated in Phase 3. Partnering and engagement activities included convening stakeholder workshops, participating in speaking engagements, one-on-one briefings of local elected and community leaders, gathering input from on-line public surveys, and keeping the general public informed through a project website, newsfeeds and media. The engagement activities were aimed at building consensus, ownership and support for the project and the strategies developed and selected in Phase 3 of the project. Building a strong coalition among local, state and regional partners was critical to successful implementation of the region's strategy.

conversation about what the region could do to improve the future, the public should be given an opportunity to convey their visions for the region by providing input on policies, actions and programs that should be tested in the scenarios. Step 2 identified values and guiding principles for the communities in the metropolitan area that should also be used to inform the selection of themes for scenarios.

Two examples of public engagement at this stage in a scenario planning effort are summarized below. A full-fledged engagement effort involving the community can draw from a menu of options described in more detail in the Technical Appendix.

Workshops and Public Meetings

The purpose of public engagement at this step is to collect ideas that can be used to refine the initial set of scenarios or develop one or more new scenarios. The public will learn even more about the scenario planning process, and become invested in the outcomes. Participants will most likely identify, in the scenarios, and the preferred scenario discussions in Step 6, the ideas brought forth from these meetings. This awareness can further help the process through increased ownership of the outcomes.

Public Involvement in the Corvallis MPO

In a series of public workshops in the Corvallis region, community members were given a chance to envision the future of the region using a variety of development types. On large interactive maps of the Corvallis region, participants were asked to place specific building block chips to tell planners both the locations for new growth they would support, and what types of densities of jobs and housing were desired. These workshops provided insight about the values and preferences of the region, which were used in the MPO's development of detailed scenarios for testing.

www.corvallisareampo.org

Step 5

It is important for workshops to be interesting and allow the public to grapple with trade-offs, sharing what they learned with other community members.

The challenge is to design engagement activities that nurture awareness and ownership of the process, and still fit within budgeted funds and staff resources. Expenses and staff time can be managed by limiting the number of events and using low-cost, yet effective outreach technologies such as interactive polling. (For more information about cost-effective outreach strategies, see the Step-by-Step Public Involvement section of the Technical Appendix.)

Most of Oregon's metropolitan areas should be able to garner quality input with one or two centrally located workshops and/or meetings. Occasionally, additional meetings may be necessary for specific subareas where significant changes may be occurring, or to involve specific interest groups such as minority communities, business people, students, and other stakeholders. However, it is important to avoid hosting too many events in order to manage costs as well as to ensure as large as possible turn-outs for each single event. Too few interested participants make it difficult to achieve the sort of critical mass necessary for creative thinking.

The public engagement plan developed in Step 1 should be revisited at this time to ensure that the planned efforts and activities will reach key audiences and provide the kind of information stakeholders need in order to understand the scenarios and provide meaningful input. Consider potential issues, such as:

1. *What new information is available about the community's likely future that would trigger public interest or concern? How well do existing plans help the community achieve the guiding principles identified in Step 2? What was learned from the development and evaluation of the base year conditions and reference case in Step 4? Examining the reference case in light of the guiding principles from Step 2 may provide valuable insight into what types of issues the public will want to work on.*

2. *Has the project schedule shifted? Public engagement is most effective during the school year, minus the winter holiday season. If schedules have shifted, it may be worth reconsidering the scheduling of public events.*

3. *Are people ready to engage in a workshop? Gauge responses from previous meetings, correspondence and website visits to get an idea of what sort of turnout is likely. Also, look at who has participated thus far to see if your plan may need to change in order to reach across the entire metropolitan area.*

Map-based or computer-based scenario workshops produce data that can be used to inform the construction of the alternative scenarios. It is important for these workshops to be interesting and allow the public to grapple with trade-offs, sharing what they learned with other community members. Following are three sample workshop styles that could be employed as part of the public engagement process to develop alternative scenarios. For more information please refer to the Technical Appendix.

Map-Based Workshops

Providing maps, data, and information to the public can be extremely effective in producing innovative ideas and analysis. Workshops challenge participants with the task of deciding where new growth should and should not occur, the general urban form that new growth should take, and the type of transportation systems needed to serve it.

Introduce the workshop with a presentation updating the public on the scenario planning process to date: a brief overview of the research and methods used to develop the base and reference case scenarios and a summary of the results of the reference case scenario. As discussed in Step 4, these should be presented in a way that connects with the audience. For instance, instead of average VMT per capita, present the data as average household spending on gasoline, or time spent in traffic.

Ask attendees working in small groups to sketch their visions for the future on sample maps, considering the trade-offs related to population growth and transportation infrastructure in different areas given environmental, institutional, and other constraints. The maps serve as the participants' canvas where they can experiment with placing stickers matching the selected building blocks. At the end of the map exercise, a representative from each group presents the group's findings, and common themes become evident from the whole group. Workshops should be highly-interactive and exciting, with the results analyzed and publicized throughout the region. Detailed instructions on developing a workshop agenda and digitizing workshop results are included in the Technical Appendix.

Envision Tualatin Tomorrow In early 2007, Tualatin completed a city-led, community-wide visioning process. The process featured ongoing communications with community members which helped build project momentum and increased the number of citizens participating. Checking in with the community at key points in the process ensured that community values and issues were well understood, refined and confirmed. As part of its promise to maintain a "living" action plan, a plan update was completed in 2013. Through forums, online surveys, work groups and other outreach activities, more than 1,000 people shared their suggestions and priorities for Tualatin's future. Four "theme teams" were convened to sort through ideas and develop a new round of actions to advance the community vision. The City Council adopted the updated Action Plan which provides a 100-action road map for tackling community goals. **www.tualatinoregon.gov/ tualatintomorrow**

Computer-Based Workshops

The computer-based workshop is based on the idea of the map-based workshop, but uses a computer as an additional tool. The participants interacts with a user interface that enters the information on a computer. This allows for some real time analysis of the ideas being shared by the public.

Real time evaluation offers participants almost instant feedback on key indicators while they are developing the scenario. Participants can then adjust their scenario as they go. This process is not only useful feedback for the scenario builders, but educational for the public.

However, computer-based workshops introduce more technological complexity. A computer is needed for each table in the workshop, and a large display is needed so all the participants can see the results.

Nevertheless, this process has been done many times over the last decade with good results. As technology improves, a touch screen tablet could replace the maps and provide instant feedback for scenario development. (Details and examples can be found in the Technical Appendix.)

Online Scenario Building

Online scenario building tools are web-based and allow members of the public to experiment with different trade-offs and see the results instantly. These online tools are an effective way to give the general public easy access to information about the issues and choices being addressed through scenario planning. The public can "turn the policy knobs" for themselves and see the likely results.

Develop Alternative Scenarios

After conducting public engagement, the ideas and concepts that emerged should be compiled and summarized to begin identifying themes for use in designing scenarios. Even though alternative scenarios can be developed in a short time, the number of alternatives that can be developed depends on resources and the complexity of the selected scenario themes. Too many scenarios may make the differences between each difficult to understand, and too few scenarios may not present sufficient options for stakeholders.

Alternative Scenario Themes

The theme of a scenario is the basis, or focus, of its design. Themes can range from recent trends to modifications of the reference case (like improving jobs-to-housing balance), to those based on specific drivers (like housing or economic development forecasts). The selected scenario themes should be as distinct as possible, so that the choices defining each scenario are clear, and the differences between them can be easily distinguished. Alternative scenarios that push the limits of a particular policy option or theme should be considered.

Figure 14: Example: Alternative Scenarios for Tulsa, Oklahoma

NEW GROWTH

Low Density Medium Density High Density

TRANSPORTATION INVESTMENTS

Mass Transit   Road

SCENARIO MAPS

What Does a Land Use and Transportation Scenario Look Like?

A scenario map shows where future growth and investment could occur. This series of scenarios for Tulsa, Oklahoma, modeled alternative futures based on different growth and transportation patterns; 1. Trends Continue 2. New Communities and 3. Centered City.

Because a scenario is based on characteristics of development, scenario maps can visually articulate how a change today can have a big impact in the future. For example, the amount of surface parking required for a retail store may seem like a minor issue at the neighborhood scale, but over time and across the city, the amount of land consumed just by surface parking lots can be enormous. By adjusting specific requirements a community can simulate and then evaluate the impact of any number of policy choices.
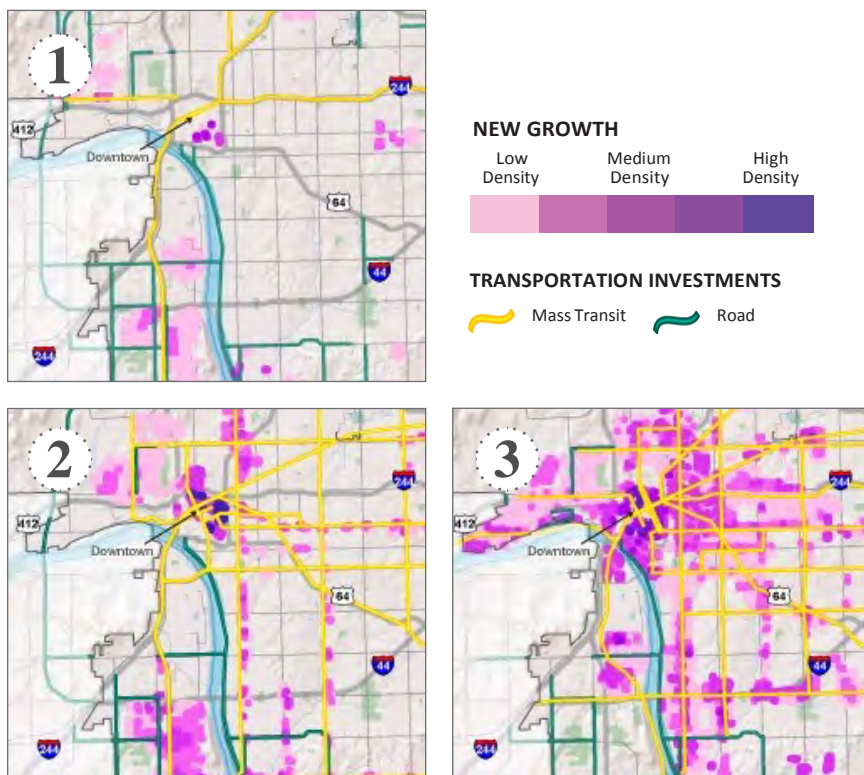
Figure 15: Example: Alternative Scenarios for San Bernadino, California Using a Variety of Scenario Themes

Reference Case
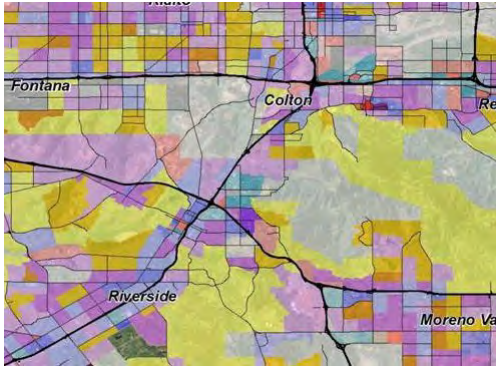
Mixed-Use District Focus
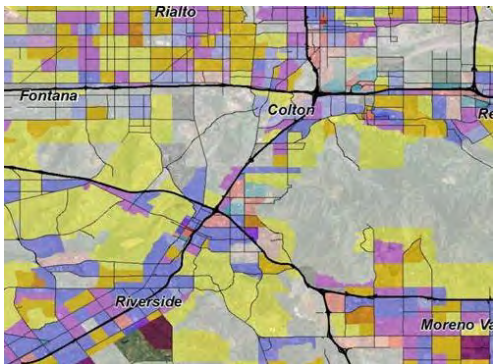
Transit Priority Focus
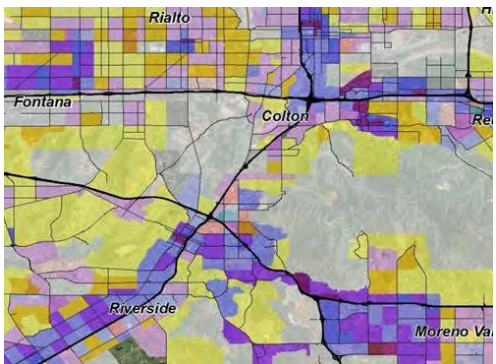
The purpose of alternative scenarios is to illustrate differences between possible choices. This is especially important if the metropolitan area is not rapidly growing. It may be that 75% or more of the jobs and housing in the planning year were already on the ground at the time of the base case. Subtle changes in housing styles or lot sizes for example, may not significantly "move the needle" on the evaluation criteria results since only a minority of the population would be able to take advantage of new housing options. Scenarios, at this point, are not specific proposals for how plans might be changed, they illustrate the range of possible outcomes and inform selection of a preferred alternative.

Below are some scenario themes to use for guidance. This is not an exhaustive list, nor do these themes need to remain segregated. For example, testing increases to infill housing could be in a scenario based on recent trends, and also one aimed at examining land use practices shown to reduce GHG emissions.

Refine the Reference Case as a Scenario

One strategy is to refine the reference case scenario to improve scenario performance (within the current comprehensive plan designations). Some of the key considerations include:

- *Adopted comprehensive plans and zoning often allow for a wide range of possible land uses. Most commercial or multifamily areas allow for higher densities than typically occur.*

- *RTP employment and housing distributions may assume recent trends and not future behavior patterns.*

- *Changes to economic conditions may result in different growth patterns. For example, many general commercial designations allow housing, offices or shopping.*

- *There may be sub-area plans for areas such as downtowns or new neighborhood plans which more precisely spell out the implementation of the comprehensive plan.*

- *Major employers and developers may have plans based on their expectation of the market within the metropolitan area. Consultations could provide insight into both likely market changes and preferences for future housing styles.*

The considerations above point out that many times within a plan's parameters, assumptions or estimates about likely densities and uses can be changed, certain areas not developed, and transportation packages changed, without a major comprehensive plan change. A scenario based on strategies that could be accomplished within the parameters of the existing comprehensive plan, and does not require changes to adopted comprehensive plans or zoning maps will likely be easier to implement.

Recent Trends

The reference case scenario, developed in Step 4 represents the future as depicted by local plans. However, since current trends may be diverging from the planned future, a scenario theme may also be based on recent trends. For example, a plan may call for extensive infill of jobs and housing in a metropolitan area's core, while recent trends may indicate most development is occurring on the edge of the metropolitan area. It could be helpful to develop this scenario to find out what the effects of outward growth may be.

Land Use Changes

A scenario such as this would be based on the premise that the transportation system and other policy tools remain the same as in the baseline assumptions. The purpose is to answer the question, "What is the most the metropolitan area could get from land use changes alone?" The Southern California Association of Governments, southern California's MPO, is engaged in a scenario planning process to estimate the potential GHG emissions benefits from a variety of land use strategies.

Metro's Urban Growth Report

Metro's Urban Growth Report (UGR) provides the kind of detailed information about changing development trends that other metropolitan areas may want to develop as they undertake scenario planning. The UGR documented recent development patterns in different parts of the community and compared actual outcomes with what was assumed when plans were adopted. Metro's analysis revealed significant changes in housing and development markets – with higher densities of commercial and residential development, and more infill and redevelopment than was originally projected. This kind of review of changing market trends can help the public and decision-makers evaluate feasibility of changing development patterns into the future. Taking time to understand changing demographics and evolving housing markets can provide a good knowledge base for planners engaging in scenario planning. https://www.oregonmetro.gov/urban-growth-report

Lessons from *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions* and other literature suggest focusing development in mixed-use areas close to urban centers decreases travel distances, encourages alternative travel options, and therefore plays a major role in decreasing GHG emissions. Create a design incorporating strategies known to be associated with lower GHG emissions. For ideas on actions and programs and their relative effectiveness at reducing GHG emissions, visit the Oregon Transportation and Land Use GHG Reduction Toolkit. Some ideas include:

- *Increase housing and employment density. Increased density in locations with close proximity to efficient transportation infrastructure can help shorten and eliminate auto trips. Increased density in remote or poorly connected locations on the other hand can lead to increases in travel.*

- *Maximize infill development. Underutilized areas are typically located close to city and town centers, and in areas with better than average transportation connectivity.*

- *Diversify land use mix. Having housing, jobs, shopping and services located closer together can enhance accessibility.*

- *Place schools in walkable neighborhoods to provide for greater transportation choice.*

- *Include pedestrian improvements such as: higher intersection densities; greater sidewalk coverage; reduced building setbacks; reduced street widths; a greater number of pedestrian crossings; and a higher number of street trees.*

- *Include accessibility factors such as: closer distance to employment for households; a higher number of jobs within 1 mile of housing; shorter distance to retail/services for housing; greater proximity to nearest retail employment; and shorter distance to transit.*

The intention of a land use focused scenario that minimizes GHG emissions is to maximize the parameters listed above within the realm of plausibility. For this reason, it can be informative to consult the outputs of travel demand models for the metropolitan area to identify TAZs with low VMT per capita. These are likely the areas most suitable for new

development. Another tactic is to find areas with concentrations of jobs or housing, where redevelopment might help in creating a better jobs-to-housing balance.

An example of using previous travel demand model outputs to guide land use planning can be seen in the VMT map of Eugene-Springfield. It identifies low-VMT areas coinciding with the transportation infrastructure. Adding future growth to the identified areas of low-VMT is likely to result in reduced or limited GHG emissions. In addition to land use considerations alone, another alternative scenario might include transportation policies that would reinforce lower GHG production, such as a higher reliance of electric vehicles, and transportation demand management (TDM) policies that reinforce transit, car sharing, walking, and biking.

Urban Design

This theme uses ideas about urban form as the basis for its design. For example, this might include planning for more development along key transit corridors and station areas while leaving stable, single-family neighborhoods untouched. Other regions have developed scenarios based on the design concept of centers, pushing infill and redevelopment densities to the limit of what is feasible in the market both today and in the future. The research found that when other factors are controlled, U.S. metropolitan areas with low density can have as much as a 40 percent increase in VMT over metropolitan areas with high density. Many scenarios are likely to involve an increase in planned densities in some parts of the community.

The Lincoln Institute of Land Policy has developed a website with information, images and tools to help better understand real on-the-ground impacts of higher density development. https://www.lincolninst.edu/. Photo source: Lincoln Land Institute

Figure 16: GHG Emissions per Household in Eugene/Springfield Area

Insufficient data

< 3.3 tonnes/year

3.3 to 5.1 tonnes/year

5.1 to 6.5 tonnes/year

6.5 to 8.6 tonnes/year

8.6+ tonnes/year
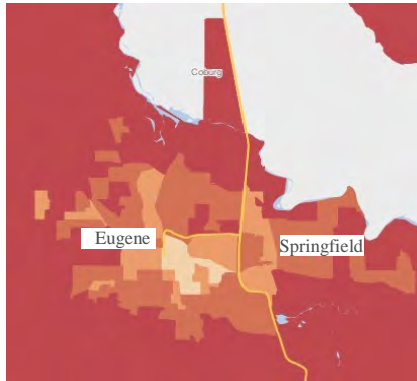
The Center for Neighborhood Technology's GHG per household maps can be useful guides for building alternative scenarios. GHG emissions from household auto use are calculated using the modeled values for VMT, a national average fuel efficiency, and a average emissions factor per gallon of gasoline. This per household measure divides the total block group emissions by the count of households. *https://htaindex.cnt.org/*

At the same time, proposals to "increase density" are often controversial with the public and generate understandable concerns about increased traffic, noise, loss of open space and crowding. It's important to acknowledge and address these concerns. When talking about density:

- *Provide illustrations and pictures showing what mixed-use centers or neighborhoods might look like. Often the public concern about density is based on experience with poorly planned developments. Oregon has a growing number of good examples of mixed-use development that show higher densities can be attractive, inviting, desirable places which most people would accept in their neighborhood or community.*

- *Be clear about what areas are and are not possible candidates for higher density development. Most scenario planning projects focus proposals for mixed-use or higher density development in a small percentage of the planning area –leaving most areas – especially stable, developed neighborhoods largely unaffected. Maps that make it clear which areas might be considered for infill, redevelopment or higher densities can help overcome stakeholder apprehension.*

- *Provide information about changing housing needs due to shifts in demographics and consumer preferences. Studies show the nation and state are in the midst of massive changes in demand for housing, with a shift in demand toward smaller houses, rental housing and an increasing preference of many people for smaller lots. Scenarios can be developed to respond to these changing demands.*

- *Provide information on the role higher densities, and mixed-use development* can play in minimizing people's need to drive.

- *Make it clear that options for more standard single-family housing will continue to be provided. As noted above, most scenario plans will leave much of the planning area – including most existing single family neighborhoods largely unchanged.*

- *Address reasonable concerns about increased density – like planning for parks and open space to serve the new and current residents.*

Many of the concerns about density are often a result of misunderstanding. How people define density is based on their own individual experience, perceptions or a specific community's context. Two and three story mixed-use buildings, for example, can provide the benefits of mixed- use development, while also being compatible with the nature of a historic district. On the other hand, eight-story modern buildings would likely be met with opposition from neighbors who choose to live in the area based on its existing character.

If the participants can visualize attractive higher density buildings or places, they are more likely to utilize them in the development of their vision for the future. The planning team then is in the position of testing community members' ideas for increased density, rather than a proposal from planners.

Scenarios provide opportunities to test new ideas, they are not formal proposals. However, care should be taken to avoid testing conditions that are nearly guaranteed to draw negative reactions from the community at large.

Specific Drivers

A driver is a force that can change the future. For example, demographic changes and their impact on the housing market have a substantial effect on development style and location. Using a housing forecast as a driver, a scenario could be created based on a variant of projected future housing demand. Common traits among Oregon's metropolitan areas include a population that is aging, and becoming more diverse. Economists and land use experts suggest this may result in housing demand shifting away from the conventional single-family home toward an increase in smaller lots and multifamily types.

Another driver could be an economic development program. If an area is interested in pursuing a future where high tech and medical fields are dominant, a scenario can be tailored to the employment, transportation, and workforce needs of the economic driver. Changing economic conditions can affect both demographic conditions and a community's decision to target a specific economic development program. An economic development scenario theme provides an opportunity to explore how changing economic conditions may impact changes in housing values, transportation needs, and demand for single-family versus multifamily housing.

Specific Community Goals

This scenario theme uses specific community goals to guide the design. The first component of developing this scenario is to identify attributes that will lead to successfully achieving these goals. The scenario design should then be based on those attributes. For example, one community goal might be to attract and retain young people. Therefore, in addition to the attributes related to educational institutions and employment opportunities, this scenario could be crafted to include the close-in housing, entertainment districts, and urban lifestyle that appeal to younger people. One of the scenarios built for PLANiTULSA (Tulsa, Oklahoma) was designed to do just this; the scenario focused more compact development in the downtown area and close-in neighborhoods.

Evaluate the Alternative Scenarios

The performance of the alternative scenarios is evaluated using the land use sketch planning tools, evaluation criteria, and the Regional Strategic Planning Model. This evaluation process is similar to that described in Step 4 regarding the reference case scenario. A portion of the evaluation criteria identified in Step 1 will come from the Regional Strategic Planning Model, while others will be direct results of the sketch planning tool. As discussed in Step 3, the recommended approach is to begin with a high-level baseline assessment using the Regional Strategic Planning Model, then link the more detailed land use and urban design

information produced by the sketch planning tool into the Regional Strategic Planning Model for evaluation. Each alternative scenario should be evaluated based on the same evaluation criteria used in the reference case evaluation for easy comparison. Additionally, be sure to do a "reality check" against known local trends and projections.

Make it meaningful – draw connections to the characteristics of the scenarios. Once the scenarios are developed, organizing the evaluation criteria created in Step 2 to provide context will be important. The evaluation criteria should be accompanied by a discussion of what is significant about the data. In particular, the differences in the scenarios should

Figure 17: Example: Graphic Illustrations of Scenario Evaluation
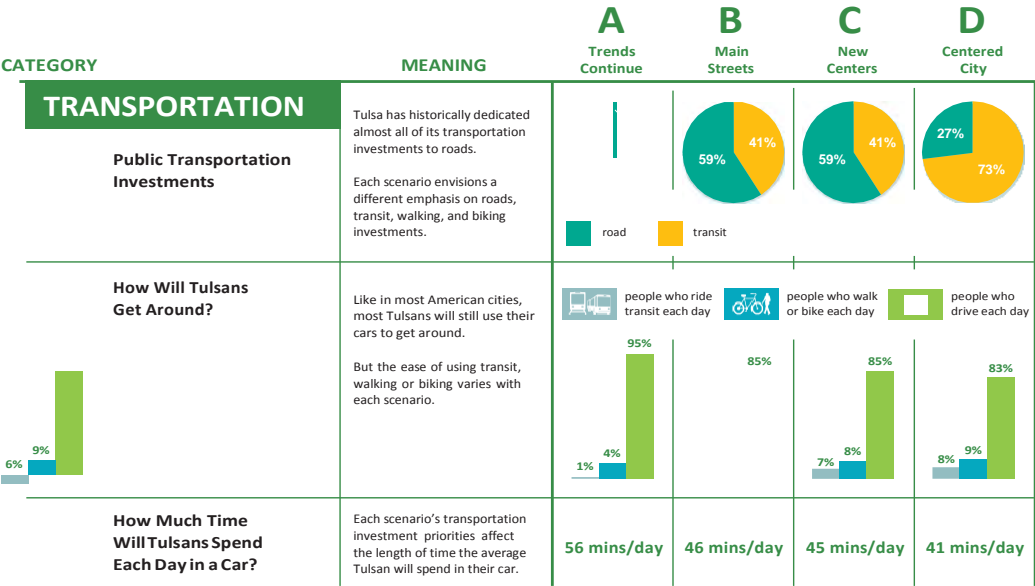
These transportation-related graphics appeared in the PLANiTULSA survey distributed in Tulsa, Oklahoma. Graphic illustrations of the evaluation criteria analysis like these communicate the tradeoffs between scenarios to the public.

be tied to the design differences that produced the results. The best strategy is to highlight differences between the scenarios, not the absolute numbers. For example, announcing that a scenario models specific VMT per day may be too abstract for most people to understand. It is easier to visualize the meaning of those results when the evaluation is compared with today's VMT, and other future scenarios, such as the reference case and alternative scenarios. Adding measures such as the average per capita fuel costs will go even further to making a measure such as VMT more meaningful. When preparing the evaluation of the scenarios to be shared with the public and policy makers in Step 6 use language and graphics that communicate the issues to which people can relate.

Conclusion

Themes for the development of alternative scenarios are selected, first through early use of Regional Strategic Planning Model as part of a high- level baseline assessment of many possible alternatives, and later through a more detailed planning process with broader public engagement. Through the early phase of the process decision-makers, stakeholders and the public will have been given an opportunity to explore and discuss the land use and transportation choices the community faces in addressing important issues over the next 20 years or more and test those choices in alternative scenarios.

Through the more detailed sketch planning phase of the process, using a broader public engagement process, the general public enters into the conversation with decision makers and stakeholders about the future of their community. Based on the selected themes, several alternative scenarios should have been designed and evaluated by the metropolitan area. The results of these alternative scenario evaluations will be reported back to the public and stakeholders in Step 6 to inform the selection of a preferred scenario.

Step 6

Step 6: Selecting a Preferred Scenario

Summary

In this step the alternative scenarios will be presented to decision makers, stakeholders and the public to solicit feedback in the selection and design of a preferred scenario for the metropolitan area.

In This Chapter

Preview

Step 6 involves the development and selection of a **preferred scenario** based on a combination of public and stakeholder input and the evaluation results. This step provides a significant opportunity to engage the public and stakeholders. With a review of the evaluation results for the alternative scenarios, they will discover what the future could look like based on the scenarios they played a role in designing. The newfound wealth of knowledge will help the public in identifying which elements of the scenarios they support, and ultimately, the composition of a preferred scenario.

The preferred scenario is a package that includes a concept map depicting expected outcomes, a set of major programs, policies or general actions, and spatially distributed future housing and employment estimates. The approach to these elements of a preferred scenario is flexible and may be customized for each metropolitan area.

The **concept map** is a visual representation of the future that conveys predominate themes of the preferred scenario. It depicts land use design types and significant transportation changes, while remaining more general than comprehensive plans or zoning maps. This provides a useful communication tool for the public to see the preferred elements.

A **set of major programs, policies or general actions** will guide the metropolitan area in achieving the preferred scenario.

A preferred scenario includes **forecasts of future housing and employment** at the TAZ level. This helps to guide subsequent planning, such as RTP updates. Providing estimates of housing and employment at the TAZ level enables the scenario to inform and guide subsequent plan updates, and builds in flexibility for local governments to consider a variety of options to accommodate expected growth consistent with a preferred scenario.

A **narrative** describes the concept map and the programs, policies or actions selected to achieve a preferred scenario.

Using the Regional Strategic Planning Model to look at alternative scenarios

The continued use of the Regional Strategic Planning Model may be appropriate at this step to evaluate the alternative scenarios in developing a preferred scenario. For instance, the Regional Strategic Planning Model can be used to scope various mixes of options that may make up a preferred scenario before embarking on the more time consuming and the broader public engagement process.

Present Alternative Scenarios to the Public

The public and stakeholders provided guiding input for the scenario planning process in Step 5 when they were asked to convey their visions for the future of the region, thus helping to shape the themes and strategies of the alternative scenarios tested. The alternative scenarios and their evaluation completed in Step 5 are used in this step to help the public and stakeholders understand outcomes of different policy choices. Presenting the performance of the alternative scenarios in comparison with the reference case scenario created in Step 4 further informs the community and stakeholders by providing a **benchmark** from which to evaluate the alternatives. In this phase of public engagement, the community will have an opportunity to review the results of alternative scenario evaluations, give their feedback and preferences, and identify popular policies or actions that are still effective in achieving community goals. Public input will be used, along with the results of the alternative scenario evaluations, to inform the development of a preferred scenario. This step is often the one that sees the greatest amount of participation in the scenario planning process.

For the best results during an outreach campaign, and to maximize participation, it is important to use a variety of **engagement methods**. Choosing preferred strategies and elements from the alternative scenarios is an empowering activity for the public and stakeholders, and as a result, participation is likely to grow. This section outlines some recommendations for engaging stakeholders and the public during the selection of a preferred scenario.

Design Easy-to-Read Alternative Scenario Maps

Scenario maps can be useful for visually expressing scenarios. However, scenario maps, especially those coming straight out of a land use sketch planning tool, can be difficult for the public to interpret. It is recommended that the alternative scenario maps shared with the public, stakeholders and public officials are rendered by a cartographer or graphic designer, simplified and made easy to understand. The scenario maps should be supplemented with written descriptions. Photographic and video simulations are also an effective way to communicate how places may look and feel if the future portrayed by the scenario became reality.

Present Key Evaluation Criteria Choices in a Relevant Way

Scenario results should be presented and compared in relation to how they performed based on the evaluation criteria established in Step 2, such as GHG emissions, housing, economy, and transportation. Use techniques described in Step 5 for communicating the criteria in understandable and relevant methods (e.g., annual fuel costs per family versus VMT per capita).

Key themes supported by the public were identified in Step 5. Share the performance of each alternative scenario with the public based on these issues that resonate with them. When presenting the programs, policies and actions that can be implemented as part of the scenario, it may be useful to categorize each as either "achieving local goals," "neutral or minimal impact," or "not achieving local goals" to make clear connections to achieving the targets.

Technical planning terms and concepts can be off-putting for stakeholders or policy makers. One recommended technique is to have people outside of the scenario planning team review the outreach materials to ensure they are

Figure 18: Example: Scenario Maps for Our Greater San Diego Vision
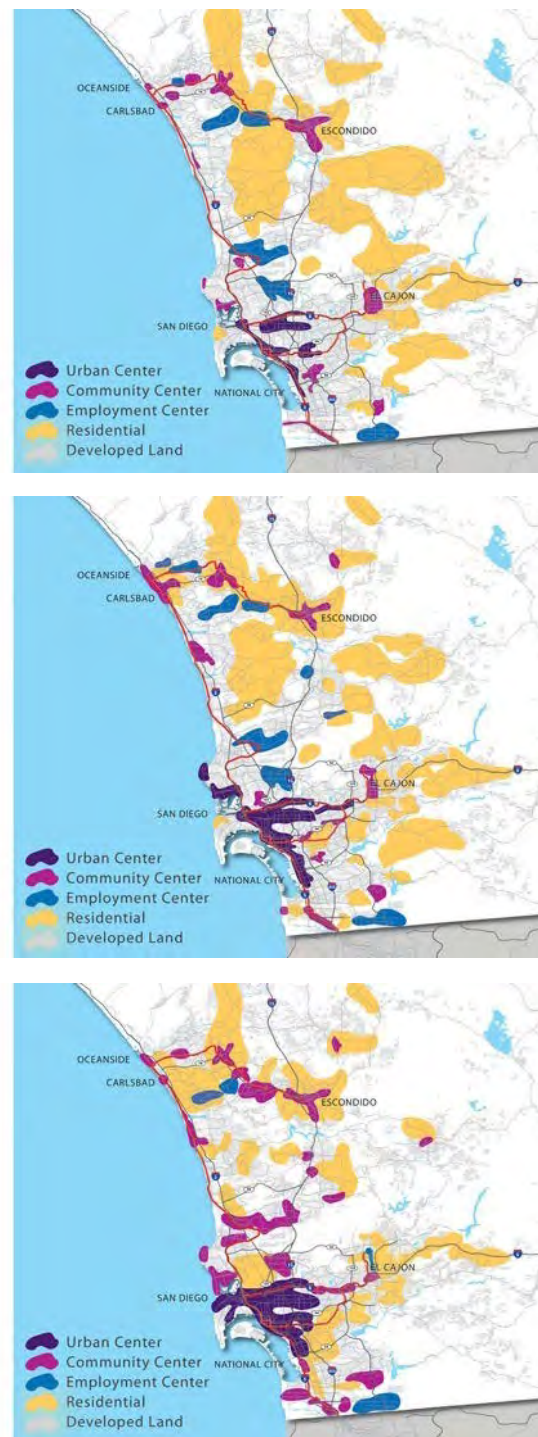
The scenario maps created for the Our Greater San Diego Vision public survey helped the public visualize different ways that the region might develop to accommodate expected growth.

easy to understand. Using a small focus group of the public, or people from a different department or agency, to review materials can be an effective way to ensure that questions and messages are clear and free of jargon.

Use a Range of Methods for Informative Engagement

Common formats for presenting alternative scenarios and their core strategies are summary brochures, newsletters, websites, forums, open houses and short videos. Using a graphically rich newsletter or an interactive web survey, people can review scenarios and express their preferences conveniently from home, without needing to invest a great deal of time.

Forums and open houses are great for two-way communication with the public and stakeholders. However, they require more resources and are more time consuming, using guest speakers, discussions, table exercises and/or instant key-pad polling to help illuminate the scenario choices from different points of view and give the public a chance to make recommendations. These events often aim to attract one hundred to several hundred participants. Some communities have used smaller forums or facilitated conversations among community members as an alternative to large public events.

While a broad outreach campaign can result in thousands of responses, some policy makers or stakeholders may be skeptical that the responses do not represent everyone in the metropolitan area. Voluntary input may not provide a representative sample of the population. This is not necessarily a

problem however; it is indeed much like voting or public testimony where interested people self-select to weigh in. Understanding the needs and desires of these participants is important for long-term success. Within this pool of people are those most likely to vote on potential future implementation actions such as bonds or policy changes.

There is also value in having a true random sample. A scientifically valid survey can help ensure that the preferred scenario serves the entire population as best it can. Typically, this type of survey will be based on random sample telephone dialing and requires development of an additional version of the outreach materials that can be administered verbally. The best way to engage in this option is to consult with researchers who specialize in telephone surveys. These specialists can work with staff to develop the verbal questionnaire based on other materials already produced for this phase of public outreach.

Consider a Focused Stakeholder Approach

Due to issues such as costs or timing, extensive public outreach may not be the best fit for every community. Grand engagement programs utilizing several of the methods listed above have proved successful in engaging large portions of the public in other scenario planning efforts. While this is usually an exciting way to present the alternative scenarios for selection, focused stakeholder meetings can also be a useful method to gather input on the most and least favored elements of the alternative scenarios. A more limited engagement effort should include stakeholders with specific knowledge of land use and transportation planning, public policy from the perspective of public, private and non-profit entities. The main advantages of this approach, besides cost, are that stakeholders familiar with the subject matter will be able to comprehend complex information and better advise the team on the details of the scenarios being tested; and they will have insight on approaches likely to be supported by policy makers. The potential shortcoming of using a focused outreach exclusively is missing out on the opportunity to enhance the public discussion of planning, and the opportunity to build a large base of support for future actions.
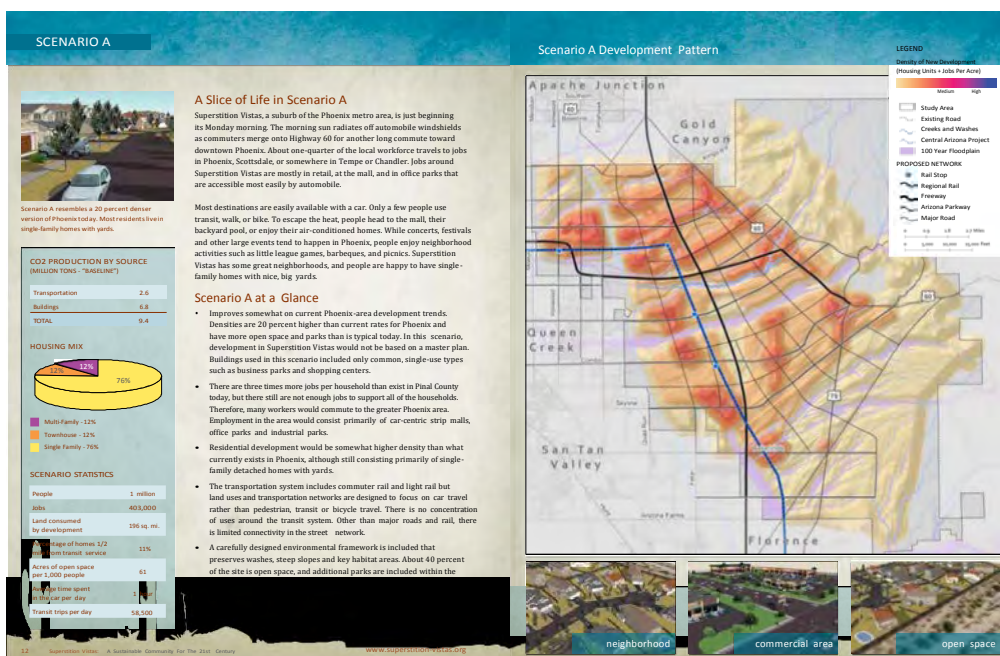
SCENARIO MAPS

This scenario evaluation example from the Superstition Vistas project in Arizona combines a well-designed map, supplemental images, key indicator graphs, as well as written descriptions to convey the most important elements of the scenario.

Role of a Preferred Scenario

A preferred scenario embodies a common set of long-term aspirations. It represents the preferred land use and transportation pattern that the region aspires to achieve over the next 20-40 years. The preferred scenario can be used to guide any subsequent updates to land use and transportation plans, programs, policies, codes and regulations.

While a preferred scenario may be based on a detailed technical analysis, it should be framed more generally to allow flexibility during implementation. For example, some areas planned for mixed-use development are likely to be more successful in attracting new housing and businesses than others. A preferred scenario should allow for slightly different outcomes over time (e.g., where one mixed-use area gets slightly more development and another gets slightly less) as long as overall objectives to accommodate mixed-use development are met.

A preferred scenario provides the basis for developing the next steps: implementation plans and actions to carry out the preferred scenario. With agreement on a preferred scenario, local governments can take steps to amend plans, policies, and programs, along with other actions to make it a reality.

Develop a Preferred Scenario

The scenario analysis and selection process should result in an understanding of the public's level of support for the elements comprising the scenarios. Once the public has weighed in on their preferred elements of each of the alternative scenarios, the next step is to synthesize that input and translate it into a preferred scenario.

Understanding Input

The responses from the public input on the alternative scenarios should be compiled into a report or memorandum, coupled with a presentation summarizing the public's rankings. It is possible that the community will overwhelmingly rally behind one scenario. However, it is also common for each scenario to possess some popular elements. For example, scenario planning processes often validate public support for local policies that encourage downtown redevelopment with expanded housing opportunities. Identifying popular elements and themes will help to form the preferred scenario. The goal of understanding the community's input is to identify areas of consensus and consider compatibility and tradeoffs among scenario elements and themes.

Translating Public Input into a Preferred Scenario

The scenario that most closely lines up with the rankings made by the public and the steering committee can be used as a starting point. Using the methods described in Step 4 and Step 5 for scenario development in the sketch planning tool, the scenario would then be modified by changing land uses, utilizing the development types, and modifications to the transport network as applicable. Unwanted elements would be removed and the strategic elements added to make it perform better, as measured by the evaluation criteria from Step 2. A combination of effectiveness and feasibility should be used to develop a scenario that can be selected as the most desirable.

It can be useful to build two or three technical scenarios that achieve similar desired outcomes but employ different themes or strategies. One scenario, for example, could add housing to job rich areas, while the other might focus new jobs and mixed-use developments in housing rich areas. The resulting mixed-use development in both scenarios may have similar outcomes. These additional scenarios can be used to illustrate the flexibility a community has to achieve the same outcomes but through different planning approaches.

Refine Scenarios with Stakeholders

Development of a preferred scenario may take several iterations. The preferred scenario is not generally a selection of one of the initial scenarios as the best. Rather, it is a new scenario combining elements or strategies from various alternative scenarios and as such it may need to be adjusted to ensure that compatible elements are being used.

Seek Guidance from Elected Officials

Elected officials within the metropolitan area should be regularly engaged throughout the scenario planning process. With the exception of an intergovernmental agreement used to initiate the scenario planning process, there are no expectations of elected bodies or officials to make decisions such as adopting ordinances or resolutions. Engagement should consist of sharing results at key milestones and engaging them in discussions on the project outcomes. It's reasonable to expect that public review of alternative scenarios will not result in a clear consensus about all the elements that ought to be included in the preferred scenario. Where the results of public review are conflicting or ambiguous, consultation with elected officials to discuss options for addressing key issues is recommended.

The City of Beaverton created a Beaverton Community Vision document during its visioning process. The Community Vision eventually led to the Beaverton Civic Plan.

Model a Preferred Scenario and Other Recommended Next Steps

Each metropolitan area will likely proceed differently in the scenario planning process. This step provides several potential outcomes and common products produced by communities that have engaged in scenario planning. The intent of these products is to guide metropolitan areas towards implementation of a preferred scenario with a range of benefits.

Modeling a Preferred Scenario

Ultimately, the preferred scenario will be evaluated through use of the land use sketch planning tool and the Regional Strategic Planning Model. The modeling of the scenario in this step is the same as in Step 4 and Step 5. Performance of the scenario can be evaluated from the outputs of the land use sketch planning tool and by summarizing the urban design information, using the census tracts or other boundaries (as described in step 3), to link those outputs to the Regional Strategic Planning Model. The GreenSTEP tool evaluates the preferred scenario for compliance with the adopted light vehicle GHG reduction targets for 2050. If using additional models, such as a travel demand model, run the preferred scenario through those models as well; sketch planning tools readily allow for generating the necessary TAZ data files. Identify and document the model results to be used as performance measure during future implementation efforts, for use in describing characteristics of the vision and for use in the final report.

Develop a Community Vision Document

A vision document captures the **community goals** expressed during the planning process, and describes the anticipated outcomes based on the selected scenario. It moves from the detailed analysis of the scenarios into general concept and descriptions of places and outcomes. A vision has been an important part of many communities' planning process. It provides more flexibility than a comprehensive plan. While visions are not necessarily developed with scenario processes, scenario plans often include a vision as an outcome. The vision is typically based on a preferred scenario (or two) and may include a map.

What are Strategies?

Strategies are actions and methods employed at multiple levels to achieve specific outcomes. Below are examples of the different levels of a strategy: overarching, targeted but general, and specific. The three categories refer to the geographic scope and scale. For instance, an overarching strategy is regional, a targeted but general may be citywide and specific could refer to a corridor or neighborhood.

Overarching:
Prioritize centers to accommodate the majority of future growth. *Shown on the concept map.*

Targeted but General:
Designate regional and town centers. *Shown on the concept map, and tested by assigning growth in the technical scenario.*

Specific:
Design a small area plan (i.e. urban renewal to build housing in a downtown).

Overarching:
Create a robust transit network. *Shown on the concept map by major transit lines.*

Targeted but General:
Increase transit service – including more stops and increased frequency throughout the transit network.

Specific:
Design a main street pedestrian plan identifying specific transit stop locations and the connections to them.

Overarching:
Direct growth toward already developed areas in the metropolitan area.

Targeted but General:
Recommend new ordinances to support mixed-use redevelopment.

Specific:
Develop new ordinances and redevelopment demonstration projects compatible with the new ordinances.

Overarching:
Encourage a decrease in driving overall and at certain times.

Targeted but General:
Propose fees for driving, such as vehicle registration or fuel tax. Propose TDM program based on advertising or financial incentives.

Specific:
Build a key piece of infrastructure (highway and BRT). Implement district or cordon pricing or facility tolling.

A Vision Concept Map

A map that can be developed as part of the vision is known as a concept map. A concept map is intended to communicate the preferred themes selected in an easy to understand graphic format. For instance, a concept map may show a system of new centers and transit corridors that help guide future policy decisions. The concept map is a general representation of future development patterns. The specific boundaries of land use design types are spelled out later through subsequent planning efforts.

A concept map is more general than a comprehensive plan map – land use design types usually represent a combination of several different land use plan designations. The concept map expresses general agreement on preferred land use with details to be worked out later through subsequent planning. It provides guidance to local governments as they update land use and transportation plans, and take other actions, to carry out the preferred scenario. In other words, the concept map is a visual representation of the goals and desires identified in the scenario planning process.

Writing About the Vision

The written portion of the vision is short and easily digested. It conveys to a casual observer the desired outcomes and the actions, programs and policies that will be used to achieve them.

Create a Final Report

Another final product can be a final report on the preferred scenario and strategies. A final report might include descriptions of the effectiveness of the strategies, their performance, and key evaluations. In addition, the evaluations can be converted into goals used to monitor the progress of implementation.

The metropolitan area and member jurisdictions may choose to endorse the preferred scenario in a formal fashion.

If the cities and counties in the metropolitan area choose to give the preferred scenario official status, below are some considerations that may be helpful:

- *Selection of a preferred scenario need not be made as a formal land use decision.*

- *Selection of a preferred scenario can be adopted by resolution.*

- *Define the role of the preferred scenario in future planning and other work.*

- *Identify broad actions or next steps that the local government could take over time to implement the preferred strategy.*

- *Include recommendations of ways other groups, agencies or organizations might help implement strategies.*

- *Seek endorsement of the preferred scenario from key agencies, potentially affected by proposed actions or programs contained in the approved strategy, such as local school districts, transit district, utilities, major employers, and landowners.*

- *Identify roles and responsibility related to next steps.*

Conclusion

In this step, the community, stakeholders and public officials all weighed in to select a preferred scenario. A preferred scenario consists of a concept map, a set of major programs, policies or general actions, future spatially distributed housing and employment estimates. The preferred scenario can also include a detailed technical analysis that estimates light vehicle GHG emissions reduction and helps guide implementation and ongoing monitoring of progress. The preferred concept is then implemented through updates to land use and transportation plans, new policies and programs, and revised zoning codes and regulations – described further in Next Steps.

This step should also have built a new sense of awareness among the community, stakeholders and elected officials. The engagement activities will have helped to build large levels of public support for planning, and identified the approaches that the community supports. Coupled with the increase in public awareness, this knowledge will help the metropolitan area decide what actions, if any they want to explore to implement the strategies tested through this process.

Step 7

Step 7: Next Steps

Summary

At this point, several alternative scenarios will have been developed and evaluated for the metropolitan area. Based on extensive community review, a preferred scenario representing how the community wants to grow and develop over the next 20-25 years or more was identified. The details of the preferred scenario provide the basis for the next steps; changing plans and pursuing other actions that help make the vision expressed in the preferred scenario an on-the-ground reality. Many of the overarching and general strategies needed to bring the preferred scenario forward should be spelled out in the scenario itself. However, be sure to take time to prepare an implementation strategy and a more thorough evaluation of feasible and effective opportunities and actions that work best for the community.

In This Chapter

Preview

Following Step 6, metropolitan areas will ideally identify a preferred scenario consisting of:

- *A vision document describing shared desires for the future and details about overarching and targeted strategies supported by the public and stakeholders.*

- *A concept map depicting a generalized view of the future linked to the vision.*

- *A technical scenario representing a potential distribution of future land uses at a scale that enables a range of analysis.*

If the public engagement process in the previous steps was successful, those organizations and individuals likely to support or implement some or all of the strategies from the **preferred scenario** will have been identified and will be ready to take action. There are many ways the metropolitan area can implement a preferred scenario. This section provides insight on some of the options that metropolitan areas may choose to take in moving beyond the scenario planning process toward **implementation** of the strategies that emerged in Step 6.

Implementation includes a range of techniques to accomplish the outcomes described by the preferred scenario. Implementation will come through many forms; some actions may bring about nearly instantaneous benefits, while others may take decades to be fully effective. This section outlines several optional approaches to implementation which can be employed within Oregon's planning system including:

- ***Pursuing changes to transportation or land use plans*** *– such as comprehensive plans, zoning and other implementation ordinances to allow new uses envisioned in the scenario.*

- ***Forming public-private partnerships*** *to coordinate development of new land use and transportation patterns that shorten automobile trips or encourage walking, biking and using transit.*

- ***Developing new programs or actions,*** *such as travel demand programs or detailed plans for important districts such as downtowns or key transit supportive areas.*

- ***Focusing public investments*** *to carry out actions that support key elements of the preferred scenario, from sidewalks and transit to electric car charging stations.*

Choosing to Implement

Coordination Period Preceding Implementation

Following the selection of a preferred scenario, there is important work to be done before implementation. Check back in with everyone who was involved in the process and share information about the preferred scenario, especially with the public, stakeholders and decision-makers, to build understanding and support. This creates an opportunity to dispel misconceptions. It is likely that throughout the process people thought more about outcomes and less about the pathways to reach the outcomes. As the process moves towards implementation, new stakeholders may come into the fold, especially after publicity about the preferred scenario. Step back and take the time to make sure everyone is on board and moving forward together.

Implementation of a preferred scenario will be made possible through voluntary, cooperative and individual efforts among the cities, counties and regional agencies. Implementation necessitates general agreement on the significant overarching strategies. These general strategies are fundamental components that define the preferred scenario. The final products of the scenario planning process however, should not be contingent on absolute agreement on every strategy.

At the broad level, the preferred scenario will be implemented over time, through overarching and targeted strategies that result in updates and amendments to comprehensive plans and transportation system plans. In the near-term, many of the targeted and specific strategies of the preferred scenario can lead to immediate action. With agreement on the preferred scenario, a city may choose to act upon a specific strategy on its own, which might also move the whole metropolitan area closer to its goals. For instance, a city may develop an implementation strategy to boost transit on a specific corridor; that decision does not require agreement by all cities within the metropolitan area, but it will likely benefit the entire area.

The preferred scenario expresses a general, broad view about the desired land use pattern and transportation system and the general policies, programs and actions (strategies) that the region expects to pursue. While the scenario outlines the overarching actions needed, it should be understood that many of the targeted or specific actions needed to carry out the preferred scenario will be detailed in step 6. With this in mind, the preferred scenario should include a clear vision and set of principles to help guide decision-makers as they consider implementing decisions.

The preferred scenario, and especially the concept map, should be general and not make specific assumptions about particular properties. Metro's 2040 Growth Concept for example used a large reddish circle to connote the regional role of Downtown Portland. It did not call out specific land uses or activities beyond the definition of the building block identified by the circle.

Begin with early wins. There are likely to be several strategies, both overarching and targeted, within the preferred scenario that enjoy

universal support. Some of these strategies may not bring about the biggest benefits, or even the best value. However, at the early stages of implementation, each success, even at a small scale, can go a long way toward helping the metropolitan area realize its shared future goals. Working through some of the easier actions or programs can help the affected agencies develop the collaboration framework needed for many aspects of implementation. It is better to test out the strategy framework on non-controversial issues before trying to tackle some of the larger issues that may have been identified through the scenario planning process.

Develop an Implementation Plan

The purpose of scenario planning is to get broad public consensus on possible land use and transportation changes that can better achieve community goals. Adoption of a preferred scenario does not by itself result in specific actions or changes to existing plans, but rather provides guidance to subsequent local actions and plan changes. Consequently, a key part of scenario planning is to develop an implementation plan. Step 6 generates a preferred scenario and strategies, comprised of actions, programs and policy options, with enough detail to inform future actions. The guiding principles from Step 2 provided the comparative framework that allowed for the public and stakeholder evaluation of the alternative scenarios and their embedded strategies. In this phase, key strategies and policies identified in Step 6 should be utilized to create a more detailed description of implementing actions, and to identify general timeframe (short, medium and long term). The process of selecting the implementation approaches will involve negotiating with key parties

and securing their agreement to participate. The implementation plan should link the various actions to people's values through use of the guiding principles.

Creating a written implementation plan or strategy can be an important step to identify the actions needed to implement the preferred scenario and the parties responsible for those actions. Implementation plans are non-regulatory plans that contemplate specific actions and allocation of resources, such as people or capital, to achieve those ends. They can serve as prioritized action plans with recommended immediate actions as the first steps towards realizing the metropolitan area's policy goals. Besides a clear description of recommended programs and improvements, the plan can include a matrix to identify what departments or organizations will have primary responsibility, and what potential funding sources may be available. It can also note the timeframe for each action and the relative priority for each action. Discussion around priorities not only helps allocate limited public funds, but also yields better project definition and clarity.

Potential Implementation Plan Components

Align the RTP and Other Transportation Plans

A scenario planning process can be used to inform an MPO's RTP update process. One of the most common ways to implement the preferred scenario is to incorporate it into the metropolitan area's RTP, whether it is a part of a RTP update or the result of a separate scenario planning process. The regional vision about future development patterns in the preferred scenario can be used to guide RTP development. For example, the preferred scenario

should include a detailed land use forecast , which can be incorporated into the housing and employment distribution used to identify regional transportation needs. These plans are important because they identify regional priorities for transportation funds. Specific goals and strategies developed as part of the preferred scenario can also be added to the regional transportation plan or used to help shape regional transportation investments. The regional vision about future development patterns in the preferred scenario can be used to guide RTP development. Often a preferred scenario will highlight benefits that could come from changes in regional priorities as they apply to transportation.

Through the evaluations from the sketch planning tool, the Regional Strategic Planning Model and possibly other tools, the technical scenario will show the potential benefits that can be achieved. Since the regional transportation infrastructure forms the backbone for land use, this new land use allocation and associated urban design information should be used in future modeling and analysis. Cities and counties may need to think beyond individual transportation projects that their constituents have asked for previously and consider the region-wide projects.

Modify Comprehensive Plans and Implementing Ordinances

The majority of strategies embodied by the preferred scenario will be enacted at the local level, by cities and counties. If land use changes are a substantial component of the preferred scenario, changes to comprehensive plans will need to be considered. It may have been the case that scenario planning was conducted as part of a comprehensive plan update. It is important, however, that the preferred scenario

not be directive of such changes. Plan changes can be encouraged, but if they are a requirement of participation the process could falter. A better approach is for the preferred scenario to tie incentives to changes. For example, directing resources toward transit improvements linked to plan updates might be most effective.

Typically, changes to comprehensive plans are focused on specific areas where different land uses are shown to be of benefit. For example, for the preferred scenario's GHG reduction strategies, the modifications may include changing land uses to allow greater mixing of uses, higher intensity development, or employment in areas rich in housing. Other changes to plans could include new connectivity standards or planning for transit-oriented development. While some of this has been used in Oregon planning for decades, in a few areas its application may be fairly new.

Metro provides an example: following the adoption of the Metro Region 2040 Growth Concept, many local jurisdictions modified their plans to include the centers and corridors concept, a key component of the region's preferred scenario. After nearly 20 years, there are few plans in the region that have not been modified to adapt to the 2040 Growth Concept. While Portland Metro does have some land use authority, the vast majority of these changes were done in cooperation with local governments, as the local governments had an interest in the regional plan's implementation.

Update Zoning Ordinances

One common finding from scenario planning efforts is that local zoning ordinances might not permit, or guide, the types and locations of new development that is described by the vision. Updates to zoning ordinances can be initiated that are intended to make it easier for the private sector to develop the types of land uses the city and metropolitan area would like to see.

As part of a scenario planning process in North Central Texas, the City of Dallas learned that capturing a larger share of the region's housing was critical to their economic development desires, and at the same time helped to diminish region-wide VMT. With limited vacant land, Dallas looked toward its light rails stops, and urban districts as places that could attract the desired housing growth. However, faced with an outdated zoning code, developers had a difficult time producing the mixed-use and higher density housing the city and region were hoping to see. To change the situation one of the first things the city did was to develop several new zoning districts that would accommodate mixed-use and higher density development. The new districts were added to the zoning ordinance, but not applied to any specific properties. The intent was to provide new options for interested developers, while at the same time not initiating any legislative zoning changes on properties whose owners may not be ready or interested until some successful examples could be built.

Develop a Strategic Plan

There are many areas within Oregon where comprehensive plans currently allow for mixed-use and higher density urban housing, but where the real estate market has not followed suit. For example, the 2011 Beaverton Civic Plan planning process discovered that downtown Beaverton zoning allowed much larger buildings than were being built.

In similar cases, metropolitan areas cities and counties will want to work with the development community to determine why properties are often built to lower intensities than planned, or why they remain underutilized despite a healthy marketplace. In many cases, there are incentives that can correct the situation, such as waiving fees or providing infrastructure. An appropriate technique for these types of situations is to create a strategic plan that covers these additional topics.

Strategic plans are non-regulatory plans that contemplate specific actions and allocate resources, such as people or capital, to achieve those ends. A

strategic plan can serve as a prioritized action plan of recommended actions that become the first steps towards realizing the metropolitan area's policy goals. Besides a clear description of recommended programs and improvements, the plan can include a matrix to identify what departments or organizations will have lead responsibility, and what potential funding sources may be available. It can note the timeframe for each action and the relative priority for each action. Discussion around priorities not only helps allocate limited public funds, but also yields better project definition and clarity.

The actions and priorities may also address co-benefits beyond those contained in local plans. While comprehensive plans are usually implemented through regulations, strategic plans involve programs and capital projects. Transportation capital projects and programs may be contained in the RTP or TSP, but other activities contemplated in a GHG reduction scenario may address a wider range of activities, including utilities, information technology, open space protection, or vehicle incentives.

Figure 19: Strategic Action Plan Example: Beaverton Civic Plan

2011-2015 Timeframe
Priority Level 1
Revise Land Use, Transportation, Economy, Housing Elements of the Comprehensive Plan to reflect Civic Plan strategies.
Engage in the Aloha-Reedville planning process to ensure that the Central City is not adversely affected by plans for TV Highway corridor.
Priority Level 3
Update the bicycle parking design requirements from 1998 standards and adopt standards to provide for on-street bike parking corrals in the Central City.
Plan and construct immediate-term bike facility improvements.
2016-2020 Timeframe
Priority Level 2
Plan and construct short-term bike facility improvements.
2021-2025 Timeframe
Priority Level 1
Plan and construct mid-term bike facility improvements
2026-2030 Timeframe
Priority Level 1
Plan and construct long-term bike facility improvements

This is an example of prioritized actions and respective timeframe from the Beaverton Civic Plan's Central City Strategy.

Potential Funding and Support Mechanisms

For many years Oregon's Transportation and Growth Management (TGM) Program has linked land use and transportation planning in the state. In the same way, MPOs can direct infrastructure funds toward projects that further enable local implementation in support of the preferred scenario. Additionally, the metropolitan area can take advantage of other opportunities to support implementation, such as those described below.

Using Transportation Projects

Sometimes, transportation projects can be used to implement part of the preferred strategy. These may range from transit enhancements, transportation demand management programs, and bike paths to bike sharing programs, workplace incentives, or electric vehicle programs. The funding allocations or specific program allocations in the transportation improvement plan (TIP) may be a possible funding source. For example, Metro has allocated a certain amount of its TIP for TOD implementation. Metro has also targeted funding for implementing boulevard designs along transit corridors. Metro's funding criteria gave preference to projects that promoted development in centers, so that new sidewalks or bikeways support the desired outcomes of creating town centers.

Pilot Programs and Catalytic Developments

This approach may include zoning code rewrites, strategic plans or encouragement of new real estate projects. Well-known catalytic projects in the Portland region following the Metro Region 2040 plan have included the Belmont Dairy and Orenco Station. Each of these received some assistance as the region's preferred scenario was converted into funding catalytic projects.

A Suggested Approach to Monitoring Programs

A key recommendation for monitoring programs is to group related measures together. Develop a one or two page spread for each measure that contains a definition of the measure, why it is important, how it is calculated, and the resulting numbers through graphics and text. A consistent format with easy to read text and graphics will help to make the monitoring program useful by various agencies and stakeholders within the metropolitan area.

Regular Monitoring Updates

Another important way to encourage implementation is to keep the scenario planning effort, especially the preferred scenario, in the public's eye. A monitoring program should be used as a check-in to see if things are heading in the right direction. Look for opportunities to share progress with the public through press reports or website updates. Metro provides an excellent example of this tactic. They survey residents annually on the 2040 Plan and other issues related to planning. They publish on their website current projects within the region, from large-scale corridor plans to smaller individual transportation-oriented developments. By bringing awareness to the work being done to achieve the metropolitan area's goals, public decisions during ballot measures or general elections will be better informed.

Monitoring Programs

An important piece of any plan is developing metrics to gauge the metropolitan area's success in implementing the plan. Monitoring includes two parts. First, monitoring implementation of the preferred scenario itself (i.e. were specific actions like expanded transit service carried out) and second, assessing how well the region is doing in meeting broader regional goals and objectives – for example reducing household spending on transportation. In short, a good monitoring program evaluates both what is being accomplished and the means to do so. There should be specific performance measures tied to the evaluation criteria from Step 2 that can be used to help monitor the effectiveness of policies and actions. A monitoring program will provide periodic snapshots from which agencies can determine if there are adjustments or corrective action should be taken, to keep the metropolitan area, or the individual city or county on course to achieve planning goals.

The technical scenario, and the subsequent evaluations from the land use sketch planning tool and the Regional Strategic Planning Model, will provide the data to populate the monitoring program. There is no rule on the number of measures to include in a monitoring program. As with many issues related to planning, it often comes down to cost. It is advisable to start with a focused list of key measures that are widely seen as vital, but not so many that collecting the data requires unrealistic levels of effort or cost.

Common elements to track include:

• *Implementation of key actions called for in preferred scenario, such as expanded transit service or development of a downtown housing strategy.*

• *Changes in per capita VMT.*

• *Transportation mode choice (auto, transit, bike and walk).*

• *Land consumption.*

• *Amount of development accommodated through infill and redevelopment.*

• *Changes in jobs and households, and densities at various geographic levels (i.e. city totals, transit or mixed use areas, or targeted areas such as downtowns).*

• *Other measures as directed by the guiding principles and evaluation criteria established in Step 2.*

Conclusion

The *Guidelines* show that scenario planning is often only the beginning of a longer endeavor that utilizes the power of regional collaboration to move toward success on a range of shared goals, including GHG reduction. Implementation programs can take many forms, and are most likely to be successful if they are based on realistic outcomes of what can be accomplished. Even a modest implementation program can be instrumental to moving the metropolitan area toward the future depicted by the preferred scenario.

The result of scenario planning is a shared vision about how the metropolitan area can be better off. The vision serves as an important starting point and catalyst for a broad range of efforts throughout the community including land use and transportation plans, but perhaps more importantly, new partnerships among groups within the community to achieve the vision. Local governments and public agencies have a key role to play by pursuing public investments, programs and actions to achieve the vision.

Scenario Planning Guidelines: Technical Appendix

Resources for Developing and Evaluating
Alternative Land Use and Transportation Scenarios

Oregon Sustainable Transportation Initiative (OSTI)

Oregon Department of
Land Conservation
and Development

Oregon
Department
of Transportation

Scenario Planning Guidelines

Resources for Developing and Evaluating
Alternative Land Use and Transportation Scenarios

Oregon Sustainable Transportation Initiative (OSTI)

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Technical Appendix
Step 1

Scenario Planning Guidelines:

Resources for Developing and Evaluating Alternative Land Use and Transportation Scenarios

This section introduces the Technical Appendix and describes the format. The appendix will follow the chronology found in 7-step process described by the manual for convenience and ease of use. Some appendix items may be more or less associated with a step than others. The entry in the Appendix will be noted with the first occurrence or reference within the guidelines document.

Intended Audience

The technical appendix is aimed at practitioners of the scenario planning process, namely planners, modelers and GIS experts.

Purpose of this document

This document will provide technical guidance through suggestions, technical explanations and examples.

- Data: Starting place for inputs to analysis (building prototypes, building blocks)

- Documents: Sample IGA, Agendas, etc.

- Suggestions: Effective Techniques, Public Engagement

Structure of Document

The structure of this document follows the 7-step process in the Guidelines, with sections appearing in chronological, or page order with their references from the primary SPG document.

Sample Intergovernmental Agreement from Metro, Southwest Corridor Plan

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF CREATING AND	)	RESOLUTION NO. 11-4278
APPOINTING MEMBERS OF THE SW	)	
CORRIDOR PLAN STEERING COMMITTEE	)	Introduced by Acting Chief Operating Officer Dan Cooper with the concurrence of Council President Tom Hughes

WHEREAS, the Metro Council has made a commitment to Making a Great Place through its work with local leaders and residents throughout the region to create prosperous and sustainable communities for present and future generations; and

WHEREAS, the adopted long-range blueprint for the future, the 2040 Growth Concept, reflects that commitment and guides the region's land use and transportation development in alignment with it; and

WHEREAS, the Metropolitan Policy Advisory Committee and Metro Council have adopted the following Six Desired Outcomes to guide its efforts in the region:

- Vibrant communities - People live, work and play in vibrant communities where their everyday needs are easily accessible.
- Economic prosperity - Current and future residents benefit from the region's sustained economic competitiveness and prosperity.
- Safe and reliable transportation - People have safe and reliable transportation choices that enhance their quality of life.
- Leadership on climate change - The region is a leader in minimizing contributions to global warming.
- Clean air and water - Current and future generations enjoy clean air, clean water, and healthy ecosystems.
- Equity - The benefits and burdens of growth and change are distributed equitably.

WHEREAS, the Regional Transportation Plan (RTP) is a central tool for implementing the 2040 Growth Concept and emphasizes outcomes, system completeness and measurable performance in order to realize adopted land use plans, and hold the region accountable for making progress toward regional and State goals to reduce vehicle miles traveled and greenhouse gas emissions; and

WHEREAS, the Metro Council accepted the Regional High Capacity Transit System Plan by Resolution No. 09-4052 (For the Purpose of Accepting the Regional High Capacity Transit System Tiers and Corridors, System Expansion Policy Framework and Policy Amendments for Addition to the 2035 Regional Transportation Plan, State Component) on July 9, 2009, for addition to the 2035 Regional Transportation Plan; and

WHEREAS, the Southwest Corridor Refinement Plan was adopted by Metro Council Resolution No. 10-4119 ("For the Purpose of Updating the Work Program for Corridor Refinement Planning through 2020 and Proceeding with the Next Two Corridor Refinement Plans in the 2010-2013 Regional Transportation Plan Cycle") as one of the next regional priorities for Corridor Refinement Plans on February 25, 2010; and

WHEREAS, the 2035 Regional Transportation Plan and its components were adopted as the state and federally-recognized metropolitan transportation plan by Ordinance No. 10-1241B ("For the Purpose of Amending the 2035 Regional Transportation Plan (Federal Component) and the 2004 Regional Transportation Plan to Comply with Federal and State Law; To Add the Regional Transportation Systems Management and Operations Action Plan, the Regional Freight Plan and the High Capacity Transit System Plan; To Amend the Regional Transportation Functional Plan and Add it to the Metro Code; To Amend the Regional Framework Plan; and To Amend the Urban Growth Management Functional Plan"); and

WHEREAS, the establishment of a Steering Committee will contribute valuable guidance toward completion and adoption of the Southwest Corridor Plan, which will include an implementation strategy for the plan area; and

WHEREAS, Steering Committee membership should include elected officials and representatives of project partner agencies; and

WHEREAS, the Metro Councilors from District 3 and District 6 will serve as the Steering Committee co-Chairs; and

WHEREAS, it is expected that the Steering Committee will be needed for approximately 24 months; now therefore

BE IT RESOLVED that the Metro Council, in order to fulfill adopted goals through development of a transportation system that furthers said goals:

1. Hereby establishes the Southwest Corridor Plan Steering Committee to fulfill the charge set forth in Exhibit A.
2. Hereby appoints the represented positions listed in Exhibit B, attached and incorporated into this resolution, to be members of the Southwest Corridor Plan Steering Committee.
3. Directs the Southwest Corridor Plan Steering Committee to meet at project milestones, with administrative and technical support from Metro staff, and to submit recommendations to the Council at project milestones.
4. Appoints Steering Committee members for a one-year term, which shall be automatically renewed for an additional term unless explicitly terminated, but not to exceed three years.

ADOPTED by the Metro Council this 4th day of August, 2011.

_____
Tom Hughes, Council President

Approved as to Form:

_____
Alison Kean Campbell, Metro Attorney

EXHIBIT A TO RESOLUTION NO. 11-4278

Southwest Corridor Plan Steering Committee Charge

The Steering Committee makes decisions on project milestones and recommends action on the Southwest Corridor Plan and Implementation Strategy to the adopting bodies. This committee, to be chaired by Metro, will be made up of elected officials from each jurisdiction with a decision-making role in developing the components of the Southwest Corridor Plan and the Southwest Corridor Implementation Strategy. The Metro Council will establish the Steering Committee and criteria for membership, and each jurisdiction will appoint an individual who meets the criteria. The group is anticipated to meet quarterly, or as needed, from September 2011 through the development of the Southwest Corridor Plan and the Southwest Corridor Implementation Strategy.

The Southwest Corridor Plan Steering Committee is charged with working toward the successful creation of the Southwest Corridor Plan and Implementation Strategy. The Steering Committee members are specifically tasked with the following responsibilities.

- Follow decision-making protocols as established by the committee.
- Provide information to and from constituents and the Southwest Corridor Implementation Partners regarding the process, substance, and implementation of the Southwest Corridor Plan.
- Represent constituents' perspectives, concerns and priorities.
- Receive input from, and provide guidance to, the Project Management Group and the Project Team Leaders (described in Appendix 1) at project milestones, which may include:
    - Project goals;
    - A problem statement based on desired outcomes for the plan area;
    - A methodology for assessing the effectiveness of strategies in meeting the plan goals and objectives;
    - A wide range of alternative strategies for testing;
    - Prioritized strategies;
    - Identified commitments to support the strategies; and
    - An Implementation Strategy for the Southwest Corridor.
- Recommend a Plan and Implementation Strategy (including phasing and funding for physical improvements and commitments and timeframe for implementing land use and related policy changes) for the plan area to the project participants, as appropriate.
- Provide leadership, foster the creation of partnerships, and encourage local actions to implement the plan.

EXHIBIT B TO RESOLUTION NO. 11-4278

Members of the Southwest Corridor Plan Steering Committee

Metro District 3 Councilor and District 6 Councilor

Elected officials from cities of Portland, Tigard, Tualatin, Sherwood and King City

Multnomah County Commissioner

Washington County Commissioner

ODOT, Region 1 Manager

TriMet, General Manager

SCENARIO PLANNING GUIDELINES

STAFF REPORT

IN CONSIDERATION OF RESOLUTION NO. 11-4278, FOR THE PURPOSE OF CREATING AND
APPOINTING MEMBERS OF THE SOUTHWEST CORRIDOR PLAN STEERING COMMITTEE

Date: August 4, 2011   Prepared by: Malu Wilkinson

BACKGROUND

The Southwest Corridor Plan is intended to collaboratively integrate land use and transportation planning
efforts to create an implementation strategy that includes investments, policy changes and partnerships.
The Southwest Corridor Plan process is intended to result in the following products, which may be
refined due to the iterative nature of the project and the inter-connectedness of the products. The Steering
Committee may identify additional or complementary plans or planning processes through the course of
the project.

1. *Southwest Corridor Plan* (Metro);
2. *Southwest Corridor Implementation Strategy* (Metro)*;* and
3. Six individual plans:
     a. *Southwest Transportation Plan* (Metro, ODOT)
     b. *Southwest Corridor Transit Alternatives Analysis* (Metro)
     c. *Barbur Concept Plan* (City of Portland)
     d. *Tigard High Capacity Transit (HCT) Land Use Plan* (City of Tigard)
     e. *Tualatin HCT Land Use Plan* (City of Tualatin)
     f. *Sherwood Town Center Plan* (City of Sherwood)

The work will be guided by a Steering Committee that includes the agencies which will be engaged in
implementing an implementation strategy for the Southwest Corridor. The process will be documented in
a charter to be adopted by each jurisdiction (a draft of the charter is included with this staff report as
Attachment A). Project partners include the cities of King City, Portland, Sherwood, Tigard, Tualatin,
Multnomah County, Washington County, TriMet, ODOT and Metro.

Metro will work with local partners to define a set of land use and transportation investments and
strategies that best achieve local and regional goals and develop an action plan for local and regional
agreements to actualize the vision. Components of the strategy may include:
     o Intergovernmental agreements that describe an investment plan that may address land
        use, transportation, habitat, parks, equity, housing choice, job growth, etc.
     o Proposal for alternative mobility standards within the Southwest Corridor
     o Transit Alternatives Analysis to be submitted to the Federal Transit Administration
     o Recommended revisions to the Regional Transportation Plan, Regional Framework Plan,
        and/or the Urban Growth Management Functional Plan, local Transportation System
        Plans (TSPs) and Comprehensive Plans
     o Recommended priorities and investments in the Oregon Department of Transportation
        (ODOT) Facility Plan and TriMet Transit Investment Plan
     o National Environmental Policy Analysis (NEPA) alternatives for transit investments

Local partners, agency partners, and Metro will implement the actions and investments described in the
SW Corridor Implementation Strategy.

The composition of the Steering Committee as described in Exhibit B ensures that members are in a position to work with their representative organizations to move forward on the actions, agreements and partnerships to be developed through this process and described in the Southwest Corridor Implementation Strategy. The Southwest Corridor Plan effort recognizes the mutual benefit from sharing information, views and aligning resources to produce an integrated implementation strategy for transportation, land use and other associated investments to support great communities within the corridor. The makeup of the proposed Steering Committee and supporting groups has been defined through a collaborative process with active engagement from all project partners.

ANALYSIS/INFORMATION

1. **Known Opposition** No known opposition exists.

2. **Legal Antecedents** The creation and appointment of members to the Southwest Corridor Plan Steering Committee is consistent with Metro Code 2.19.030 (Membership of the Advisory Committees) and 2.19.040 (Advisory Committee Purpose and Authority Resolution), as well as Resolution No. 10-4119 that established the Southwest Corridor Plan as a priority mobility corridor refinement plan in the 2010-2013 Regional Transportation Plan cycle.

3. **Anticipated Effects** The Southwest Corridor Plan Steering Committee will contribute valuable guidance toward completion and adoption of the Southwest Corridor Plan. The Steering Committee will meet throughout the project's life at key milestones and may offer recommendations to Metro Council.

4. **Budget Impacts** Costs associated with convening and supporting the Southwest Corridor Plan Steering Committee are accounted for in the project's scope of work and budget.

RECOMMENDED ACTION
Metro staff recommends the adoption of Resolution No. 11-4278.

Attachment 1

Attachment 1 to Resolution No. 11-4278 Staff Report
Southwest Corridor Plan Charter
July 25, 2011 Draft

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Attachment 1

This charter establishes the Southwest Corridor Plan steering committee, which will review major milestones for the component plans and recommend an implementation strategy for the Southwest Corridor. (The Southwest Corridor Plan Area is shown in Appendix 2.) The signatories to this charter will use a collaborative approach to develop the Southwest Corridor Plan and the Southwest Corridor Implementation Strategy, to align local, regional, and state policies and investments to create great places. This work will benefit from partnerships and collaboration to make the most of simultaneous planning projects to help achieve local, regional, state and federal goals. Involved jurisdictions and agencies will use the forum created by this charter to discuss individual work efforts and determine how local, regional, and state actions fit into a cohesive strategy.

The purpose of this Charter is to set forth those undertakings expected of each Southwest Corridor Plan partner. By signing this Charter and adopting it by resolution, the participants agree to work together in good faith toward achieving the goals, creating the plans, and implementing the strategies created by this process.[1]

A)   Desired outcomes

The charter signatories agree that the six desired outcomes and characteristics of a successful region guide the creation of the Southwest Corridor Plan, the Southwest Corridor Implementation Strategy, and inform the entire planning process. These six desired outcomes are:
- Vibrant communities;
- Economic prosperity;
- Safe and reliable transportation;
- Leadership on climate change;
- Clean air and water; and
- Equity.

B)   Goal

The goal of the Southwest Corridor Plan process is to create a framework intended to improve the land use and transportation conditions in the Southwest Corridor, which will in turn stimulate community and economic development, leverage private investments and make efficient use of available resources. The process should provide a transparent, objective and consensus-based framework, as agreed to and further defined by the steering committee, to help define, refine, evaluate, screen and select land use and transportation alternatives.

By working together, the charter participants will develop a Southwest Corridor Plan. In addition, they will simultaneously develop a Southwest Corridor Implementation Strategy that identifies and prioritizes needed projects to support local aspirations, and regional and state goals. The Southwest Corridor Implementation Strategy will create a framework for establishing agreements on local, regional and state actions that will support implementation. The structure will include a robust public engagement process that actively engages citizens in defining community visions and priorities for investment.

The Southwest Corridor Plan will identify policies and investments that are intended to:
- Improve access to regionally significant employment, educational and commercial centers;
- Improve mobility throughout the Southwest Corridor for all transportation modes;

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[1] This Charter constitutes a project-specific agreement required by the ODOT/MPO/Transit Operator Agreement (ODOT Agreement # 24682; Metro Contract # 928512), Appendix A, Section 4.

Attachment 1

- Improve access to affordable living, considering the combined housing, transportation and utility costs;
- Improve watershed health and habitat function, and enhance the natural environment;
- Equitably distribute the benefits and burdens of growth;
- Improve the quality of the region's air, water and land resources;
- Support active lifestyles;
- Integrate health strategies; and
- Integrate trails and parks plans and improvements.

C) Products

The Southwest Corridor Plan process is intended to result in the following products, which may be refined due to the iterative nature of the project and the inter-connectedness of the products. The Steering Committee may identify additional or complementary plans or planning processes through the course of the project.

4. *Southwest Corridor Plan* (Metro);
5. *Southwest Corridor Implementation Strategy* (Metro)*; and*
6. Six individual plans:
   a. *Southwest Transportation Plan* (Metro, ODOT)
   b. *Southwest Corridor Transit Alternatives Analysis* (Metro)
   c. *Barbur Concept Plan* (City of Portland)
   d. *Tigard High Capacity Transit (HCT) Land Use Plan* (City of Tigard)
   e. *Tualatin HCT Land Use Plan* (City of Tualatin)
   f. *Sherwood Town Center Plan* (City of Sherwood)

(1) Southwest Corridor Plan and (2) Implementation Strategy

The *Southwest Corridor Plan* will summarize the results of the six individual plans listed above and identify areas for continued coordination, to be included in the *Implementation Strategy*. The project partners will work together to integrate different disciplines beyond land use and transportation, leveraging current efforts where possible, encompassing topics such as workforce housing, parks and green infrastructure, economic development, and impacts on public health.

The *Southwest Corridor Implementation Strategy* will include a summary of the future actions and agreements among the partner agencies and jurisdictions on a set of coordinated policies and investments to implement a shared vision. The *Implementation Strategy* becomes a guide for pursuing opportunities and investments throughout the Southwest Corridor.

The *Southwest Corridor Plan* and the *Implementation Strategy* should be endorsed by the Southwest Corridor Steering Committee, and is intended to be adopted and implemented by the appropriate agencies and jurisdictions.

(3a) Southwest Transportation Plan

The Southwest Transportation Plan and the Southwest Corridor Transit Alternatives Analysis are complementary projects that have typically been done sequentially, and, in the context of the Southwest Corridor Plan, are now being done simultaneously. The two products will be iterative, consistent, and leverage analysis and public engagement. The Southwest Corridor Transit Alternatives Analysis, a subset of the Southwest Transportation Plan, will be led by Metro while the Southwest Transportation Plan will be co-led by ODOT and Metro. There will be two products, as described in this charter. Development of the Southwest Transportation Plan will include, as appropriate:

Attachment 1

- Identification of local, regional, and state transportation needs;

- A process and criteria, including performance standards, to evaluate and compare alternatives that balance the identified needs;

- Decisions regarding need, mode, function, general location, general cross-sections, and alternative mobility and/or performance standards for future management of transportation facilities within the corridor;

- Integration of the Southwest Corridor Transit Alternatives Analysis; and

- A list of prioritized transportation projects and strategies to meet and incorporate into the Regional Transportation Plan, local transportation plans, and a state highway facility plan. The list will contain short, medium, and long-term projects and strategies.

The Southwest Transportation Plan will result in the following products:

- Transportation plan for the Southwest Corridor, including amendments to the Regional Transportation Plan (adopted by Metro);

- An I-5, OR43 and 99W Highway Facility Plan, which may include alternative mobility standards to those currently adopted in the Oregon Highway Plan. This would be an amendment to the Oregon Highway Plan (adopted by the Oregon Transportation Commission); and

- Potential amendments to partner agency plans, such as Transportation System Plans and/or Comprehensive Plans, as appropriate. (The amendments would be adopted by City of Portland, City of Tigard, City of King City, City of Tualatin, City of Sherwood, TriMet, Multnomah County and Washington County).

(3b) Southwest Corridor Transit Alternatives Analysis
The Southwest Corridor Transit Alternatives Analysis (AA), a subset of the Southwest Transportation Plan, will evaluate the function, mode and potential alignment of a high capacity transit (HCT) improvement. The AA is the first step in the federal process to determine the most efficient public investment in transit for the Southwest Corridor. The analysis will be informed by the land use and transportation plans that make up the overall Southwest Corridor Plan. The Alternatives Analysis will result in a Narrowed Transit Solutions Report. At the end of this process, Metro and regional partners would determine whether to move further into project development. At that time, a choice would also be made whether to enter into the National Environmental Policy Act (NEPA) process of environmental impact statement, environmental assessment, or categorical exclusion.

(3c) Portland Barbur Concept Plan
The Barbur Concept Plan is a collaborative effort involving the community, City of Portland, Metro, TriMet, and ODOT to create a long term vision for the Barbur Boulevard corridor. Beginning in summer of 2011, an 18-month public process will explore alternative future land use and transportation concepts for the corridor between Portland's Central City and the Tigard city limit. The concept plan will identify future transportation investments, stormwater solutions, and changes to City policy and zoning. Most importantly, the public process will inform regional decisions for future High Capacity Transit in the Southwest Corridor.

(3d) Tigard HCT Land Use Plan
The Tigard HCT Land Use Plan will identify potential station communities and preferred development typologies as well as policy, investment and code changes necessary to support HCT in Tigard. Action to be taken by the city council will include acceptance of the land use plan for the potential station communities, including changes to the comprehensive plan, zone map, and coordinated amendments to the TSP. Future considerations will include:
- Amendments to the Tigard Comprehensive Plan, related text and Zoning Map
- Coordinated amendments to the Tigard TSP (with associated RTP amendments)

- Identification of local, regional, and state transportation needs;
- A process and criteria, including performance standards, to evaluate and compare alternatives that balance the identified needs;
- Decisions regarding need, mode, function, general location, general cross-sections, and alternative mobility and/or performance standards for future management of transportation facilities within the corridor;
- Integration of the Southwest Corridor Transit Alternatives Analysis; and
- A list of prioritized transportation projects and strategies to meet and incorporate into the Regional Transportation Plan, local transportation plans, and a state highway facility plan. The list will contain short, medium, and long-term projects and strategies.

The Southwest Transportation Plan will result in the following products:

- Transportation plan for the Southwest Corridor, including amendments to the Regional Transportation Plan (adopted by Metro);
- An I-5, OR43 and 99W Highway Facility Plan, which may include alternative mobility standards to those currently adopted in the Oregon Highway Plan. This would be an amendment to the Oregon Highway Plan (adopted by the Oregon Transportation Commission); and
- Potential amendments to partner agency plans, such as Transportation System Plans and/or Comprehensive Plans, as appropriate. (The amendments would be adopted by City of Portland, City of Tigard, City of King City, City of Tualatin, City of Sherwood, TriMet, Multnomah County and Washington County).

(3b) Southwest Corridor Transit Alternatives Analysis
The Southwest Corridor Transit Alternatives Analysis (AA), a subset of the Southwest Transportation Plan, will evaluate the function, mode and potential alignment of a high capacity transit (HCT) improvement. The AA is the first step in the federal process to determine the most efficient public investment in transit for the Southwest Corridor. The analysis will be informed by the land use and transportation plans that make up the overall Southwest Corridor Plan. The Alternatives Analysis will result in a Narrowed Transit Solutions Report. At the end of this process, Metro and regional partners would determine whether to move further into project development. At that time, a choice would also be made whether to enter into the National Environmental Policy Act (NEPA) process of environmental impact statement, environmental assessment, or categorical exclusion.

(3c) Portland Barbur Concept Plan
The Barbur Concept Plan is a collaborative effort involving the community, City of Portland, Metro, TriMet, and ODOT to create a long term vision for the Barbur Boulevard corridor. Beginning in summer of 2011, an 18-month public process will explore alternative future land use and transportation concepts for the corridor between Portland's Central City and the Tigard city limit. The concept plan will identify future transportation investments, stormwater solutions, and changes to City policy and zoning. Most importantly, the public process will inform regional decisions for future High Capacity Transit in the Southwest Corridor.

(3d) Tigard HCT Land Use Plan
The Tigard HCT Land Use Plan will identify potential station communities and preferred development typologies as well as policy, investment and code changes necessary to support HCT in Tigard. Action to be taken by the city council will include acceptance of the land use plan for the potential station communities, including changes to the comprehensive plan, zone map, and coordinated amendments to the TSP. Future considerations will include:

- Amendments to the Tigard Comprehensive Plan, related text and Zoning Map
- Coordinated amendments to the Tigard TSP (with associated RTP amendments)

Attachment 1

- Amendments to the Public Facilities Plan and Implementing Capital Improvement Plan

(3e) Tualatin HCT Land Use Plan

The Tualatin HCT Land Use Plan may identify locally preferred station areas and development typologies as well as policy, investment and code changes necessary to support HCT in Tualatin. Action items to be adopted by the city council may include:

- Land Use Plan
- Comprehensive plan changes
- Local zoning changes
- Amendments to CIP and other investment strategies.

(3d) Sherwood Town Center Plan

The project will result in a Town Center Plan for Sherwood. The project will determine the appropriate boundary of the Town Center, identify opportunities and constraints for the successful development of the town center and create a strategy for development and re-development of the area. The project would be completed to comply with the Metro functional plan policies and guidelines to be eligible for regional investments.

D) Southwest Corridor Plan Steering Committee Charge

The Steering Committee makes decisions on project milestones and recommends action on the Southwest Corridor Plan and Implementation Strategy to the adopting bodies. This committee, to be chaired by Metro, will be made up of elected officials from each jurisdiction with a decision-making role in developing the components of the Southwest Corridor Plan and the Southwest Corridor Implementation Strategy. The Metro Council will establish the Steering Committee and criteria for membership, and each jurisdiction will appoint an individual who meets the criteria. The group is anticipated to meet quarterly, or as needed, from September 2011 through the development of the Southwest Corridor Plan and the Southwest Corridor Implementation Strategy.

The Southwest Corridor Plan Steering Committee is charged with working toward the successful creation of the Southwest Corridor Plan and Implementation Strategy. The Steering Committee members are specifically tasked with the following responsibilities.

- Follow decision-making protocols as established by the committee.
- Provide information to and from constituents and the Southwest Corridor Implementation Partners regarding the process, substance, and implementation of the Southwest Corridor Plan.
- Represent constituents' perspectives, concerns and priorities.
- Receive input from, and provide guidance to, the Project Management Group and the Project Team Leaders (described in Appendix 1) at project milestones, which may include:
    o Project goals;
    o A problem statement based on desired outcomes for the plan area;
    o A methodology for assessing the effectiveness of strategies in meeting the plan goals and objectives;
    o A wide range of alternative strategies for testing;
    o Prioritized strategies;
    o Identified commitments to support the strategies; and
    o An Implementation Strategy for the Southwest Corridor.
- Recommend a Plan and Implementation Strategy (including phasing and funding for physical improvements and commitments and timeframe for implementing land use and related policy changes) for the plan area to the project participants, as appropriate.

Attachment 1

- Provide leadership, foster the creation of partnerships, and encourage local actions to implement the plan.

The Steering Committee will be convened by Metro and meet at project milestones. The decision-making process and expected relationships among project partners are described in Appendix 1.

Attachment 1

E)   Anticipated timeline and key milestones

Table 1: SW Corridor Plan Phases, Milestones, and Anticipated Timeline

Phase	Milestone	Approximate date
Define problems, opportunities & constraints	1. Charter adopted by Southwest Corridor partners	Fall 2011
	2. Steering Committee defines goals *The goals will lay the foundation for determining the strategies to address land use and transportation needs.*	November 2011
Identify wide range of solutions and integrated strategies	3. Steering Committee approves an outcomes-based evaluation framework and criteria *The criteria may define how transportation and land use investment, strategies, and policies work together to achieve goals.*	January 2012
	4. Steering Committee identifies alternative strategies to support achieving local and regional goals *Alternative strategies include packages of transportation investments (including transit options), land use changes and other investments that can be evaluated against the criteria.*	May 2012
Narrow solutions and draft Southwest Corridor Plan and Implementation Strategy	5. Steering Committee prioritizes alternative strategies *Priority strategies may identify efficient use of public resources including local, regional, state and federal investments and policy changes to achieve goals.*	October 2012
	6. Steering Committee approves draft Southwest Corridor Plan and Implementation Strategy *The Southwest Corridor Plan will summarize each of the component plans and the Implementation Strategy will describe appropriate agreements and actions that need to be taken in the corridor.*	December 2012
Agree on action plan to implement the Southwest Corridor Plan and Implementation Strategy	7. Partners adopt Southwest Corridor Implementation Strategy and agree to implement components as appropriate	January – June 2013
	8. Metro Council/JPACT recommend alternative transportation investments for NEPA process	June 2013

Attachment 1

F) Roles & Responsibilities

Table 2 (on the following page) delineates the roles and responsibilities of the signing parties for each project included in the Southwest Corridor Plan area.

Definitions:

Convener: Agency responsible for making sure the planning process is completed and implemented. The convener is expected to consult with the other parties to gain efficiencies and avoid conflicts and is responsible for leading a public process.

Co-convener: Two agencies in an agreement to work together to ensure the planning process is completed and implemented.

Collaborate: To work together to achieve a common goal or objective. Collaboration is often employed where multiple parties have authority or control over the outcome and may involve a shared project or policy outcome. Parties may share expertise, resources, etc., to accomplish the goal or complete the project.

Coordinate: To develop, plan, program and schedule projects in consultation with other parties such that conflicts among projects are avoided. Coordinated projects are usually those over which not all parties, other than the convener, have control or authority.

Grant funder: An agency providing grant funding for a project. Responsibilities include contract management.

Grantee: The recipient of a grant for a specific planning project.

Owner: The agency that formally selects and pursues implementation of projects, strategies or policies, and that maintains the final plan or product. There may be multiple owners in a planning process that is completed inter-jurisdictionally.

Technical support: May include a wide range of services such as data analysis, mapping, policy analysis, and public engagement support and coordination.

IGA: Intergovernmental Agreement
MOU: Memorandum of Understanding
ODOT: Oregon Department of Transportation
RTP: Regional Transportation Plan
TIP: Transportation Investment Plan
TSP: Transportation System Plan

Attachment 1

Table 2: SW Corridor Plan Charter Signatories Roles and Responsibilities*

| Plan | Southwest Corridor Plan | Southwest Corridor Implementation Strategy | Southwest Transportation Plan | Southwest Corridor Transit Alternatives Analysis | Component plans | | | |
					Portland Barbur Concept Plan	Tigard HCT Land Use Plan	Tualatin HCT Land Use Plan	Sherwood Town Center Plan
Metro	Owner **Convener**	Owner **Convener**	Owner – RTP **Co-convener**	Owner **Convener**	Grant funder Technical support	Grantee Technical support	Grant funder Technical support	Technical support
ODOT	Owner	Owner	Owner – ODOT Facility Plan **Co-convener**	Collaborate	Collaborate Technical support	Grant funder Technical support	Collaborate Technical support	Grant funder Technical support
TriMet	Owner	Owner	Owner – TIP	Collaborate	Collaborate	Collaborate	Collaborate	Collaborate
King City	Owner	Owner	Owner – TSP	Collaborate Coordinate with land use analysis	Collaborate	Collaborate	Collaborate	Collaborate
Portland	Owner	Owner	Owner – TSP	Collaborate Coordinate with land use analysis	Owner **Convener** Grantee	Collaborate	Collaborate	Collaborate
Sherwood	Owner	Owner	Owner – TSP	Collaborate Coordinate with land use analysis	Collaborate	Collaborate	Collaborate	Owner **Convener** Grantee
Tigard	Owner	Owner	Owner – TSP	Collaborate Coordinate with land use analysis	Collaborate	Owner **Convener** Grantee	Collaborate	Collaborate
Tualatin	Owner	Owner	Owner – TSP	Collaborate Coordinate with land use analysis	Collaborate	Collaborate	Owner **Convener** Grantee	Collaborate
Washington County	Owner	Owner	Owner – TSP	Collaborate	Coordinate	Collaborate	Collaborate	Collaborate
Multnomah County	Owner	Owner	Coordinate	Coordinate	Coordinate	Coordinate	Coordinate	Coordinate

Charter signatory

* This chart does not preclude other plans and processes from being included in the Southwest Corridor Plan and/or Implementation Strategy.

DRAFT 7/25/2011: Southwest Corridor Plan Charter

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Attachment 1

G)   Agreement

_____   _____

City of Portland   Date   **ODOT   Date**

_____   _____

City of Tigard   Date   **Metro   Date**

_____   _____

TriMet   Date   **Washington County   Date**

_____   _____

City of Tualatin   Date   **City of Sherwood   Date**

_____   _____

City of King City   Date   **Multnomah County   Date**

Attachment 1

Appendix 1: Decision-making structure & Process

The text and chart below describe the decision process and expected relationships among the project partners. Three groups will support the Southwest Corridor Steering Committee in the development of the Southwest Corridor Plan and Implementation Strategy.

- **Southwest Corridor Project Management Group.** The PMG serves as a bridge between the Project Team Leaders (PTL) and the Steering Committee to help develop a coordinated set of agreements, investments and policy changes that together make up the Southwest Corridor Plan and the Southwest Corridor Implementation Strategy. This group, convened by Metro and comprised of senior staff from each of the jurisdictions with a decision making role, serves to advise the Steering Committee.

- **Southwest Corridor Project Team Leaders.** The PTL is responsible for ensuring the component parts of the Southwest Corridor Plan and the Southwest Corridor Implementation Strategy are completed in a coordinated fashion. This group, convened by Metro, is made up of technical staff from each of the jurisdictions that are working to develop components of the Southwest Corridor Plan and the Southwest Corridor Implementation Strategy.

- **Southwest Corridor Implementation Partners.** The Implementation Partners will advise the Steering Committee at key milestones on strategy and the impact of potential decisions and alternatives on a wide range of interest groups. This group will meet approximately four times (or as needed), help to identify complementary strategies to be implemented by private and/or non-profit organizations, and provide a foundation for partnerships to implement strategies.

Chart 1 depicts the decision-making process, including which bodies decide on components of the Southwest Corridor Plan, as also described in Section (C) of the Charter.

Attachment 1

SOUTHWEST CORRIDOR PLAN

Decision-making structure
with summary of plans and agreements adopted by local governments, Metro and the Oregon Transportation Commission

The Southwest Corridor Plan will develop a coordinated set of component plans and an implementation strategy that identifies and prioritizes needed projects to support local aspirations consistent with regional and state goals and stimulate community and economic development, leveraging private investments and making efficient use of available resources. It will include changes to local, regional and state policies to support the strategy.

Local city councils	MPAC/JPACT/Metro Council	Oregon Transportation Commission	TriMet, Washington and Multnomah counties
Local land use, transportation, public facilities and capital improvement plans	Implementation strategy, transportation plan, transit alternatives analysis, regional transportation and land use plans	I-5, OR 43 and 99W facility plans	

Public

Early and continuous public involvement will engage corridor residents, businesses and transportation system users, informing throughout the process and requesting ideas and feedback on issues related to major milestones.

Steering committee (Meets quarterly or as needed)

Elected and appointed officials from participating local governments and agencies make regional level decisions at major milestones, and recommends adoption of the Southwest Corridor Plan and Investment Strategy to the adopting bodies.

Project management group (Meets quarterly or as needed)

Senior staff from participating local governments and agencies provide oversight and guidance to the project, serving as a bridge between the technical and political work necessary to develop a coordinated set of agreements, investments and policy changes.

Project team leaders (Meets monthly or as needed)

Project managers and staff liaisons from local governments and agencies ensure coordination of the local land use plans, transportation plans and transit alternatives analysis as well as identify and raise technical and other issues to the project management group.

Implementation partners (Will meet approximately four times)

Periodic engagement will request advice at key milestones on strategy and impact of potential decisions and alternatives on a wide range of interests, from freight to workforce housing and economic development to parks and habitat.

Southwest Corridor Plan and Implementation Strategy	Barbur Land Use Plan	HCT Land Use Plan	HCT Land Use Plan	Town Center Plan	Transportation plan	Transit alternatives analysis	Other plans and projects
Metro	Portland [CAC and PI]	Tigard [CAC and PI]	Tualatin [CAC and PI]	Sherwood [CAC and PI]	ODOT/Metro	Metro	King City, Washington County, Multnomah County, TriMet

[CAC and PI] Each city's process will include a community advisory committee and independent, but coordinated, public involvement.

Attachment 1

Appendix 2: Geographic Area

Attachment 1

Appendix 3: Six Outcomes

As adopted in the Regional Framework Plan by Metro Council Ordinance #10-1244B, the six characteristics that define a successful region are:
1. People live, work and play in vibrant communities where their everyday needs are easily accessible.
2. Current and future residents benefit from the region's sustained economic competitiveness and prosperity.
3. People have safe and reliable transportation choices that enhance their quality of life.
4. The region is a leader in minimizing contributions to global warming.
5. Current and future generations enjoy clean air, clean water and healthy ecosystems.
6. The benefits and burdens of growth and change are distributed equitably.

Sample Intergovernmental Agreement, Greater Bear Creek Valley: Regional Problem Solving Agreement

GREATER BEAR CREEK VALLEY
REGIONAL PROBLEM SOLVING AGREEMENT

3   This REGIONAL PROBLEM SOLVING AGREEMENT (the "Agreement") is entered into this _____ day of _____, 20____ by and between Jackson County, the duly incorporated Oregon municipalities of Medford, Phoenix, Central Point, Jacksonville, Talent,

6   Eagle Point, and Ashland, the Land Conservation and Development Commission (LCDC), the Department of Land Conservation and Development (DLCD), the Oregon Department of Transportation (ODOT), the Oregon Department of Housing and Community Services

9   (ODHCS), the Oregon Economic and Community Development Department (OECDD), the Oregon Department of Environmental Quality (DEQ), the Oregon Department of Agriculture (ODA), the Rogue Valley Metropolitan Planning Organization (RVMPO), and Rogue Valley

12   Sewer Services (RVS).

RECITALS

       WHEREAS Jackson County and the cities of Phoenix, Medford, Central Point,

15   Eagle Point, Jacksonville, Ashland, and Talent (each a "Local Jurisdiction" and collectively, the "Region") are part of the Greater Bear Creek Valley, described more particularly in the draft Plan, attached hereto as Exhibit A, and incorporated by this reference, that expects to

18   see a doubling of the population over the long-term future; and

       WHEREAS the increasing population in the Region will create an ongoing demand for additional lands available for urban levels of development; and

21   WHEREAS that demand for urbanizable land will have to be balanced with the Region's need to maintain its high-quality farm and forest lands, as well as to protect its natural environment; and

24   WHEREAS the Local Jurisdictions recognize that long-term planning for which lands in the Region are most appropriate for inclusion in each municipality's urban reserve areas (URAs) in light of the Region's social, economic, and environmental needs is best de-

27   termined on a regional basis; and

       WHEREAS the draft Plan is the RPS Policy Committee's recommended means of elaborating the regional solutions to the identified regional problems; and

30   WHEREAS the State's Regional Problem Solving (RPS) statute provides a special process for addressing regional land use issues that allows the Local Jurisdictions, upon the satisfaction of certain conditions, to implement regional strategies through the adoption of

33   post-acknowledgement comprehensive plan amendments that do not fully comply with the otherwise applicable regulations (the "Regulations") of the Land Conservation and Development Commission (LCDC) to implement the Statewide Planning Goals (the "Goals"); and

36   WHEREAS one of the conditions the Local Jurisdictions must satisfy in order to deviate from the Regulations is that all the participants in the RPS process enter into an agreement that identifies: the problem faced by the Region; the goals that will address the

problem; the mechanisms for achieving those goals; and the system for monitoring the implementation and effectiveness of those goals; and

3   WHEREAS various entities were identified as potential stakeholders within the regional planning process, and invitations were extended to every incorporated jurisdiction (Jackson County, Eagle Point, Medford, Jacksonville, Central Point, Phoenix, Talent, and Ash-

6   land), school district (Ashland School District No. 5, Central Point School District No. 6, Jackson County School District No. 9, Medford School District 549C, and Phoenix-Talent School District No. 4), and irrigation district (Eagle Point, Medford, Rogue River, and Talent Irriga-

9   tion Districts) in the Region, plus the Medford Water Commission, the Rogue Valley Metropolitan Planning Organization, Rogue Valley Sewer Services, Rogue Valley Transportation District, and the appropriate state agencies (DLCD, ODOT, ODA, ODHCS, OECDD, and DEQ);

12   and

WHEREAS the stakeholders mentioned above chose to exercise different levels of participation and responsibility within the planning process, the "participants" (as the

15   term is employed in ORS 197.656(2)(b)), are those jurisdictions and agencies that elect, by signing this Agreement, to implement the regional solutions to the regional problems identified hereinafter; and

18   WHEREAS signatory participants (Signatories) have chosen to exercise different levels of activity and responsibility within the implementation phase of the adopted Plan, Implementing Signatories are those participants which will amend their comprehensive

21   plans per Section VI (3) of this Agreement to implement the adopted Plan, and Supporting Signatories are those participants which will otherwise support the implementation of the adopted Plan; and

24   WHEREAS the Implementing Signatories are Jackson County and the cities of Eagle Point, Medford, Central Point, Phoenix, Talent, Jacksonville, and Ashland; and Supporting Signatories are the Rogue Valley Sewer Services (RVS), the Rogue Valley Metropoli-

27   tan Planning Organization (RVMPO), the Land Conservation and Development Commission (LCDC), and signatory state agencies; and

WHEREAS this Agreement is intended to serve as the basis for amendments to

30   the comprehensive plans and land use regulations of the Implementing Signatories in compliance with ORS 197.656.

AGREEMENT

33   NOW, THEREFORE, the parties to this Agreement agree to propose comprehensive plan and land use regulation amendment processes based on the attached draft Plan (Exhibit A). With this agreement, participants acknowledge that, notwithstanding the fact

36   that the draft Plan is the result of eight years of collaborative and jurisdiction-specific planning, it may become necessary to make adjustments to the draft Plan as a result of the comprehensive plan amendment process.

39

I.   Recitals

The recitals set forth above are true and correct and are incorporated herein by this reference.

II.   General Agreement

Signatories to this Agreement agree to abide by a Plan developed under Regional Problem Solving, as adopted by Implementing Signatories into their comprehensive plans, and acknowledged by the State of Oregon. Implementing Signatories agree to maintain internal consistency with the adopted Plan on an ongoing basis, and when necessary and appropriate, either to amend their comprehensive plans and related policies, codes, and regulations to be consistent with the adopted Plan, or to pursue amendments to the adopted Plan. The Land Conservation and Development Commission (LCDC) agrees to review the Implementing Signatories' comprehensive plan and land use regulation amendments under ORS 197.656(2), and agrees that this Agreement contains the elements required by ORS 197.656(2)(b). Notwithstanding the generality of the foregoing provision and any other provision of this Agreement, however, LCDC retains its full discretion and authority with respect to its review of the adopted Plan, or any amendments to the adopted Plan, and with respect to its review of the amendments to comprehensive plans and land use regulations that the Implementing Signatory Jurisdictions adopt to implement the adopted Plan. The adopted Plan shall be what is adopted as a result of Jackson County's comprehensive plan amendment process.

The process for amending the comprehensive plans of Jackson County and Implementing Signatories is described in the attached work program (Exhibit B), which details the tasks and timing necessary to coordinate the initial comprehensive plan amendments necessary to adopt the Plan.

Per ORS 197.656, all amendments to the adopted Plan will be subject to review by LCDC in the manner of periodic review or as set forth in ORS 197.251.

III.   Statement of Problems to be Addressed   [ORS 197.656]

The parties to the Greater Bear Creek Valley RPS process (the "Project") identified three problems to be addressed by the Project:

Problem No. 1

Lack of a Mechanism for Coordinated Regional Growth Planning

The Region will continue to be subjected in the future to growth pressures that will require the active collaboration of jurisdictions within the Greater Bear Creek Valley. A mechanism is needed that accomplishes this without infringing on individual jurisdictional authority and/or autonomy. This Problem No. 1 shall be referred to hereinafter as "Coordinated Growth Management."

Problem No. 2

Loss of Valuable Farm and Forest Land Caused by Urban Expansion

As our communities have expanded incrementally, there has been a tendency to convert important farm and forest lands to urban uses while bypassing lands with significantly less value as resource lands. This has been exacerbated by the Region's special characteristics and historic settlement patterns, which can cause some state regulations governing urban growth to have unintended consequences, some of them contrary to the intent of Oregon's Statewide Planning Goals. This Problem No. 2 shall be referred to hereinafter as the "Preservation of Valuable Resource Lands."

Problem No. 3

Loss of Community Identity

Urban growth boundary expansions have contributed to a decreasing separation between some of the communities in the Region, which jeopardizes important aspects of these jurisdictions' sense of community and identity. This Problem No. 3 shall be referred to hereinafter as the "Preservation of Community Identity."

IV.   Project Goals   [ORS 197.656(2)(A)]

The parties to this Agreement have adopted the following Goals with respect to the Problems:

Goal No. 1

Manage future regional growth for the greater public good.

Goal No. 2

Conserve resource and open space lands for their important economic, cultural, and livability benefits.

Goal No. 3

Recognize and emphasize the individual identity, unique features, and relative comparative advantages and disadvantages of each community within the Region.

V.   Optional Techniques for Implementation[1] [ORS 197.656(2)(B)]

These optional techniques for implementation are those identified as appropriate for implementation of the draft Plan. As stated in the Recitals, it may become necessary to make adjustments to the draft Plan, and potentially these optional techniques for implementation, as a result of the public comprehensive plan amendment process.

A.   **Problem No. 1**   *Lack of a Mechanism for Coordinated Regional Growth Planning*

           Goal No. 1   *Manage future regional growth for the greater public good.*

<u>Optional Implementation Techniques</u>

(1)   **Coordinated Periodic Review**

Implementing Signatories may engage in a coordinated schedule of regular Periodic Reviews following the adoption of the Plan. This regionally coordinated Periodic Review will begin in 2012, will take place every 10 years, and will coincide with the ten-year regular review of the adopted Plan. This coordinated Periodic Review will provide an opportunity to take advantage of an economy of scale in generating technical information, and to incorporate a regional perspective in the Periodic Review process, but it does not mandate a simultaneous or linked process among jurisdictions.

(2)   **Ten-year RPS Review**

Implementing Signatories will abide by the review process described in Section VI of this Agreement. The review process complies with the monitoring requirement in the RPS statute, and affords participating jurisdictions flexibility in responding to changing regional and local circumstances by establishing a process and venue for amending the adopted Plan.

(3)   **Coordinated Population Allocation**

Jackson County's allocation of future population growth, a state-mandated responsibility of the County, will reflect the Implementing Signatories' proportional allocation of future population within the adopted Plan and its future amendments consistent with statute.

(4)   **Greater Coordination with the RVMPO**

As a proven mechanism of regional collaborative planning in the study area, the RVMPO, as the federally designated transportation planning entity, will plan and coordinate the regionally significant transportation strategies critical to the success of the adopted Plan. Of special focus will

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[1] Where "optional techniques for implementation" refers to strategies and mechanisms to implement regional solutions that are in compliance with the statewide goals and statutes, but which may not strictly adhere to Oregon Administrative Rules.

3
be the development of mechanisms to preserve rights-of-way for major transportation infrastructure, and a means of creating supplemental funding for regionally significant transportation projects.

B.   **Problem No. 2**   *Loss of Valuable Farm and Forest Land Caused by Urban Expansion*

6
Goal No. 2   *Conserve resource and open space lands for their important economic, cultural, and livability benefits.*

Optional Implementation Techniques

9
(1)   **Long-Range Urban Reserves**

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The establishment of Urban Reserves sufficient to serve a doubling of the Region's urban population will allow long-term production decisions to be made on agricultural land not included in urban reserves.

(2)   **Regional Agricultural Buffering Standards**

15
Implementing Signatories will apply the adopted Plan's set of agricultural buffering standards as a means of mitigating negative impacts arising from the rural/urban interface.

(3)   **Critical Open Space Area (COSA) Preservation**

18
The COSA strategies outlined in Appendix IX of the draft Plan are available as an option to Signatory jurisdictions interested in further accentu-

21
ating or more permanently preserving areas of separation between communities (community buffers). These COSA strategies are not mandatory for any jurisdiction, and may be refined or expanded as individual jurisdictions see fit.

24   **C.**   **Problem No. 3**   *Loss of Community Identity*

Goal No. 3   *Recognize and emphasize the individual identity, unique features, and relative comparative advantages and disadvantages*

27
of each community within the Region.

Optional Implementation Techniques

(1)   **Community Buffers**

30
The establishment of Urban Reserves outside of recommended areas of critical open space provides for a basic level of preservation for the Region's important areas of community separation.

33
(2)   **Allocating to Comparative Advantages**

The Region agrees to a distribution of the calculated need of residential and employment lands among Implementing Signatories necessary to

36
support a regional doubling of the population. This distribution, which
depends on a number of factors that relate to the comparative strengths

3

and weaknesses of Implementing Signatories, will allow each community to develop its own balance of viability and individuality within the larger regional matrix.

(3)   **Critical Open Space Area (COSA) Preservation**

6

The COSA strategies outlined in Appendix IX of the draft Plan are available as an option to Signatory jurisdictions interested in further accentuating or more permanently preserving areas of separation between communities (community buffers). These COSA strategies are not mandatory for any jurisdiction, and may be refined or expanded as individual jurisdictions see fit.

9

VI.   **Measurable Performance Indicators**   [ORS 197.656(2)(C)]

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These measurable performance indicators are those identified as appropriate for monitoring purposes of the adopted Plan. As stated in prior sections, it may become necessary to make adjustments to the draft Plan, and potentially these measurable performance indicators, as a result of the comprehensive plan amendment process.

15

The following are measurable performance indicators:

1)   On a regular basis, every 10 years starting in 2012, the Implementing Signatories may participate in a process of coordinated Periodic Review.

18

2)   On a regular basis, every 10 years starting in 2012, Implementing Signatories to this Agreement will be subject to the regular RPS review process. Jackson County shall initiate the RPS review process by providing notice of the RPS review to Signatories to this Agreement and requiring that each Implementing Signatory submit a self-evaluation monitoring report addressing compliance with the performance indicators set out in this Section to the County within 60 days after the date of the notice. Jackson County will distribute these monitoring reports to all Signatories.

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24

27

3)   Implementing Signatory cities will incorporate the portions of the RPS adopted Plan that are applicable to each individual Implementing Signatory city into that city's comprehensive plan and implementing ordinances, and will reference the larger regional Plan as an adopted element of Jackson County's comprehensive plan. To incorporate applicable portions of the RPS adopted Plan into their comprehensive plans and implementing ordinances, Implementing Signatory cities will adopt at least the following:

30

33

a)   RPS Plan policies adopted to comply with Section X(2) of this Agreement;

36

b)   10-year mandated review period;

c)   urban reserve areas (if appropriate);

39

d) target residential densities (for the urban reserve areas);

e) agricultural buffering standards (for the urban reserve areas);

f) implementing ordinances (for the urban reserve areas).

4) Implementing Signatories will comply with the general conditions as listed in Section X of this Agreement, and, as appropriate, the specific conditions of approval for selected urban reserves, as described in the adopted Plan.

5) Implementing Signatory jurisdictions serving or projected to serve a designated urban reserve will adopt an Urban Reserve Management Agreement (URMA) jointly with Jackson County.

6) Urban reserves identified in the adopted Plan are the *first-priority* lands used for UGB expansions by Implementing Signatories.

7) Implementing Signatory cities, when applying urban designations and zones to urban reserve land included in UGB expansions, will achieve, on average over a 20-year planning horizon, at least the "higher land need" residential densities in the adopted RPS Plan for buildable land as defined by OAR 660-008-0005(2). The density offset strategy outlined in the draft Plan is an acceptable mechanism to assist in meeting density targets.

8) Implementing Signatory cities, when applying urban designations and zones to urban reserve land included in a UGB expansion, will be guided by the general distribution of land uses proposed in the adopted RPS Plan, especially where a specific set of land uses were part of a compelling urban-based rationale for designating RLRC land as part of a city's set of urban reserves.

9) Conceptual plans for urban reserves will be developed in sufficient detail to allow the Region to determine the sizing and location of regionally significant transportation infrastructure. This information should be determined early enough in the planning and development cycle that the identified regionally significant transportation corridors can be protected as cost-effectively as possible by available strategies and funding. Conceptual plans for an urban reserve in the RPS Plan are not required to be completed at the time of adoption of a comprehensive plan amendment incorporating urban reserves into a city or county comprehensive plan.

10) The county's population element is updated per statute to be consistent with the gradual implementation of the adopted Plan.

VII.   Incentives and Disincentives to Achieving Goals

[ORS 197.656(2)(D)]

These incentives and disincentives are those identified as appropriate to the draft Plan. As stated in prior sections, it may become necessary to make adjustments to the draft Plan, and potentially these incentives and disincentives, as a result of the public comprehensive plan amendment process.

Incentives

1)   Continued regional cooperation through the 10-year review process and coordinated Periodic Review may improve the Region's ability to respond to challenges and opportunities more effectively than it does presently.

2)   Adherence to the adopted Plan may provide the Region with a competitive advantage, increase the attractiveness of the Region to long-term investment, and improve southern Oregon's profile in the state.

3)   Adherence to the adopted Plan may produce significant reductions in transportation infrastructure costs by minimizing future right-of-way acquisition costs and by improving the overall long-range coordination of transportation and land use planning.

4)   Adherence to the adopted Plan will provide Signatory jurisdictions with population allocations that are predictable, transparent, and based on the relative strengths of the different participating jurisdictions.

5)   The adopted Plan will offer compelling regional justifications and state agency support for Tolo and the South Valley Employment Center that may not have been available to an individual city's proposal.

6)   Adherence to the adopted Plan will permit Implementing Signatories to implement the flexibility provided by the concept of the "Regional Community", in which cities, in the role of "regional neighborhoods", enjoy a wide latitude in their particular mix, concentration, and intensity of land uses, as long as the sum of the regional parts contributes to a viable balance of land uses that is functional and attractive to residents and employers and in compliance with statewide goals.

Disincentives

1)   Implementing Signatories that choose to expand their UGBs into land not designated as urban reserve will be required to go through the RPS Plan minor or major amendment process prior to or concurrent with any other process.

RPS Plan Amendments

Processing amendments to the adopted Plan will be the responsibility of Jackson County, and can only be proposed by the governing authority of an Implementing Signatory jurisdiction. In acknowledgement of the collaborative process by which the adopted Plan was created, Jackson County will have available the assistance of the signatories to this Agreement through a Technical Advisory Committee and Policy Committee. Both committees serve on an as-needed basis, and both serve in an advisory capacity to Jackson County.

(a)   Technical Advisory Committee

The TAC will comprise planners and senior-level staff from signatory jurisdictions and agencies, and each signatory will have one vote, irrespective of the number of participating representatives. Recommendations to the Policy Committee or directly to Jackson County will be made by at least a supermajority vote (simple majority plus one) of attending signatory jurisdictions and agencies.

(b)   Policy Committee

The Policy Committee will comprise elected officials or executive staff from signatory jurisdictions and agencies. Each Implementing Signatory jurisdiction will designate a voting and alternate voting member, and each Implementing Signatory jurisdiction will have one vote. Recommendations to Jackson County will be made by at least a supermajority vote (simple majority plus one) of attending Implementing Signatories. Attending jurisdictions must constitute a quorum of Implementing Signatories. Supporting Signatories (State agencies, the RVMPO, LCDC, and Rogue Valley Sewer Services), while Signatories, will not be voting members of the Policy Committee.

When an amendment to the adopted RPS Plan is proposed, Jackson County will make a preliminary determination regarding whether the proposed amendment is a Minor Amendment or Major Amendment, as defined below, and will notify signatory jurisdictions of the County's preliminary determination. Based on its preliminary determination, Jackson County will review the proposed amendment according to the procedures for Minor Amendments or Major Amendments set out below.

Per ORS 197.656, all amendments to the adopted Plan will be subject to review by LCDC in the manner of periodic review or as set forth in ORS 197.251.

Proposed amendments to the adopted Plan will adhere to the following provisions:

1)   Minor Amendment

A minor amendment is defined as any request for an amendment to the adopted Plan that:

a)   does not conflict with the general conditions listed in Section X of this Agreement or specific conditions of approval described in the adopted RPS Plan; and

b) does not propose an addition of more than 50 acres to a city's urban reserves established for a city in the adopted RPS Plan or more than a 50-acre expansion of the UGB into non-urban reserve rural land.

In the case of Ashland, which did not establish urban reserves during the development of the Plan process, a proposal to establish an urban reserve or expand its UGB of not more than 50 acres will be considered a minor amendment.

Should a city exceed its limit of 50 acres for adding *to its urban reserves* during the term of the Agreement, it may not use the minor amendment process for further alterations to its urban reserves. Should a city exceed its limit of 50 acres for expanding its UGB into non-urban reserve rural land during the planning horizon, it may not use the minor amendment process for further expansions of its UGB into non-urban reserve land.

Any Implementing Signatory may initiate a minor amendment to the adopted Plan. The Implementing Signatory must clearly identify the nature of the minor amendment, and specify whether the minor amendment would require any other Implementing Signatory to amend its comprehensive plan. Should any Implementing Signatory other than the proposing jurisdiction and Jackson County be required to amend their comprehensive plans as a result of the proposed minor amendment, the affected Implementing Signatory will be a party to the minor amendment proceeding.

Jackson County's process for a minor amendment to the Plan will be equivalent to the state and local required processes for a comprehensive plan amendment.

Signatory jurisdictions and agencies shall be provided with notice of the County's final decision on each minor amendment request within five working days of the adoption of the final decision.

2) Major Amendment

A major amendment is defined as any requested amendment to the adopted Plan that does not meet the definition of a Minor Amendment.

a) If multiple signatory jurisdictions are involved in a single request for a major amendment, a lead jurisdiction will be selected by the affected jurisdictions;

b) notice containing a detailed description of the proposed change will be forwarded by Jackson County to all signatory jurisdictions and agencies;

c) staff from signatory jurisdictions and agencies will be noticed, and will meet as a Technical Advisory Committee and generate a recommendation to the Policy Committee by vote of at least a supermajority of those present (simple majority plus one);

3

d) decision-makers from signatory jurisdictions and agencies will be noticed, and will meet as a Policy Committee and consider the proposal and the Technical Advisory Committee recommendation. Attending jurisdictions will constitute a quorum; and

6

e) the Policy Committee will generate a recommendation to Jackson County by vote of at least a supermajority of those present (simple majority plus one).

9

Jackson County's process for a major amendment to the Plan will be equivalent to the state and local required process for a comprehensive plan amendment in addition to the above provisions. Noticing will be in compliance with State statutes.

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All parties to this agreement and any additional affected agencies shall be provided with notice of the County's final decision on each major amendment request within five working days of the adoption of the final decision.

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IX. Newly Incorporated City

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Should White City or some other area of Jackson County within the area of the adopted Plan incorporate while the adopted Plan is in effect, and should the newly incorporated city desire to become a signatory to the Agreement, increased population will be added to the regional target population adequate to accommodate the projected population growth of the newly incorporated city for the remainder of the adopted Plan's planning horizon. The addition of a newly incorporated city to the adopted Plan, the establishment of urban reserves, and other such actions shall be accomplished through the major amendment process.

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X. Conditions to Agreement

General Conditions

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The Signatories agree that the adopted Plan shall comply with the general conditions listed below, which apply to all Implementing Signatories. These general conditions are those which have been identified as appropriate to the adopted Plan. As stated in prior sections, it may become necessary to make adjustments to the draft Plan, and potentially these general conditions, as a result of the public comprehensive plan amendment process.

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1) Agricultural Buffering

Where appropriate, Implementing Signatories shall apply the agricultural buffering guidelines developed through the Regional Problem Solving process.

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2)   Transportation

The adopted Plan shall include policies to:

a)   Identify a general network of locally owned regionally significant north-south and east-west arterials and associated projects to provide mobility throughout the Region.

b)   Designate and protect corridors for locally owned regionally significant arterials and associated projects within the RVMPO to ensure adequate transportation connectivity, multimodal use, and minimize right of way costs.

c)   Establish a means of providing supplemental transportation funding to mitigate impacts arising from future growth.

These policies shall be implemented by ordinance upon the adoption of the latest update of the Rogue Valley Metropolitan Planning Organization's Regional Transportation Plan and the local adoption of the RPS Plan through individual city and county Comprehensive Plan amendments. Implementing Signatory cities will incorporate the portions of the RPS Plan relative to transportation that are applicable to each individual city into that city's comprehensive plan and implementing ordinances, and will reference the larger regional plan as an adopted element of Jackson County's comprehensive plan.

Conditions of Approval

Specific conditions of approval apply to selected urban reserve areas, and are described in the adopted Plan. The Implementing Signatories agree to abide by these conditions. As stated in prior sections, it may become necessary to make adjustments to the draft Plan, and potentially the conditions of approval, as a result of the public comprehensive plan amendment process.

XI.   Amendments to the Agreement

For the purpose of maintaining consistency with the RPS Statue (ORS 197.656) amendments to the Agreement can be made at any time by consensus (all parties in agreement) of the Signatories to the Agreement.

Under this section, "signatories" refers to all signatories to the Agreement except the Land Conservation and Development Commission (LCDC). In addition, nothing in this section, or this Agreement, is intended to affect the authority of LCDC to review an amendment to this Agreement as required under ORS 197.656.

XII.   Termination of Participation

A signatory to the Agreement may petition Jackson County for termination of its participation in the Agreement. Jackson County will convene a meeting of the Policy Committee to consider such a petition. A signatory's petition may be granted by a supermajority (simple majority plus one) of the Signatories to the Agreement. A signatory that has terminated its participation with the consent of a supermajority of the signatories to the Agreement shall not be considered to have failed to adhere to the adopted Plan.

Should an Implementing Signatory terminate its participation in the Agreement without approval of the supermajority of signatories to the Agreement, it will be considered to have failed to adhere to the adopted Plan, and may be subject to the Disincentives in Section VII and applicable legal and legislative repercussions. For remaining signatories, the validity of this Agreement will not be adversely impacted by an Implementing Signatory's termination of participation, by supermajority decision or otherwise.

Under this section, "signatories" refers to all signatories to the Agreement except the Land Conservation and Development Commission (LCDC).

XIII.   Termination of the Agreement

This agreement may be terminated when one or more of the following occur(s):

1)   A supermajority (simple majority plus one) of Signatories agree that the Agreement is terminated;

2)   LCDC denies acknowledgment of the Plan;

3)   The doubled regional population is reached;

4)   50 years have passed since the Agreement was signed.

No signatory will be penalized under the conditions of this Agreement due to a supermajority decision to terminate.

Under this section, "signatories" refers to all signatories to the Agreement except the Land Conservation and Development Commission (LCDC).

XIV.   Applicability

Implementing Signatories to this agreement agree that necessary amendments to their comprehensive plans will occur as required by the Plan, and that the Plan is in effect for each jurisdiction at the time that its and Jackson County's implementing comprehensive plan amendments and land use regulations are adopted and acknowledged.

Once the RPS plan is implemented by the appropriate comprehensive plan amendments and land use regulations, an Implementing Signatory's failure to adhere to the Plan as adopted

or subsequently amended will expose that jurisdiction to the usual legal and legislative re-
percussions from non-compliance with acknowledged comprehensive plans.

3   Signatories to this agreement acknowledge that statutory authority over land use regulation
      ultimately resides with the Oregon legislature. Additionally, signatories to this agreement
      recognize that the provisions of the Plan may be determined in the future to be in conflict
6   with existing or yet to be adopted statutes or administrative rules.

      Signatories to this agreement expressly recognize that land use regulations and actions
      must otherwise comport with the statutes and other applicable regulations of the State of
9   Oregon other than those LCDC regulations for which the adopted RPS Plan authorizes less
      than full compliance.

      Therefore, Signatories agree that, when conflicts between statute and other applicable regu-
12   lations of the State of Oregon (other than those LCDC regulations for which the adopted
      Plan authorizes less than full compliance) and the Plan arise, Oregon statute shall prevail.

XV.   Severability

15   Any provision or part of the Agreement held to be void or unenforceable under
      any Law or Regulation shall be deemed stricken and all remaining provisions shall continue
      to be valid and binding upon the parties. The Agreement shall be reformed to replace such
18   stricken provision or part thereof with a valid and enforceable provision that comes as close
      as possible to expressing the intention of the stricken provision.

XVI.   Entire Agreement

21   This Agreement contains the entire agreement between the parties and super-
      sedes all prior negotiations, discussions, obligations, and rights of the parties regarding the
      subject matter of this agreement. There is no other written or oral understanding between
24   the parties. No modification, amendment or alteration of this Agreement shall be valid un-
      less it is in writing and signed by the parties hereto.

XVII.   Counterparts

27   This Agreement may be signed in counterpart by the parties, each of which shall
      be deemed original, but all of which together shall constitute one and the same instrument,
      binding on all parties hereto.

XVIII.   Authority to Execute Agreement

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            Each person signing of behalf of a governmental entity hereby declares that he
      or she, or it has the authority to sign on behalf of his or her or its respective entity and
33   agrees to hold the other party or parties hereto harmless if he or she or it does not have
      such authority.

Greater Bear Creek Valley Regional Problem Solving Agreement

Implementing Signatories

_____
Chairman,
Jackson County Board of Commissioners

_____
Mayor, City of Ashland

_____
Mayor, City of Talent

_____
Mayor, City of Phoenix

_____
Mayor, City of Medford

_____
Mayor, City of Jacksonville

_____
Mayor, City of Central Point

_____
Mayor, City of Eagle Point

Supporting Signatories

_____
Director, Oregon Department of Land
Conservation and Development

_____
Director, Oregon Department of
Transportation

_____
Director, Oregon Department of
Environmental Quality

_____
Director, Oregon Economic and
Community Development Department

_____
Director, Oregon Department of
Agriculture

_____
Director, Oregon Housing and Community
Development Department

_____
Chair, Rogue Valley Metropolitan
Planning Organization

_____
Chair, Rogue Valley Sewer Services

_____
Chair, Land Conservation and
Development Commission

_____
General Manager, Rogue Valley Sewer
Services

Sample Memorandum of Understanding, Greater Bear Creek Valley: Regional Problem Solving

RESOLUTION NO. 00-01
One Valley Regional Problem Solving Project

A resolution of the Policy Committee (hereinafter "Committee") of the Greater Bear Creek Area Regional Problem Solving Process (hereinafter "RPS" or "RPS project") affirming policies and procedures relating to RPS:

WHEREAS:

1. The jurisdictions of Jackson County, Medford, Eagle Point, White City, Jacksonville, Central Point, Phoenix, Talent and Ashland; local agencies BCVSA (Bear Creek Valley Sanitary Authority) and MWC (Medford Water Commission); and state agencies such as DLCD (Department of Land Conservation and Development), ODOT (Oregon Department of Transportation), OECDD (Oregon Economic and Community Development Department), DEQ (Department of Environmental Quality), HCS (Housing and Community Services), ODA (Oregon Department of Agriculture), and ODF (Oregon Department of Forestry) have entered into a regional land use planning process the purpose of which is to collaboratively identify areas of Jackson County in which future growth at urban levels of density is and is not desirable or appropriate; and

2. The Committee anticipates the process will result in agreements by and between participants upon where urban levels of growth will eventually occur, how such lands will be governed and managed by participants prior to annexation and urbanization, and what lands should be protected against development at urban densities; and

3. The Committee understands that this resolution applies to the project's time period as presented in the "**One Valley** Regional Problem Solving Work Plan and Timeline", and that the Committee assumes this RPS project will be of the scope and duration as presented therein (within a range of flexibility as granted by the Policy Committee);

NOW, THEREFORE, THE COMMITTEE RESOLVES:

Responsibility for completing and overseeing work tasks, for public participation, for project management, and for establishing and implementing policies are distributed among the project's committees, jurisdictions, and state and local agencies as follows:

> Participating Jurisdictions and Agencies
> Policy Committee
> Technical Committee
> Resource Lands Review Committee (RLRC)
> Project Citizen Involvement Committee (pCIC)
> Jurisdiction-specific Citizen Involvement Committee (jcic)
> Rogue Valley Council of Governments

The role of each of these shall be:

Participating Jurisdictions and Agencies
Lead Responsibilities
Provide timely feedback of concerns, issues, or recommendations to the project through the corresponding Policy or Technical Committee members.

Facilitate the project's approval/adoption process.

Keep informed of the project's process and products.

Policy Committee
Lead Responsibilities
As individual members of the Policy Committee, serve as the project's advocate in the community at large and before each participating jurisdiction or agency's decision makers.

Establish and/or approve project policies and processes.

Review work products and recommendations from Technical Committee, and either approve or recommend adjustments.

Direct the process of garnering on-going support and final plan approval of participating jurisdictions and state and local agencies.

Make recommendations to RVCOG on project and budget management issues as appropriate.

Direct the process of seeking funding to continue project to completion and implementation following June 2001, providing participating jurisdictions are satisfied with progress to date.

Monitor the useful involvement of each jurisdiction's own citizen involvement committee (jcic).

Technical Committee
Lead Responsibilities
As individual members of the Technical Committee, serve as the project's advocate in the community at large and before each participating jurisdiction or agency's decision makers.

Prepare, or direct RVCOG to prepare when appropriate, final work products or recommendations for Policy Committee approval.

Serve as the principle implementor and conduit of project work between the Policy Committee and the pCIC and RLRC, and between Policy Committee and State.

Implement project-related policies of the Policy Committee.

Take the lead on coordinating work on all RLRC and pCIC work tasks, and other tasks as specified in the project scope of work.

Provide on-going feedback to the RLRC and pCIC on the use to which their recommendations are being put during the development of the project.

Make recommendations to RVCOG on project management issues as necessary.

Resource Lands Review Committee (RLRC)
Lead Responsibilities
As per state statute, make expert recommendations concerning any contemplated changes to the commercial resource land base (resource lands put to other uses).

Forward a recommendation to the Technical Committee identifying the study area's most valuable farmland (and other resource land if applicable).

Coordinated Task Responsibilities
Make recommendations concerning the need and nature of a protective overlay for the identified valuable agricultural lands.

Task Review Responsibilities
Review the draft growth and non-growth plans.

Project Citizen Involvement Committee (pCIC)
Lead Responsibilities
Provide a significant opportunity for broad-based public input.

Forward a recommendation to the Technical Committee identifying the study area's most valuable open space.

Coordinated Responsibilities
Recommend viable means of financing public open space if appropriate.

Identify the need and nature of a protective overlay or zone for the identified valuable open space lands.

Make recommendations concerning a future best case jobs/housing balance.

Examine the study area's population potential after 2050, and possible limiting factors.

Examine future in-fill and redevelopment potentials.

Establish buffer area design standards.

Task Review Responsibilities
Regionally coordinated periodic review proposal

Major infrastructure sequential growth plan.

Preliminary allocations of future growth areas to jurisdictions;

Draft growth and non-growth plans

Jurisdiction-specific Citizen Involvement Committee (jcic)
Lead Responsibilities
To the extent appropriate for, and determined by, each jurisdiction:

Review the progress of the project work tasks, and provide feedback to the project through the appropriate Policy or Technical Committee member.

Focus on jurisdiction-specific issues, and provide feedback as above.

Provide the opportunity for the local public to become informed about, and have input in, the project and its process.

Rogue Valley Council of Governments (RVCOG)
Lead Responsibilities
Contract management with DLCD.

Daily project and individual task management.

Budget management, including expenditure reports and budget changes.

Coordination between all committees, and between the project and all participating jurisdictions and agencies.

Unanimously approved by voting members of the Committee this seventh day of November, 2000.

_____

Recording Secretary

Step 2 – Community Outcomes and Evaluation Criteria

Sample Guiding Principles

Guiding Principles for scenario planning are typically established in collaboration with an advisory committee that has been convened to support the planning process or are drawn from existing plans of local jurisdictions. Guiding principles are developed to ensure that planning recommendations and strategies reflect and support the core values of the community. Having a clear understanding and consensus of the public's values ensures that the recommendations and strategies within the plan are consistent with these values.

Scenario planning as it relates to HB 2001 and SB 1059 has a clear goal to explore how to reduce greenhouse gas (GHG) emissions of light vehicles using a variety of land use and transportation strategies. A broader discussion of community priorities can yield better overall project clarity and direction for the scenario process.

Guiding principles for a scenario planning project will likely vary among metropolitan areas. However, there are some common themes that tend to emerge. Included is a sample selection of guiding principles that have been used successfully in plans throughout Oregon and in other states. The following example guiding principles are listed under six themes:

- Land Use
- Transportation
- Community and Housing
- Economy
- Equity and Opportunity
- Environment

LAND USE

- Use urban, rural lands and the lands that have the potential to become urban, efficiently.

- Encourage orderly and efficient conversion of land from rural to urban uses in response to urban needs, taking into account metropolitan area and statewide goals.

- Protect rural lands best suited for non-urban uses from incompatible urban encroachment.

TRANSPORTATION

- The transportation network ensures safe and efficient travel.

- Neighborhoods should be served by a variety of transportation options, walking, biking, and public transit in addition to the use of the automobile.

- Navigation is simplified through signage, lighting and pathways.

- Neighborhoods should be walkable with safe and continuous sidewalks, a variety of routes, and good access to transit corridors.

COMMUNITY & HOUSING

- The metropolitan area is the kind of place where newcomers can move, find a home, and join the community.

- New development should respect and be compatible with the quality of life already enjoyed.

- Future development should protect historic buildings, neighborhoods and resources while allowing for continued use and enhancement of urban areas and the creation of new mixed use centers.

- New development should be designed to complement and enhance existing neighborhoods; it should add new and diverse choices, both in style and cost, for housing, shopping, entertainment, and other amenities.

- New neighborhoods on previously undeveloped land should be planned to provide a range of housing, employment, and shopping choices.

- There should be opportunities for all residents to shop for basic needs, such as grocery stores and pharmacies.

- Government policy should be clear and result in predicable development. Regulations should provide for the type of development residents want to see built and should be implemented consistently and fairly.

- New and existing employment centers should include shopping and after-hours activities as well as housing, so they become richer more vibrant places throughout the day and night.

ECONOMY

- Economic development efforts recognize the important role that the quality of life, natural beauty, diversity and uniqueness of the region play in attracting and keeping businesses and employees.

- Economic success requires long-range planning to anticipate the infrastructure investment necessary to attract and keep companies in the region, including transportation, water, electric power and telecommunications.

- New centers of employment should be located so as to make efficient use of existing transportation and other infrastructure and minimize the travel time and distance for employees.

- Residents have an opportunity to obtain affordable housing that is conveniently located near their places of employment.

- A quality of life and financial climate is fostered to encourage businesses to start up or expand.

EQUITY AND OPPORTUNITY

- Communities shall strive for inclusivity, a variety of income levels, and be accessible to all races, cultures, and ethnicities.

- Access to quality childcare, housing, jobs, healthcare, education, and basic needs shall be available to all.

- Everyone should have access to parks and open spaces.

- Ensure there is opportunity for small, medium-sized and minority owned businesses.

- A range of housing, employment, transportation, education and health care available across incomes, ethnicities, and cultures.

- All people and places should benefit from the regional prosperity while preserving a sense of place in Oregon's many unique cities, town and rural places.

ENVIRONMENT

- Development patterns should preserve important environmentally sensitive and plentiful scenic lands.

- New buildings should meet high standards for energy, water, and carbon efficiency while delivering high quality spaces for people.

- Growth should not significantly degrade, and should, if possible, enhance the quality of the region's air and water.

- Ensure that there are parks, trails and open spaces that are easily accessible to residents throughout the community.

- Consider open space as essential infrastructure just like sewer, water and roadways.

- Create and maintain a regional greenspace network, comprised of connected open spaces, trails, and extensive parks. Accommodate sustainable design in City works projects.

Potential Evaluation Criteria

Evaluation criteria are used to measure the performance of various land use and transportation strategies through comparison of the scenarios. They can be grouped into thematic topics that link core community values (guiding principles) directly to the criteria by which scenarios will be evaluated. They show measures that can be calculated by the tools being utilized in the scenario planning process. The table below presents a list of criteria that exceeds what is required for GHG related scenario planning. However, there may be some measures that should be included to assess some of the co-benefits important to the region that can come from scenario planning.

Evaluation Criteria	Unit of Measure
Growth and Land Consumption	
Urbanization Pattern	
• Urbanized acreage	Acreage or square miles
o Per capita	
o Per housing unit	
o Per job	
• Proportion of development on vacant land	Percentage and actual acreage
• Proportion of development on redeveloped land	Percentage and actual acreage
• Density for the metropolitan area or sub-geographies	People per square mile or units per acre for smaller areas
Evaluation Criteria	**Unit of Measure**
Transportation	
Travel and Commuting	
• Vehicle Miles Traveled (total, per capita, etc.)	Miles
• Mode Split	Percentages and number of trips
o walk	
o bike	
o transit	
o passenger	
o drive alone	
• Average trip time	Minutes
• Average trip distance	Miles
• Annual average transportation cost per household	Dollars
• % of households with access to Transit (rail and bus)	Percentage
• % of jobs with access to Transit (rail and bus)	Percentage
Active Transportation	
• Walkable areas	
o Share of Households	Percentage and total number

○ Share of Jobs	Percentage and total number
• Complete Neighborhoods	
○ Share of Households	Percentage and total number
○ Share of Jobs	Percentage and total number
• Average minutes walking per person per day	Minutes
• Average minutes biking per person per day	Minutes
• Households within walking distance of:	
○ Parks	Percentage and total number
○ Schools	Percentage and total number
○ Cultural amenities	Percentage and total number
○ Parks and open space	Percentage and total number
○ Amenities (arts, museums, theaters, hospitals, etc)	Percentage and total number
Transportation Impacts	
• Greenhouse Gas Emissions	
○ % of target met	Percentage
Housing	
Housing Mix	
• Single Family	Percentage and total number
• Townhouse	Percentage and total number
• Multi-family	Percentage and total number
• % ground related	Percentage and total number
• Owner vs. renter	Percentage and total number
Total Buildings	
• Units by building type	Number of units
Housing Affordability	
• Housing match/gap	Ratio - units
• Housing Cost	Average rent and sales price
• Transportation plus housing cost	Dollars
Shared Prosperity	
• Average wage	Dollars
• Median household income	Dollars
• Low-income areas	
○ Households added	Percentage and total number
○ Employment added	Percentage and total number
○ Redevelopment rates	Percentage and total number
○ Accessibility to employment	Percentage and total number based on timed drive and walksheds
○ Accessibility to parks, open space, beaches,	Percentage and total number based

amenities	on timed drive and walksheds
• Access to healthcare	Percentage and total number based on timed drive and walksheds
Natural Environment & Sustainability	
Sensitive Lands	
• Amount of growth on environmentally sensitive lands	Percentage and acreage
• Amount of growth on agricultural land (inside and outside of UGB)	Percentage and acreage
Hazard Mitigation	
• Amount of growth in wildfire risk areas	Percentage and acreage
• Amount of growth in landslide risk areas	Percentage and acreage
• Amount of growth in earthquake hazards (as defined by Dogami)	Percentage and acreage
Built Environment & Sustainability	
• Total urban water consumption	
o Per capita	Acre feet or Gallons
o Per housing unit	Acre feet or Gallons
o Internal and external	Acre feet or Gallons
• Total energy consumption	
o Per capita	Kilowatts or BTUs
o Per housing unit	Kilowatts or BTUs
o Per job	Kilowatts or BTUs
• Impervious surface increase	Acreage
Economy and Prosperity	
• Employment by sector	Number and percent
• Housing and transportation costs	Dollar amount and percent of average income
• Development value	$/acre
• Costs of providing parking spaces	Dollar amount
• Household auto ownership costs	Dollar amount
• Fuel and electricity costs per capita	Dollar amount

Step 3 - Set Up For Scenario Planning and Evaluation Tools

Building Prototypes

Building prototypes include the range of building types currently in the region as well as buildings expected to be in the future. Example "one-sheets" are included of urban and suburban pro.ducts. Details include, building scale and mass, uses, parking and site utilization. The building prototypes are assembled within a scenario spreadsheet to create the Building Blocks used in the scenario development.

Examples Included:
City of Portland building prototype summary sheets

1-Single Family- Low Density

Portland, OR

Building Summary		
Lot area (sf)	43,560	**sf**
Lot area (acres)	1.00	**acre**
Height	3	**stories**
Usable FAR	0.64	
Residential units/acre	7	**/acre**
Avg. unit size (sf)	3,200	**sf**
Employees/acre	-	**/acre**

Financial Summary		
Average unit sale price	$848,000	
Average cost/sf	$265	**/sf**
Average unit rent	$6,400	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ 25.00	**/sf**
Office rent (sf/year)	$ -	**/sf**
Estimated land value	$18.09	**/sf**
Estimated land value	$788,000	**/acre**
Total project costs	$5,482,070	

Parking and Open Space Summary	
Residential parking/unit	1.79
Retail parking/ksf	-
Office parking/ksf	-
Total parking spaces	13
Open space (%)	40%

Construction Costs *		
Residential	$125	**/sf**
Retail	$125	**/sf**
Office	$0	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

50%   32%   9%   9%
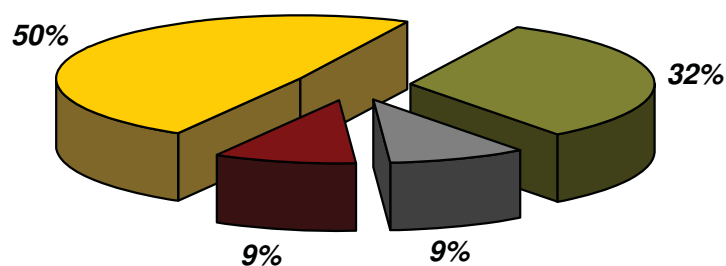
- ■ **Building footprint**
- ■ **Landscaping or open space**
- ■ **Parking area next to building**
- ■ **Unused or flexible space**

2-Single Family-Medium Density

Portland, OR

Building Summary		
Lot area (sf)	4,000	**sf**
Lot area (acres)	0.09	**acre**
Height	2	**stories**
Usable FAR	0.55	
Residential units/acre	11	**/acre**
Avg. unit size (sf)	1,700	**sf**
Employees/acre	-	**/acre**

Financial Summary		
Average unit sale price	$442,000	
Average cost/sf	$260	**/sf**
Average unit rent	$3,400	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ 25.00	**/sf**
Office rent (sf/year)	$ -	**/sf**
Estimated land value	$19.03	**/sf**
Estimated land value	$76,120	**/acre**
Total project costs	$431,557	

Parking and Open Space Summary	
Residential parking/unit	1.79
Retail parking/ksf	-
Office parking/ksf	-
Total parking spaces	2
Open space (%)	50%

Construction Costs *		
Residential	$115	**/sf**
Retail	$0	**/sf**
Office	$0	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

50%

32%

3%

15%
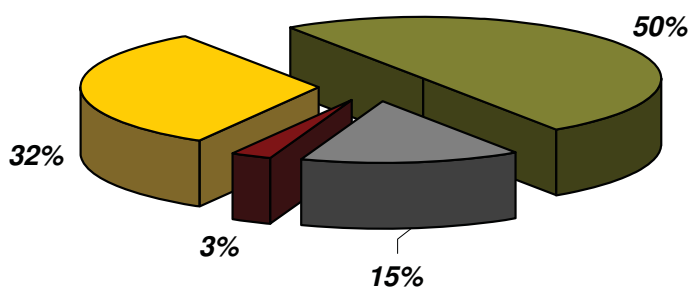
- ■ **Building footprint**
- ■ **Landscaping or open space**
- ■ **Parking area next to building**
- ■ **Unused or flexible space**

2-Skinny House

Portland, OR

Building Summary		
Lot area (sf)	2,500	**sf**
Lot area (acres)	0.06	**acre**
Height	2	**stories**
Usable FAR	0.85	
Residential units/acre	27	**/acre**
Avg. unit size (sf)	1,400	**sf**
Employees/acre	-	**/acre**

Financial Summary		
Average unit sale price	$343,000	
Average cost/sf	$245	**/sf**
Average unit rent	$2,800	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ 25.00	**/sf**
Office rent (sf/year)	$ -	**/sf**
Estimated land value	$19.03	**/sf**
Estimated land value	$47,575	**/acre**
Total project costs	$326,340	

Parking and Open Space Summary	
Residential parking/unit	0.50
Retail parking/ksf	-
Office parking/ksf	-
Total parking spaces	1
Open space (%)	30%

Construction Costs *		
Residential	$115	**/sf**
Retail	$0	**/sf**
Office	$0	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

57%
30%
13%
0%
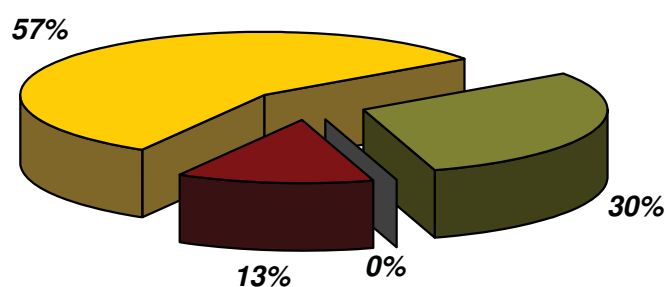
■ **Building footprint**

■ **Landscaping or open space**

■ **Parking area next to building**

■ **Unused or flexible space**

3- Single Family Housing w Accesory Dwelling Unit

Portland, OR

Building Summary		
Lot area (sf)	4,000	sf
Lot area (acres)	0.09	acre
Height	2	stories
Usable FAR	0.91	
Residential units/acre	21	/acre
Avg. unit size (sf)	2,000	sf
Employees/acre	-	/acre

Financial Summary		
Average unit sale price	$530,000	
Average cost/sf	$265	/sf
Average unit rent	$4,000	/month
Average rent (sf/month)	$ 2.00	/sf
Retail rent (sf/year)	$ 25.00	/sf
Office rent (sf/year)	$ -	/sf
Estimated land value	$12.30	/sf
Estimated land value	$49,200	/acre
Total project costs	$445,660	

Parking and Open Space Summary	
Residential parking/unit	1.00
Retail parking/ksf	-
Office parking/ksf	-
Total parking spaces	1
Open space (%)	35%

Construction Costs *		
Residential	$115	/sf
Retail	$125	/sf
Office	$0	/sf

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

53%

2%

10%

35%
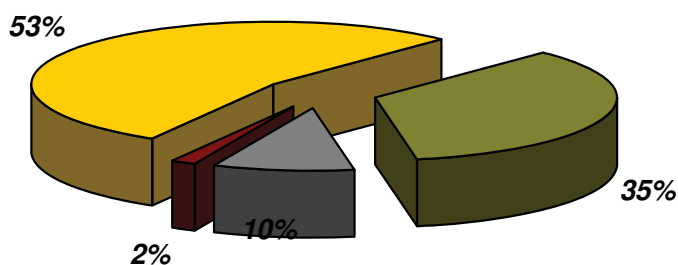
- Building footprint
- Landscaping or open space
- Parking area next to building
- Unused or flexible space

5a- Multi-Family Residential (Structured)

Portland, OR

Building Summary

Lot area (sf)	5,000	sf
Lot area (acres)	0.11	acre
Height	3	stories
Usable FAR	1.60	
Residential units/acre	56	/acre
Avg. unit size (sf)	1,000	sf
Employees/acre	-	/acre

Financial Summary

Average unit sale price	$265,000	
Average cost/sf	$265	/sf
Average unit rent	$2,000	/month
Average rent (sf/month)	$ 2.00	/sf
Retail rent (sf/year)	$ 25.00	/sf
Office rent (sf/year)	$ -	/sf
Estimated land value	$20.50	/sf
Estimated land value	$102,500	/acre
Total project costs	$1,341,904	

Parking and Open Space Summary

Residential parking/unit	1.00
Retail parking/ksf	-
Office parking/ksf	-
Total parking spaces	6
Open space (%)	30%

Construction Costs *

Residential	$109	/sf
Retail	$0	/sf
Office	$0	/sf

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

53%

0%

17%

30%

- ☐ **Building footprint**
- ☐ **Landscaping or open space**
- ☐ **Parking area next to building**
- ☐ **Unused or flexible space**
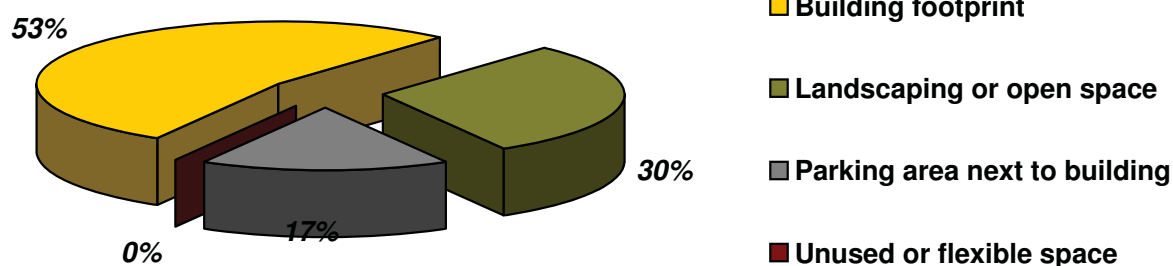
5b- MF Residential (Surface)

Portland, OR

Building Summary

Lot area (sf)	5,000	sf
Lot area (acres)	0.11	acre
Height	3	stories
Usable FAR	1.35	
Residential units/acre	47	/acre
Avg. unit size (sf)	1,000	sf
Employees/acre	-	/acre

Financial Summary

Average unit sale price	$225,000	
Average cost/sf	$225	/sf
Average unit rent	$2,000	/month
Average rent (sf/month)	$ 2.00	/sf
Retail rent (sf/year)	$ 25.00	/sf
Office rent (sf/year)	$ -	/sf
Estimated land value	$26.70	/sf
Estimated land value	$133,500	/acre
Total project costs	$1,060,006	

Parking and Open Space Summary

Residential parking/unit	1.00
Retail parking/ksf	-
Office parking/ksf	-
Total parking spaces	5
Open space (%)	20%

Construction Costs *

Residential	$109	/sf
Retail	$0	/sf
Office	$0	/sf

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

45%
20%
0%
35%
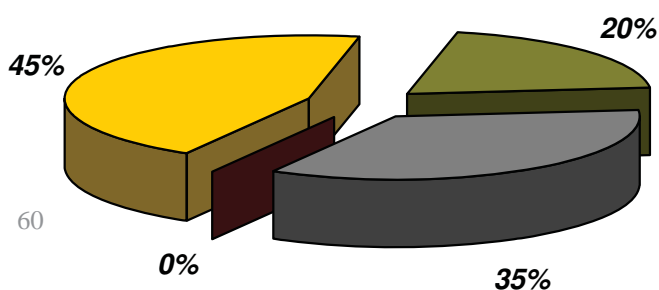
- ■ Building footprint
- ■ Landscaping or open space
- ■ Parking area next to building
- ■ Unused or flexible space

6b- Mixed Use Neighborhood Corridor Apartments (Surface)

Portland, OR

Building Summary

Lot area (sf)	20,000	sf
Lot area (acres)	0.46	acre
Height	4	stories
Usable FAR	1.67	
Residential units/acre	58	/acre
Avg. unit size (sf)	1,000	sf
Employees/acre	-	/acre

Financial Summary

Average unit sale price	$300,000	
Average cost/sf	$300	/sf
Average unit rent	$2,250	/month
Average rent (sf/month)	$ 2.25	/sf
Retail rent (sf/year)	$ 25.00	/sf
Office rent (sf/year)	$ -	/sf
Estimated land value	$42.17	/sf
Estimated land value	$843,400	/acre
Total project costs	$6,204,744	

Parking and Open Space Summary

Residential parking/unit	1.00
Retail parking/ksf	2.00
Office parking/ksf	-
Total parking spaces	27
Open space (%)	15%

Construction Costs *

Residential	$125	/sf
Retail	$0	/sf
Office	$0	/sf

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

42%
15%
0%
43%
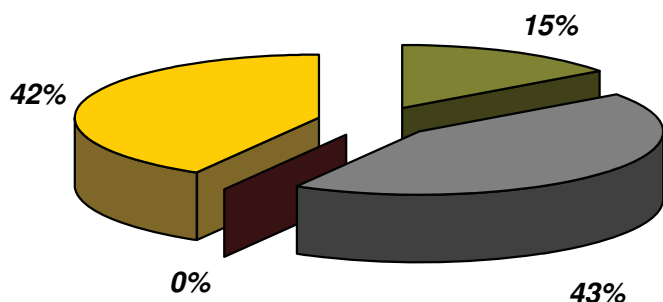
- ■ **Building footprint**
- ■ **Landscaping or open space**
- ■ **Parking area next to building**
- ■ **Unused or flexible space**

6c-MU Neighborhood Corridor Apartments (tuck-U)

Portland, OR

Building Summary		
Lot area (sf)	20,000	**sf**
Lot area (acres)	0.46	**acre**
Height	4	**stories**
Usable FAR	3.40	
Residential units/acre	104	/**acre**
Avg. unit size (sf)	1,000	**sf**
Employees/acre	-	/**acre**

Financial Summary		
Average unit sale price	$300,000	
Average cost/sf	$300	/**sf**
Average unit rent	$2,000	/**month**
Average rent (sf/month)	$ 2.00	/**sf**
Retail rent (sf/year)	$ 25.00	/**sf**
Office rent (sf/year)	$ -	/**sf**
Estimated land value	$25.14	/**sf**
Estimated land value	$502,800	/**acre**
Total project costs	$10,319,336	

Parking and Open Space Summary	
Residential parking/unit	0.25
Retail parking/ksf	-
Office parking/ksf	-
Total parking spaces	26
Open space (%)	15%

Construction Costs *		
Residential	$125	/**sf**
Retail	$125	/**sf**
Office	$0	/**sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

- 85%
- 0%
- 0%
- 15%
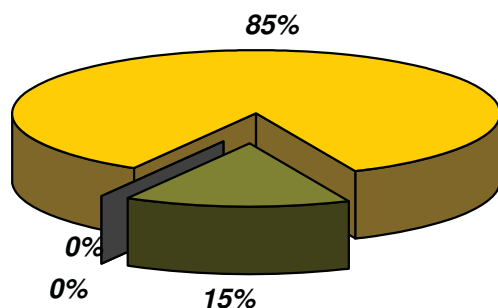
□ **Building footprint**

□ **Landscaping or open space**

□ **Parking area next to building**

■ **Unused or flexible space**

7-Attached Houses High Density

Portland, OR

Building Summary

Lot area (sf)	10,000	**sf**
Lot area (acres)	0.23	**acre**
Height	3	**stories**
Usable FAR	1.26	
Residential units/acre	37	**/acre**
Avg. unit size (sf)	1,200	**sf**
Employees/acre	-	**/acre**

Financial Summary

Average unit sale price	$360,000	
Average cost/sf	$300	**/sf**
Average unit rent	$2,400	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ 25.00	**/sf**
Office rent (sf/year)	$ -	**/sf**
Estimated land value	$25.14	**/sf**
Estimated land value	$251,400	**/acre**
Total project costs	$2,042,918	

Parking and Open Space Summary

Residential parking/unit	1.50
Retail parking/ksf	-
Office parking/ksf	-
Total parking spaces	13
Open space (%)	15%

Construction Costs *

Residential	$109	**/sf**
Retail	$0	**/sf**
Office	$0	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

42%
15%
0%
43%
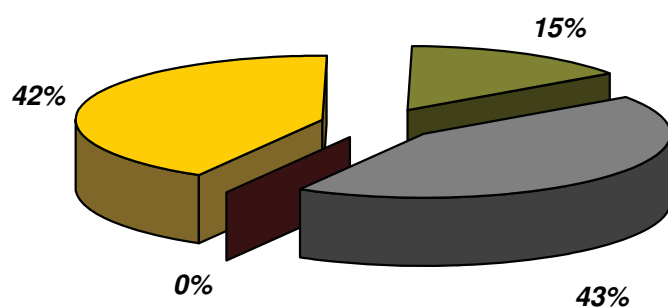
- ■ **Building footprint**
- ■ **Landscaping or open space**
- ■ **Parking area next to building**
- ■ **Unused or flexible space**

8-Attached Houses Medium Density

Portland, OR

Building Summary		
Lot area (sf)	10,000	**sf**
Lot area (acres)	0.23	**acre**
Height	3	**stories**
Usable FAR	1.42	
Residential units/acre	29	**/acre**
Avg. unit size (sf)	1,700	**sf**
Employees/acre	-	**/acre**

Financial Summary			
Average unit sale price		$510,000	
Average cost/sf		$300	**/sf**
Average unit rent		$3,400	**/month**
Average rent (sf/month)	$	2.00	**/sf**
Retail rent (sf/year)	$	25.00	**/sf**
Office rent (sf/year)	$	-	**/sf**
Estimated land value		$20.45	**/sf**
Estimated land value		$204,500	**/acre**
Total project costs		$2,028,510	

Parking and Open Space Summary	
Residential parking/unit	1.00
Retail parking/ksf	-
Office parking/ksf	-
Total parking spaces	7
Open space (%)	30%

Construction Costs *		
Residential	$109	**/sf**
Retail	$0	**/sf**
Office	$0	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

47%

30%

0%

23%
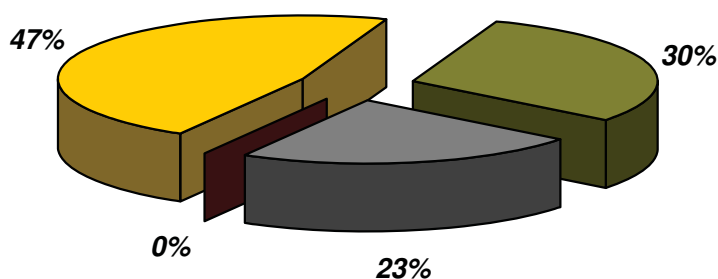
- Building footprint
- Landscaping or open space
- Parking area next to building
- Unused or flexible space

10- MU SRO Housing

Portland, OR

Building Summary

Lot area (sf)	15,000	sf
Lot area (acres)	0.34	acre
Height	5	stories
Usable FAR	3.32	
Residential units/acre	202	/acre
Avg. unit size (sf)	400	sf
Employees/acre	72	/acre

Financial Summary

Average unit sale price	$80,000	
Average cost/sf	$200	/sf
Average unit rent	$400	/month
Average rent (sf/month)	$ 1.00	/sf
Retail rent (sf/year)	$ 25.00	/sf
Office rent (sf/year)	$ 10.00	/sf
Estimated land value	$62.15	/sf
Estimated land value	$932,250	/acre
Total project costs	$8,038,717	

Parking and Open Space Summary

Residential parking/unit	0.10
Retail parking/ksf	0.50
Office parking/ksf	0.25
Total parking spaces	13
Open space (%)	5%

Construction Costs *

Residential	$109	/sf
Retail	$125	/sf
Office	$0	/sf

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

66%

5%

0%

29%
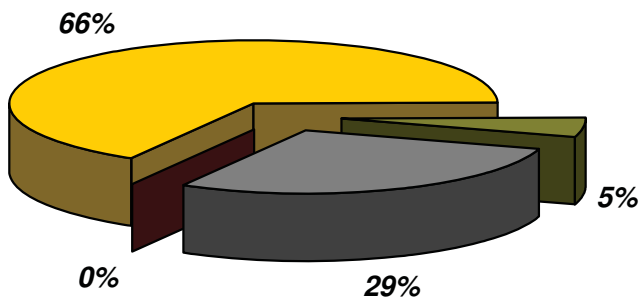
- ☐ **Building footprint**
- ☐ **Landscaping or open space**
- ☐ **Parking area next to building**
- ☐ **Unused or flexible space**

13a-MU Apts (Family Housing)

Portland, OR

Building Summary

Lot area (sf)	40,000	**sf**
Lot area (acres)	0.92	**acre**
Height	6	**stories**
Usable FAR	4.80	
Residential units/acre	112	**/acre**
Avg. unit size (sf)	1,200	**sf**
Employees/acre	74	**/acre**

Financial Summary

Average unit sale price		$360,000	
Average cost/sf		$300	**/sf**
Average unit rent		$1,920	**/month**
Average rent (sf/month)	$	1.60	**/sf**
Retail rent (sf/year)	$	25.00	**/sf**
Office rent (sf/year)	$	-	**/sf**
Estimated land value		$35.71	**/sf**
Estimated land value		$1,428,400	**/acre**
Total project costs		$37,435,438	

Parking and Open Space Summary

Residential parking/unit	1.00
Retail parking/ksf	0.50
Office parking/ksf	-
Total parking spaces	122
Open space (%)	20%

Residential	$109	**/sf**
Retail	$128	**/sf**
Office	$0	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

80%

0%

0%

20%
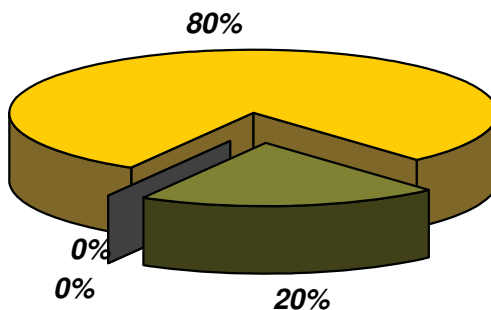
■ **Building footprint**

■ **Landscaping or open space**

■ **Parking area next to building**

■ **Unused or flexible space**

13b- MU Apts (Small Household)

Portland, OR

Building Summary		
Lot area (sf)	40,000	**sf**
Lot area (acres)	0.92	**acre**
Height	6	**stories**
Usable FAR	5.10	
Residential units/acre	237	**/acre**
Avg. unit size (sf)	600	**sf**
Employees/acre	79	**/acre**

Financial Summary		
Average unit sale price	$180,000	
Average cost/sf	$300	**/sf**
Average unit rent	$1,200	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ 25.00	**/sf**
Office rent (sf/year)	$ -	**/sf**
Estimated land value	$35.71	**/sf**
Estimated land value	$1,428,400	**/acre**
Total project costs	$42,653,778	

Parking and Open Space Summary	
Residential parking/unit	0.50
Retail parking/ksf	1.00
Office parking/ksf	-
Total parking spaces	150
Open space (%)	15%

Construction Costs *		
Residential	$109	**/sf**
Retail	$128	**/sf**
Office	$0	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

85%
0%
0%
15%
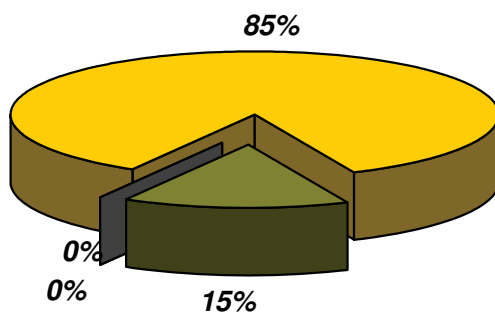
- ■ **Building footprint**
- ■ **Landscaping or open space**
- ■ **Parking area next to building**
- ■ **Unused or flexible space**

14-MU Small Lot Condo

Portland, OR

Building Summary

Lot area (sf)	10,000	**sf**
Lot area (acres)	0.23	**acre**
Height	15	**stories**
Usable FAR	13.50	
Residential units/acre	203	**/acre**
Avg. unit size (sf)	2,150	**sf**
Employees/acre	73	**/acre**

Financial Summary

Average unit sale price	$526,750	
Average cost/sf	$245	**/sf**
Average unit rent	$2,688	**/month**
Average rent (sf/month)	$ 1.25	**/sf**
Retail rent (sf/year)	$ 25.00	**/sf**
Office rent (sf/year)	$ -	**/sf**
Estimated land value	$69.01	**/sf**
Estimated land value	$690,100	**/acre**
Total project costs	$22,766,713	

Parking and Open Space Summary

Residential parking/unit	1.00
Retail parking/ksf	2.00
Office parking/ksf	-
Total parking spaces	66
Open space (%)	0%

Construction Costs *

Residential	$109	**/sf**
Retail	$128	**/sf**
Office	$93	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

100%

0%

0%
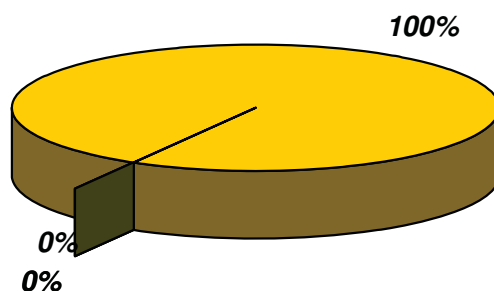
- ■ **Building footprint**
- ■ **Landscaping or open space**
- ■ **Parking area next to building**
- ■ **Unused or flexible space**

16-Mixed Use Neighborhood Commercial/Housing

Portland, OR

Building Summary

Lot area (sf)	10,000	**sf**
Lot area (acres)	0.23	**acre**
Height	4	**stories**
Usable FAR	4.00	
Residential units/acre	89	**/acre**
Avg. unit size (sf)	1,100	**sf**
Employees/acre	-	**/acre**

Financial Summary

Average unit sale price	$291,500	
Average cost/sf	$265	**/sf**
Average unit rent	$1,375	**/month**
Average rent (sf/month)	$ 1.25	**/sf**
Retail rent (sf/year)	$ 15.00	**/sf**
Office rent (sf/year)	$ -	**/sf**
Estimated land value	$33.90	**/sf**
Estimated land value	$339,000	**/acre**
Total project costs	$5,703,724	

Parking and Open Space Summary

Residential parking/unit	0.50
Retail parking/ksf	0.50
Office parking/ksf	-
Total parking spaces	15
Open space (%)	0%

Construction Costs *

Residential	$109	**/sf**
Retail	$128	**/sf**
Office	$93	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

100%

0%

0%
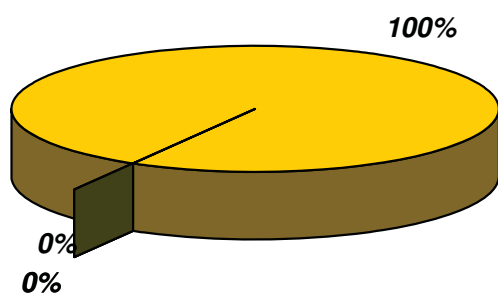
- ■ **Building footprint**
- ■ **Landscaping or open space**
- ■ **Parking area next to building**
- ■ **Unused or flexible space**

17-MU Neighborhood Retail/Residential

Portland, OR

Building Summary		
Lot area (sf)	12,500	**sf**
Lot area (acres)	0.29	**acre**
Height	4	**stories**
Usable FAR	3.60	
Residential units/acre	118	**/acre**
Avg. unit size (sf)	850	**sf**
Employees/acre	42	**/acre**

Financial Summary			
Average unit sale price		$255,000	
Average cost/sf		$300	**/sf**
Average unit rent		$1,700	**/month**
Average rent (sf/month)	$	2.00	**/sf**
Retail rent (sf/year)	$	25.00	**/sf**
Office rent (sf/year)	$	-	**/sf**
Estimated land value		$38.24	**/sf**
Estimated land value		$478,000	**/acre**
Total project costs		$6,918,696	

Parking and Open Space Summary	
Residential parking/unit	1.79
Retail parking/ksf	-
Office parking/ksf	-
Total parking spaces	-
Open space (%)	0%

Construction Costs *		
Residential	$109	**/sf**
Retail	$125	**/sf**
Office	$0	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

100%

0%

0%
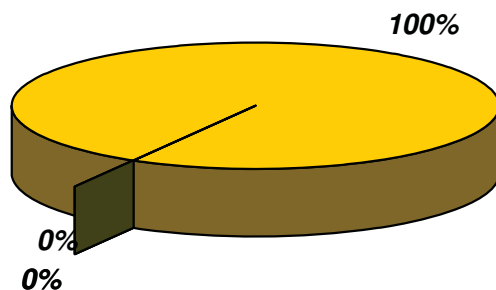
☐ **Building footprint**

☐ **Landscaping or open space**

☐ **Parking area next to building**

☐ **Unused or flexible space**

18-Live/Work Townhouses

Portland, OR

Building Summary

Lot area (sf)	20,000	sf
Lot area (acres)	0.46	acre
Height	3	stories
Usable FAR	1.44	
Residential units/acre	22	/acre
Avg. unit size (sf)	1,600	sf
Employees/acre	25	/acre

Financial Summary

Average unit sale price	$424,000	
Average cost/sf	$265	/sf
Average unit rent	$2,000	/month
Average rent (sf/month)	$ 1.25	/sf
Retail rent (sf/year)	$ 25.00	/sf
Office rent (sf/year)	$ 10.00	/sf
Estimated land value	$25.14	/sf
Estimated land value	$502,800	/acre
Total project costs	$4,794,834	

Parking and Open Space Summary

Residential parking/unit	1.00
Retail parking/ksf	1.00
Office parking/ksf	1.00
Total parking spaces	19
Open space (%)	20%

Construction Costs *

Residential	$109	/sf
Retail	$128	/sf
Office	$93	/sf

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

48%

20%

0%

32%
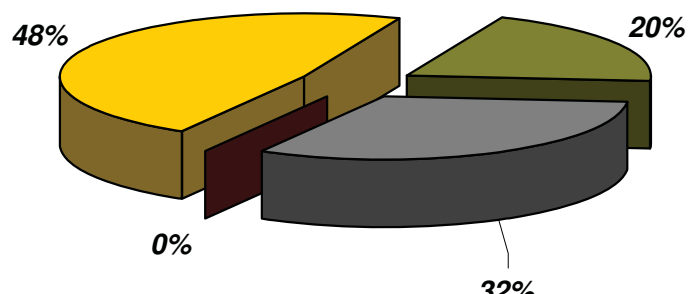
- Building footprint
- Landscaping or open space
- Parking area next to building
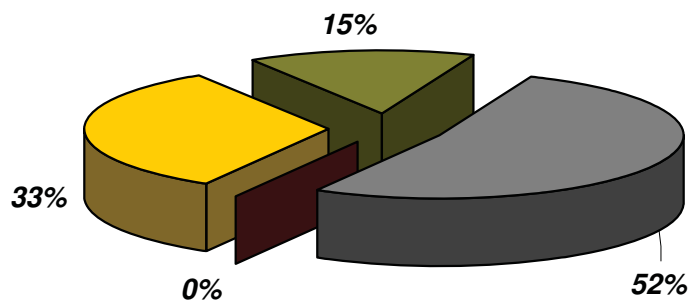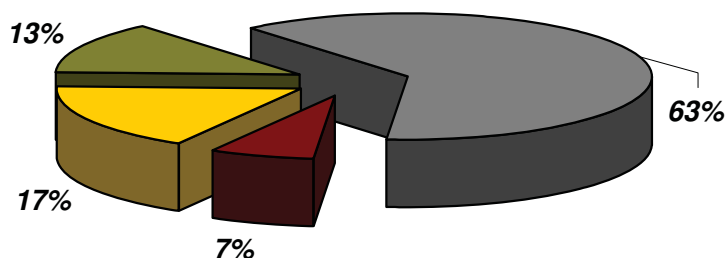- Unused or flexible space

20-Retail

Portland, OR

Building Summary

Lot area (sf)	10,000	**sf**
Lot area (acres)	0.23	**acre**
Height	1	**stories**
Usable FAR	0.33	
Residential units/acre	-	**/acre**
Avg. unit size (sf)	-	**sf**
Employees/acre	14	**/acre**

Financial Summary

Average unit sale price	$0	
Average cost/sf	$300	**/sf**
Average unit rent	$0	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ 30.00	**/sf**
Office rent (sf/year)	$ 20.00	**/sf**
Estimated land value	$26.78	**/sf**
Estimated land value	$267,800	**/acre**
Total project costs	$1,041,421	

Parking and Open Space Summary

Residential parking/unit	-
Retail parking/ksf	4.00
Office parking/ksf	-
Total parking spaces	13
Open space (%)	15%

Construction Costs *

Residential	$109	**/sf**
Retail	$128	**/sf**
Office	$93	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

15%

33%

0%

52%

■ **Building footprint**

■ **Landscaping or open space**

■ **Parking area next to building**

■ **Unused or flexible space**

21- Lifestyle Center

Portland, OR

Building Summary		
Lot area (sf)	100,000	**sf**
Lot area (acres)	2.30	**acre**
Height	3	**stories**
Usable FAR	0.40	
Residential units/acre	-	**/acre**
Avg. unit size (sf)	-	**sf**
Employees/acre	18	**/acre**

Financial Summary		
Average unit sale price	$0	
Average cost/sf	$300	**/sf**
Average unit rent	$0	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ 28.00	**/sf**
Office rent (sf/year)	$ 25.00	**/sf**
Estimated land value	$25.14	**/sf**
Estimated land value	$2,514,000	**/acre**
Total project costs	$11,481,084	

Parking and Open Space Summary	
Residential parking/unit	-
Retail parking/ksf	4.00
Office parking/ksf	-
Total parking spaces	158
Open space (%)	15%

Construction Costs *		
Residential	$109	**/sf**
Retail	$128	**/sf**
Office	$93	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

13%

17%

7%

63%

- ☐ **Building footprint**
- ☐ **Landscaping or open space**
- ☐ **Parking area next to building**
- ☐ **Unused or flexible space**

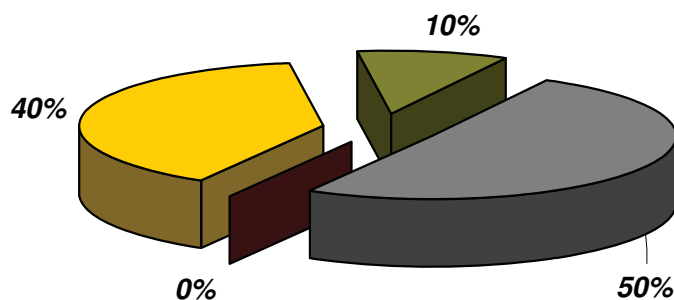## 23a-Office Mid-Rise w/Surface Parking

Portland, OR

Building Summary		
Lot area (sf)	30,000	**sf**
Lot area (acres)	0.69	**acre**
Height	5	**stories**
Usable FAR	1.98	
Residential units/acre	-	**/acre**
Avg. unit size (sf)	-	**sf**
Employees/acre	146	**/acre**

Financial Summary		
Average unit sale price	$0	
Average cost/sf	$300	**/sf**
Average unit rent	$0	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ 25.00	**/sf**
Office rent (sf/year)	$ 20.00	**/sf**
Estimated land value	$54.50	**/sf**
Estimated land value	$1,635,000	**/acre**
Total project costs	$10,257,259	

Parking and Open Space Summary	
Residential parking/unit	-
Retail parking/ksf	1.00
Office parking/ksf	1.00
Total parking spaces	59
Open space (%)	10%

Construction Costs *		
Residential	$125	**/sf**
Retail	$125	**/sf**
Office	$93	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

10%

40%

0%

50%

- ☐ **Building footprint**
- ☐ **Landscaping or open space**
- ☐ **Parking area next to building**
- ☐ **Unused or flexible space**

23b-Office Mid-Rise (Sandwich)

Portland, OR

Building Summary

Lot area (sf)	30,000	**sf**
Lot area (acres)	0.69	**acre**
Height	9	**stories**
Usable FAR	5.40	
Residential units/acre	-	**/acre**
Avg. unit size (sf)	-	**sf**
Employees/acre	344	**/acre**

Financial Summary

Average unit sale price	$0	
Average cost/sf	$300	**/sf**
Average unit rent	$0	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ 25.00	**/sf**
Office rent (sf/year)	$ 25.00	**/sf**
Estimated land value	$54.50	**/sf**
Estimated land value	$1,635,000	**/acre**
Total project costs	$21,409,347	

Parking and Open Space Summary

Residential parking/unit	-
Retail parking/ksf	2.00
Office parking/ksf	1.00
Total parking spaces	208
Open space (%)	0%

Construction Costs *

Residential	$109	**/sf**
Retail	$128	**/sf**
Office	$93	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

100%

0%

0%
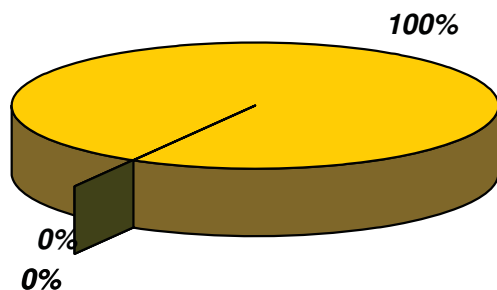
- ☐ **Building footprint**
- ☐ **Landscaping or open space**
- ☐ **Parking area next to building**
- ☐ **Unused or flexible space**

24-Office Low-Rise (Surface)

Portland, OR

Building Summary

Lot area (sf)	10,000	**sf**
Lot area (acres)	0.23	**acre**
Height	3	**stories**
Usable FAR	1.18	
Residential units/acre	-	**/acre**
Avg. unit size (sf)	-	**sf**
Employees/acre	107	**/acre**

Financial Summary

Average unit sale price		$0	
Average cost/sf		$300	**/sf**
Average unit rent		$0	**/month**
Average rent (sf/month)	$	2.00	**/sf**
Retail rent (sf/year)	$	25.00	**/sf**
Office rent (sf/year)	$	20.00	**/sf**
Estimated land value		$26.78	**/sf**
Estimated land value		$267,800	**/acre**
Total project costs		$2,038,266	

Parking and Open Space Summary

Residential parking/unit	1.00
Retail parking/ksf	2.00
Office parking/ksf	1.00
Total parking spaces	14
Open space (%)	15%

Construction Costs *

Residential	$109	**/sf**
Retail	$128	**/sf**
Office	$93	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

- 39%
- 15%
- 0%
- 46%
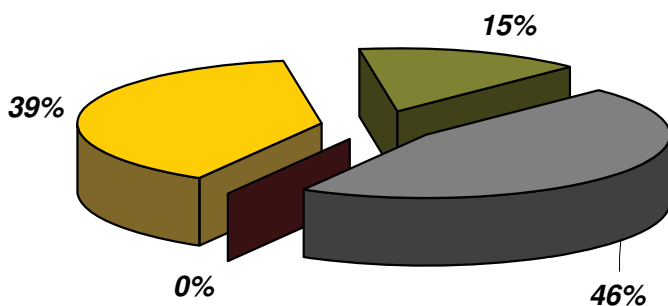
■ **Building footprint**

■ **Landscaping or open space**

■ **Parking area next to building**

■ **Unused or flexible space**

25-Office Rehab

Portland, OR

Building Summary		
Lot area (sf)	30,000	**sf**
Lot area (acres)	0.69	**acre**
Height	3	**stories**
Usable FAR	1.15	
Residential units/acre	-	**/acre**
Avg. unit size (sf)	-	**sf**
Employees/acre	67	**/acre**

Financial Summary		
Average unit sale price	$0	
Average cost/sf	$300	**/sf**
Average unit rent	$0	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ 25.00	**/sf**
Office rent (sf/year)	$ 15.00	**/sf**
Estimated land value	$20.09	**/sf**
Estimated land value	$602,700	**/acre**
Total project costs	$6,604,746	

Parking and Open Space Summary	
Residential parking/unit	-
Retail parking/ksf	1.00
Office parking/ksf	1.00
Total parking spaces	34
Open space (%)	20%

Construction Costs *		
Residential	$0	**/sf**
Retail	$93	**/sf**
Office	$128	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

- 44% ■ Building footprint
- 14% ■ Landscaping or open space
- 36% ■ Parking area next to building
- 6% ■ Unused or flexible space

Technical Appendix
Step 3
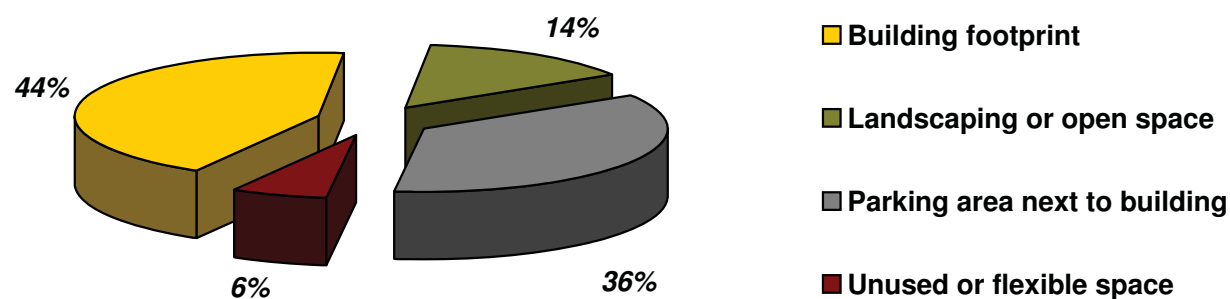
26-Multi Level Flexspace

Portland, OR

Building Summary

Building Summary		
Lot area (sf)	10,000	**sf**
Lot area (acres)	0.23	**acre**
Height	4	**stories**
Usable FAR	2.65	
Residential units/acre	-	**/acre**
Avg. unit size (sf)	-	**sf**
Employees/acre	113	**/acre**

Financial Summary

Financial Summary		
Average unit sale price	$0	
Average cost/sf	$300	**/sf**
Average unit rent	$0	**/month**
Average rent (sf/month)	$ 2.00	**/sf**
Retail rent (sf/year)	$ -	**/sf**
Office rent (sf/year)	$ 15.00	**/sf**
Estimated land value	$18.34	**/sf**
Estimated land value	$183,400	**/acre**
Total project costs	$4,844,425	

Parking and Open Space Summary

Parking and Open Space Summary	
Residential parking/unit	-
Retail parking/ksf	-
Office parking/ksf	0.50
Total parking spaces	13
Open space (%)	0%

Construction Costs *

Construction Costs *		
Residential	$0	**/sf**
Retail	$0	**/sf**
Office	$128	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

66%

0%

0%

34%
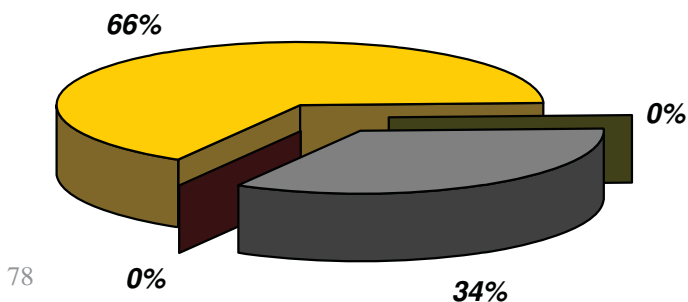
- ■ **Building footprint**
- ■ **Landscaping or open space**
- ■ **Parking area next to building**
- ■ **Unused or flexible space**

27-Industrial

Portland, OR

Building Summary

Lot area (sf)	43,560	**sf**
Lot area (acres)	1.00	**acre**
Height	1	**stories**
Usable FAR	0.63	
Residential units/acre	-	**/acre**
Avg. unit size (sf)	-	**sf**
Employees/acre	22	**/acre**

Financial Summary

Average unit sale price		$0	
Average cost/sf		$0	**/sf**
Average unit rent		$0	**/month**
Average rent (sf/month)	$	-	**/sf**
Retail rent (sf/year)	$	-	**/sf**
Office rent (sf/year)	$	14.00	**/sf**
Estimated land value		$14.06	**/sf**
Estimated land value		$612,454	**/acre**
Total project costs		$4,433,974	

Parking and Open Space Summary

Residential parking/unit	-
Retail parking/ksf	-
Office parking/ksf	1.00
Total parking spaces	28
Open space (%)	15%

Construction Costs *

Residential	$0	**/sf**
Retail	$0	**/sf**
Office	$120	**/sf**

* includes building costs with tenant improvements; does not include parking costs

% of Total Lot Area

63%
15%
0%
22%
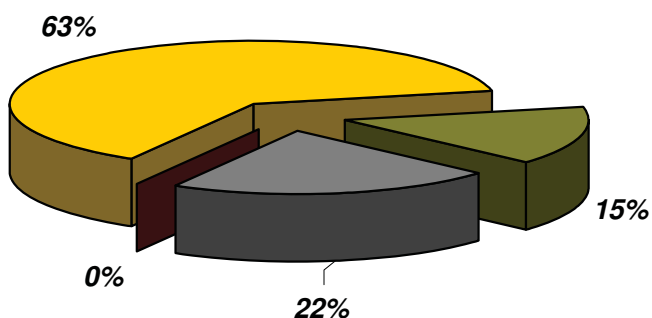
- **Building footprint**
- **Landscaping or open space**
- **Parking area next to building**
- **Unused or flexible space**

Sample Building Blocks

The following is a description of example building blocks that can be used in the sketch planning tool. They each consist of a mix of building prototypes to define a specific place. Each building block as an associated housing and job density and housing and job split (e.g. MFR, SFR, Townhome and Office, Retail, Industrial).

Development Type	Dwelling Units/Acre	Jobs/ Acre	Description
Downtown Center	10 - 30	75-300	Downtown Center incorporates office, retail, residential, and civic uses into a pedestrian-oriented and mixed-use environment. Modeled after downtown Portland, Downtown Centers serve as a commercial destination and employment center. Building ranges from mid-rise, mixed-use buildings to commercial towers. The interconnected street network and variety of amenities within walking distance make Downtown Centers accessible by automobile, transit, bicycle and foot. Civic and open spaces increase foot traffic and keep activity lively throughout the day and evening. These areas are appropriate for infill and redevelopment. This scale may not be needed by the non-Metro MPOs but it may prove useful in testing ideas.
Downtown Residential	50 - 100	5 - 20	Downtown Residential provides a concentration of housing units in buildings typically over four stories tall. Buildings include an array of multi-family homes and townhouses in mid-rise residential buildings to mixed-use residential high rises. Downtown Residential is appropriate in the downtown core and provides a significant amount of urban housing. The ground floor may include retail businesses such as a coffee shop or restaurant. As with Downtown Center, this development type may be too dense for some regions.

City Center	25 - 50	60 - 125	City Center incorporates a diverse mix of residential and employment uses, though at a lower density than Downtown Center. This development type serves as a significant source of employment, and like Corvallis has a pedestrian-oriented center at its core. It may require structured parking and is accessible via multiple modes of transportation.
City Residential	20 - 40	5 -15	City Residential includes a greater proportion and diversity of housing than Downtown Residential areas, such as multi-family homes, single-family homes on small lots and townhouses with communal yard space. These areas are often compact, pedestrian-friendly, and transit-oriented. They blend seamlessly with the city.
Town Center	20-45	20-50	Town Centers primarily function as a service destination near a central main street rather than an employment center. They feature a balanced share of housing and jobs including townhouses, apartments over storefronts and single-family homes near commercial districts. They are pedestrian-oriented because of their mix of residential, retail, and office uses and are located on a interconnected street network.
Town Neighborhood	15 - 25	0 - 2	Town Neighborhood includes townhomes, garden apartments, condominiums, and cottage homes on small lots. The development is oriented to the street and located near a main street, the heart of a smaller town, or on the fringe of downtown. Commercial uses can include small groceries, a coffee shop, or yoga studio.
Neighborhood Center	13 - 20	15 -20	Neighborhood Center a mix of small scale mixed use buildings, townhomes, and duplexes, offices and retail with a main street character. The types of businesses would likely be neighborhood serving,

Compact Neighborhood	8 - 10	0	Compact Neighborhood includes mid- to low-rise multi-family, townhouses and small lot single-family dwellings. Compact Neighborhoods are medium density residential areas near mixed use center, such as neighborhood centers or town centers. Street connectivity is favorable, allowing a high degree of foot traffic and access to transit.
Residential Subdivision	5 - 7	0	Residential Subdivisions include single-family, detached homes and duplexes. Street networks are typical of post World War II suburbs. Residential Subdivisions are designed for automobile travel. Due to the extensive use of cul-de-sacs, street connectivity and pedestrian travel are generally low.
Large Lot Subdivision	2 - 4	0	Large Lot Subdivisions consist entirely of single-family, detached homes. Large Lot Subdivisions are typically isolated from employment and retail services. Development includes large residences on expansive lots without sidewalks. Street connectivity is low and travel is dependent upon the automobile.
Activity Center	10 - 20	15 - 30	An Activity Center is an agglomeration of large-scale retail buildings, offices and multi-family housing. The Activity Center building block contains a relatively dense mix of uses, comparable to the Neighborhood or Town Center, but these types, it is not pedestrian-friendly. Land uses are separated from each other by parking areas, freeways or arterials. Activity Centers are usually positioned at intersections of highways or arterials, sometimes along major transit corridors.
Transit Corridor	20 - 50	8	Transit Corridors stretch along a single boulevard or street with either bus or rail transit service. Households, offices, and retail uses may be accommodated by a few high-rise towers, but mostly mid-rise buildings. Pedestrian access is adjacent neighborhoods is well connected, and on the corridor it is focused on accessing local transit.

Main Street	5 - 10	25 - 35	Main Streets include a mix of uses and an interconnected street network that encourage pedestrian travel. Main Streets primarily function as service destinations rather than centers of employment. Surface lots and on-street spaces provide parking. Buildings typically stand two to four stories tall and often include apartments above storefronts.
Office Park	0	39	Office Parks are comprised of low to medium density office buildings surrounded by surface parking. Generally located near highways for easy auto-access, transit and walking options are limited. Office Parks lack residential or retail uses, thus increasing the number of auto trips.
Industrial	0	14	Industrial is made up of a mix of low and medium density industrial buildings. They often consist of industrial yards and campuses separate from other uses due to the nature of industrial use. This development type is often near highways and accessible via automobiles with large surface parking for autos and trucks. Walking and transit options are severely limited.
Arterial Commercial	0	12 - 20	Arterial Commercial is modeled after highway-oriented development. Rather than being agglomerated at a highway intersection, Arterial Commercial takes a linear form along both sides of the highway. This is an auto-oriented building block.

Step 4 – Create Current Base Year and Future Reference Case

Additional information on building current base conditions and reference case scenarios

Current Base Conditions or Base Year Scenario

Using GIS, the exiting jobs are mathematically assigned to developed land within each TAZ. The assignment only takes place on land considered developed for the same year as the TAZ data (in this suggested example, 2005). All of the land that is classified as housing would receive a proportioned share of the households within the TAZ. Subsequently, the same would apply to the land considered developed in employment uses. If the land use data is of fine enough resolution to quantify mixed use development, those parcels, or zones (as described under model setup) would receive both jobs and households. This level of precision is adequate for developing a base year scenario that can be used to, in conjunction with a future scenario, describe the 2035 or other horizon year condition.

TAZs with land use. The colors represent different uses.
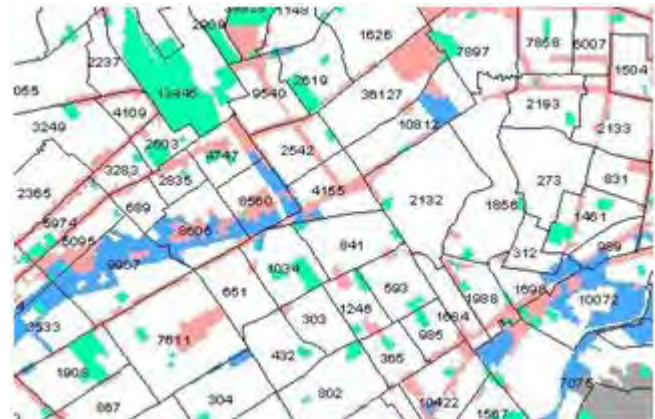
Employment lands shown. The residential lands have been removed from the map

The Reference Case

Scenario planning relies on the idea of a Reference Case Scenario (RCS) because it serves as a point of comparison for other alternatives.

The RCS must be developed using the same Building Blocks that were developed earlier and used in the creation of the base conditions or base year scenario.

The simplest form of RCS is built by using the prorating techniques described in the section above. Jobs and housing are assigned to the landscape based on the maximum densities allowed by the Building Blocks. This proration, easily done within GIS, will allocate all of the jobs and housing in one fell swoop. However, in almost no case will the density exactly match the density described by the Building Blocks. This is where the professional must intervene.

The first thing to do is to compare, at a TAZ or base geography zone level, the maximum allowed density with that which was assigned by the proration process. Zones where the amount of jobs or households is significantly different should then be adjusted using the sketch planning tool. Using the associated painting tool the operator can fine tune the RCS until it is a close match. Generally when summarized back to the TAZ level, the RCS should be within plus or minus five percent of the original TAZ allocation.

Public Kickoff

A public kickoff event is one of several public involvement options presented in Step 4. There are various methods recommended to use the results from Step 4 to solicit excitement from the community to participate in the big workshop in Step 5. Below is an example of an agenda to host a public open house to share the results of the base case and reference case scenarios.

Kick-off Meeting Agenda Sample

Following is a suggested description and timeline for a project kickoff event.

6:30 – 7:00 Welcome, Introduction and Overview of project & schedule

   PowerPoint – project overview, team, and schedule

7:00 – 7:30 Present Scenario model & prototypes research

   PowerPoint – Geography lesson – tells the story of:

- Geographic context

- Opportunities and constraints

- Sketch planning tool & scenario-based planning

- Relationship of prototypes to local plans and zoning

- Forecast & growth data

7:30 – 8:40 Describe modeling results

   Virtual Present and Virtual Future: Presentation of the Base conditions and Reference case, comparison made using guiding principles and evaluation criteria

- Where we are today?

- Where we are likely headed?

 Discussion – groups' reaction - purpose is to learn from attendees in order to set up future scenario planning, workshops/meetings and recruitment for participation. Options include:

- Live Polling

- Facilitated tables

- General Q&A

8:40 – 8:45   Wrap-up

Getting the word out for a Public Kickoff

Example flyers for advertising public events.

The East Baton Rouge Comprehensive Master Plan

is a community-wide planning project that will examine current development and economic trends through an inclusive citizen engagement process. In addition, it will determine a vision for how East Baton Rouge residents want the city-parish to develop and grow during the next 30 years and put a plan in place for achieving the vision of East Baton Rouge's citizens. FUTUREBR embraces Mayor Holden's call to transform Baton Rouge into "America's Next Great City."

Get Involved

For the FUTUREBR plan to be effective, it needs you, your coworkers, your neighbors, your family and your friends to get involved and stay involved. Here's how:

- **Parishwide Input Workshops**
  (March 2010)
  Participate personally and inform your contacts

- **Small Area Workshops**
  (Fall 2010)
  Participate personally and inform your contacts

- **www.FUTUREBR.com**
  Sign up to become a Citizen Planner
  Receive email updates on plan activities

- **Become a Fan**
  Follow us on Twitter and Facebook

- **Share Your Vision for FUTUREBR**
  Online, by mail, or with a YouTube video!

- **Be a FUTUREBR Organization**
  Meet quarterly with the planning team
  Support project by spreading awareness

Upcoming Events

PARISHWIDE INPUT WORKSHOPS

Tuesday, March 2, 6-8:30PM
Redemptorist High School Cafeteria
3800 St. Gerard Avenue

Thursday, March 4, 6-8:30PM
Woodlawn High School Cafeteria
15755 Jefferson Hwy

Get Involved!

FUTUREBR
Vision • Opportunity • Progress

THE EAST BATON ROUGE PARISH MASTER PLAN

Mayor-President Melvin "Kip" Holden invites you to attend the kick-off!

Thursday, December 3rd
5:30–7:30 p.m.

Louisiana State Museum
660 North Fourth Street
Baton Rouge, Louisiana

There will be a short presentation on the project at 6:00 p.m. by John Fregonese, national lead planner on the project.

This is your opportunity to help shape the growth of East Baton Rouge Parish for the next 20 years. Join us to learn how you can be involved in this important project for our future.

The East Baton Rouge Comprehensive Master Plan is a community-wide planning project that will examine current development and economic trends through an inclusive citizen engagement process. In addition, it will determine a vision for how East Baton Rouge residents want the city-parish to develop and grow during the next 30 years and put a plan in place for achieving the vision of East Baton Rouge's citizens.

Our hopes are...

A thriving economy that makes our young people want to stay and raise their families here

An economy that works equally well for all parts of the City

New possibilities for transportation alternatives and easier, more convenient connections all across town

A beautiful City that finds the right balance between development and preservation priorities

Step 5 – Develop and Evaluate Alternative Scenarios

Public Workshop Example Materials

Public Workshop Agenda Sample

Following is a suggested description and timeline for a public workshop. The event is designed to both educate the participants, and gather information to inform the scenario planning process, and provide the team with the public input necessary to begin crafting alternative scenarios.

This agenda is intended to work for a large meeting, up to two or three hundred people. It will work equally well with attendance as low as forty people.

The following time schedule lists the activities in reference to the beginning of the event.

Event Timing

0:00 – 1:00   Room Setup

1:00 – 1:30   Registration

1:30 – 1:45   Introductions by community leader or elected official

1:45 – 2:15   Presentation and workshop instructions

2:15 – 2:30   Group Goal Setting Conversation

2:30 – 3:30   Small Group Mapping Exercise Land Use and Transportation

3:30 – 4:00   Small Group Mapping of community improvements

4:00 – 4:30   Small group presentations of workshop results

4:30 – 5:00   Wrap-up and conclusion of common themes

The times preceding each step in the following descriptive agenda represent the duration of time suggested for each step.

1:00 Room Setup

1 to 1.5 hours prior to the beginning of the event, volunteers and project team members will set up the room. This includes distributing the maps and materials between tables, audio visual setup and any moving of furniture.

0:30 Registration and check-in

Participants will arrive, register, and find their seats. It is recommended to have a mechanism for people to sign up in advance so that you can have a better idea of the quantity of materials you will need to bring. The

recommendation is to encourage pre-registration, but not make it a requirement.

0:15 Introduction

An elected official or recognized community leader will greet the participants and introduce the project and the person who will be leading the workshop exercise.

0:30 Background Presentation and Workshop Instructions

A presentation will describe:

- The purpose, and desired outcomes of the workshop

- Background on the base conditions and reference case scenarios, including land use, transportation, economics, and other quality of life factors as applicable.

- A detailed instruction on the Map Exercise portion of the event and the tools to be employed, including:

    - The basemap

    - Reference maps (Likely to include maps such as: Transportation Plan, Environmental Constraints, Land Use Plans, Social Equity)

    - The building block chips – stickers used to indicate future desired conditions

    - Pens – used for delineating 'Areas of Stability' or other areas that should not be locations for growth and transportation issues

    - The range of chipsets – the varying levels of growth and character

Participants will use combinations of the elements described above to build their vision of the metropolitan area and show the team the solutions that they would support in creating a future vision.

1:45 Goal Setting and the Small Group Mapping Exercise

Participants will work in teams of 8- 10 that will likely represent a range of interests. They will have one neutral staff or volunteer facilitator to act as their graphic hand. The group will discuss the merits of the different elements and building blocks and additional background information shown in accompanying reference maps. Graphic icons and markers will be the tools that lead to the creation of the alternative future concepts. Participants will be encouraged to modify needed transportation elements, retail, housing, mixed-use and office focus locations, and locate key open spaces. This exercise simultaneously teaches the participants about the complex issues involved in planning their community while forcing them to make the difficult decisions.

0:30 Small Group Presentations

After each group has created their 'virtual future' they will designate one person to present the map they have created to the rest of the participants. They will be encouraged to talk about the challenges they faced, the solutions for which they were unified in opinion, and the goals they were working toward. If there are more than 10 groups, it is recommended that a smaller subset is selected for presentation, either by drawing numbers,

or taking volunteers. This step may run long if you want to give more people time to present.

0:30 Wrap-up

The workshop leader will thank the participants; describe some of the ideas that arose during the map exercise session. If you run long on the small group presentation, the wrap-up should be short. This will A. get people out on time and B. account for the fact that some will have left during the presentation section.

Following is a more detailed breakdown of the mapping exercise. Times described are to be used as a guide only. Groups will move at their own pace, with an occasional timing reminder coming from the project team.

WORKSHOP EXERCISE

Next to each step number is an approximate duration of time. Please use these times as a guide only. Feel free to spend more or less time on a task, as needed, while keeping track of the overall schedule.

Step 1. (5 min.) Introductions.

Everyone introduces themselves. Everyone should tell the group what he or she hopes to accomplish with this exercise. Each participant can write his/her name on the base map in the designated location and locate his/her home and workplace on the map to help them get oriented.

Step 2. (5 min.) Familiarize participants with the materials.

 You should familiarize the participants with the materials: the base map, pens, scissors, chips and chip menu, chip trading guide and building block packet (the chip materials will be discussed in Step 5, so don't go into too much detail now). Go through the map legend to make sure everyone understands what the different colors and symbols on the map represent. The base map shows the developed areas, its environmentally constrained areas, as well as undeveloped lands.

Step 3. (5 min.) Identify the group's goals for the workshop map.

Goals can include anything that has to do with land use, development, housing and transportation in the area. Write the goals on the map. Near the end of the session, you should return to the goals to make sure that the group has met what they set out to do. If your group members are having difficulty identifying goals, simply move on to the next step.

Step 4. (10 min.) Discuss and draw in areas to preserve or create open space.

Use the green marker to define the areas on the map that the group feels are important to protect from development or create new open space or parks.

Step 5. (10 min.) Introduce chip materials.

Go over the Chip Menu briefly. The menu shows that different building blocks are represented by chips (game pieces or stickers). The "chip menu" handout summarizes the chip type information shown in the presentation. Understanding the trade-offs in intensity and style between these types is

fundamental to playing the workshop game. This will be discussed in the presentation, but you should have a good understanding of these types before facilitating the group.

You will also have transportation chips representing road improvements, new public transit lines and trail networks.

Explain the chipset envelopes. Three envelopes on your table will contain different chipsets that each accommodates the area's potential growth using a different combination of development chips.

TIME CHECK – within 30 minutes or so of starting, participants should be ready to start experimenting with placing the chips on the map. Steps 6 – 11 should take about 1 hour—this time is theirs to spend as they see fit. The groups are free to move back and forth between the steps.

Step 6. (10 min) Choose a starter chipset.

The chipsets are intended as a starting point only. The group should agree which set to begin with and move on to Step 7. As the exercise progresses, they may trade chips as they see fit.

Open the envelopes and spread the chips out on the table. This illustrates the differences in development patterns and land consumed. However, please do not spend too much time on choosing a chipset.

Step 7. (30 min.) Place development chips on the map.

The central task of the game is to place chips on the map representing the group's vision for land use and transportation in the parish. The group can also return to its previously-identified goals as a starting point. As they place the chips, the participants should think of transportation changes or improvements to support all this new development. They may draw these desired transportation changes on the maps now or later, in Step 7.

Encourage the participants to play with different ideas as the chips are moved around. This is the time to experiment with different themes. Don't stick the chips down yet!

Trade and cut chips. With your guidance and the chip menu, participants can trade chips as the group sees fit. Use one of the unused envelopes as a "chip bank" with which to trade. If the bank runs out of a particular chip which you need, you may pull chips from other chipsets.

Use the Chip menu to see the relative "values" of each chip based on the amounts of households it accommodates. We expect that participants will use the trading option to, as an example, convert residential subdivisions compact neighborhoods, or to increase the density of future development.

The participants can cut chips if they would like smaller increments of a particular chip type or for trading purposes.

Step 8. (10 min.) Draw transportation infrastructure.

The Red marker is used for transit, which can take several forms, and the Blue marker is used for roadways or roadway improvements. The Green marker is used for trails and paths. Encourage your group to think about how their land use plan works with the existing transportation network. Are new highways, roads, or transit lines needed? Should chips be moved around to fit into the existing network?

Step 9. Place Community Improvements on the map.

Use the colored dot stickers to located new community improvements in areas you think would benefit. Examples of these are daycare, adult education, parks, and police stations. Record comments on the associated worksheet by placing the same color sticker on the worksheet. Use the marker to put a number on both stickers, the one on the map and on the worksheet so the comments can be connected with a location on the map.

Step 10. Review the map.

Spend some time examining your new map. The group should make sure the previously-discussed goals have been met. Assess whether the group vision (the map) is consistent with these goals. Rearrange the chips if necessary.

Step 11.(10 min.) Stick chips on map: A "ten-minute warning" will be called.

Once the group has finished arranging the chips on the map, peel off the backing and stick them down. If the group has any additional points to make, you can annotate the map with the pens provided. As participants stick the chips, have them think of a map name that captures the spirit of their map and choose a group member to present the map to the larger group.

Step 12.   Name map and choose a presenter.

Step 13.   (20 min.) Present maps to the group.

The project team will tell you when it is time to stop the discussion and make presentations to the rest of the workshop participants. A few tables will be chosen at random to present their maps to the group. Remind your presenter to tell the group about any specific goals that you were working toward or problems you were trying to solve.

Step 14.   (5 min.) Thank you and next steps:

After the individual tables have presented their maps, the project team will discuss conclusions and briefly outline how these maps will help inform the themes developed to be tested in alternative scenarios.

Incorporating public and stakeholder input

Digitizing workshop input

At the public workshops described above, participants create paper maps with stickers indicating where they want growth and what types of growth. Fregonese Associates's technique is to collect the maps and use a technique called "digitizing" to convert the maps from the workshops into GIS shapefiles for analysis. The process follows these steps:

1. Photograph each paper map produced at the workshop with the highest resolution possible.

2.   Set up Excel scenario spreadsheet.

    a. Open scenario spreadsheet, go to "Dev Types Attributes" tab

    b. In column A, "Development Types," add the names of all chip types used in the workshop.

    c. Save and close file.

3. Add the images into an ArcMap project, .mxd file, after giving each map a distinct number.

4. Georeference each map images to match other layers on the workshop map.

5. Create a polygrid layer in ArcMap.

6. Use Envision Tomorrow to paint cells of the grid to match the chip location from the first workshop map.

    a. Envision will record these results using the active polygrid layer (in the attribute table, the field called "DEV_TYPE").

    b. For each map, transfer these results to a new field (name field after map number) in the attribute table to save them, and then clear out the active "DEV_TYPE" field for the next map's results.

    c. Save results in a new field: calc [new field = "DEV_TYPE"] and then clear out the DEV_TYPE field: calc [DEV_TYPE = ""]

7. Digitize subsequent workshop maps in the same way, always transferring results after each map and saving frequently.
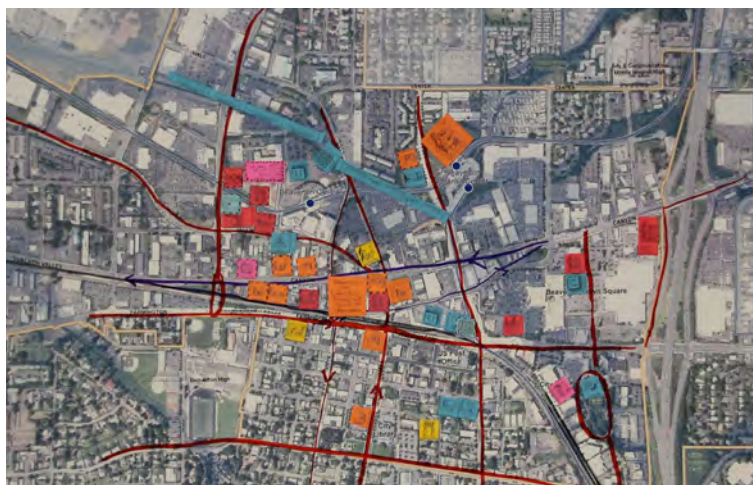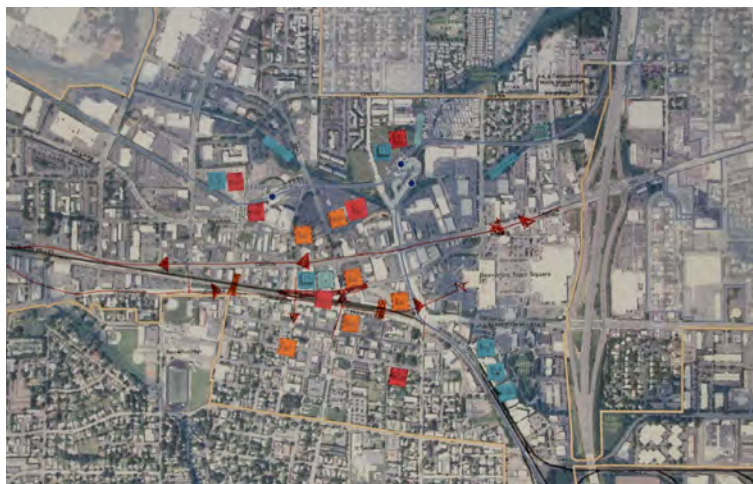
Images of Beaverton Civic Plan workshop maps completed by participants.

Developing themes for testing

Following completion of the workshop map digitization, the information of where participants placed chips on all maps is now stored in one GIS layer. With this information compiled, it's now possible to analyze the workshop results and look for emerging trends from the workshop input.

All workshop maps can now be compiled to visualize the collective thinking of the public that participated. In other words, imagine laying all the maps on top of each other to see which locations on the maps received the most chips and what type of development were most popular. For instance, with ArcGIS, Fregonese Associates organizes the shapefile to show where all civic, mixed-use, residential, employment or any other development type used, occurs on the map. The image of each of these distinct development types can be exported to see trends in where participants placed the chips. This process is described in detail below.

How to analyze workshop results in Envision

1.   Digitize all workshop maps.

2.   Choose a common color set/symbology for all chips, and apply to the envision polygrid layer. If there are multiple MXD files, you can 'save as layer file' and add this layer to other project files so the colors match.

3.   Copy/paste the envision polygrid layer multiple times – you will need a new layer for each map and element you'd like to illustrate (for example: map 1, 2, 3; all commercial chips; chip frequency, etc). If it helps, rename these new layers.

4.   Import symbology from the envision grid layer:

   a. Properties > Symbology > Import > Based on [select original envision layer] > Apply to [select field].

   b. The map will show up, illustrating your chosen field.

5.   For 'all chips placed' -- turn on multiple layers. Add layers such as municipal boundaries or major roads to help orient the map.

6.   Layout View. Use a bookmark extent. Adjust legend, use guides so that each exported map will have the same appearance.

7.   Export map as JPEG.

Images of Beaverton Civic Plan workshop maps digitized.

How to display all chips of each kind (e.g. commercial, residential, civic)

Themes emerge from the workshop maps by observing frequency of chip placement on the maps. Using ArcMap it is possible to view each development type separately or to view all chips placed on the maps at once. Examples from the Beaverton Civic Plan are below.

1. Copy/paste original polygrid to create a new layer and rename ("all commercial").

2. Open attribute table of new layer.

   a. Options > New Field > "Commercial" choose Short Integer > OK

   b. Options > Select by Attribute > create formula to capture all commercial chips from all maps:

      i.   Use 'get unique values'

      ii. SELECTION = "Map 1 = Comm OR Map 2 = Comm OR Map 3 = Comm" to include all maps

   c. With that selection active, select the new Commercial field in attribute table:

      i. Hover over name and right click

      ii. Field Calculator: 1 (this will give all selected grid cells a value of 1)

3. Commercial layer > Properties > Symbology > Get Unique Values:

   a. Delete null, uncheck "all other values"

   b. Label the "1" as "Commercial"

   c. Choose the appropriate color for commercial chips (RGB value)

4. Export map as JPEG. Repeat for each chip type.

Highest frequency of chips placed on each polygrid.
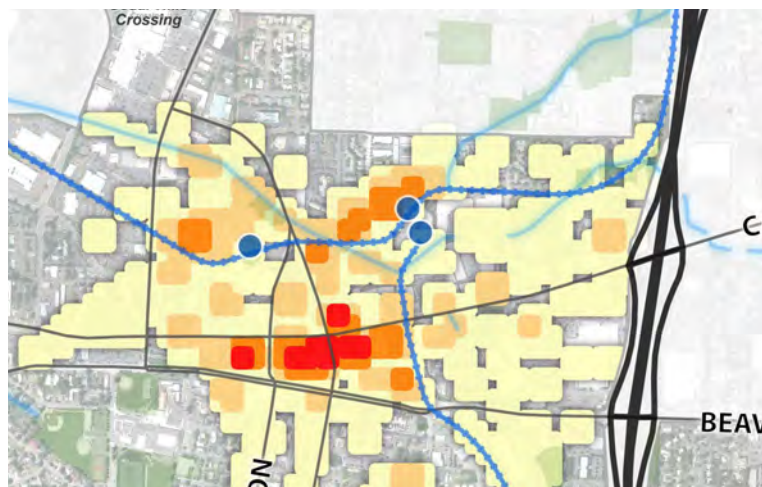
Mixed-use chips placed.

The highest frequency of chips placed on each polygrid cell is shown in the Beaverton Civic Plan map above. The darker colors indicate a higher placement of chips. In analyzing this compilation of workshop results, attention can be directed to the areas where there appears to be consensus from the community participants that development is desired in the locations with red coloring. There appears to be a new center of gravity north of Beaverton-Hillsdale Hwy on Canyon and Broadway.

The map of red cells indicates where participants placed mixed use chips. Themes of central districts emerge where dark clusters of chips are located.

Developing scenarios based on workshop input and emerging themes

One of the alternative scenarios may be based on the themes that emerge from digitizing the workshop maps. In the example below, maps from Baton Rouge public workshops were photographed, digitized, and then compiled to visualize themes. The "workshop" scenario was developed by building on the themes from the workshop.
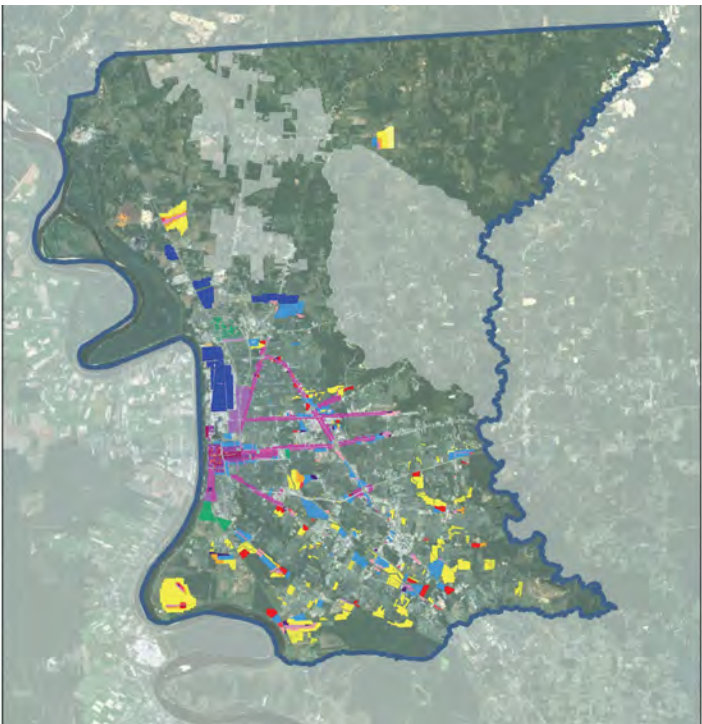
Step 6 – Select a Preferred Scenario

Examples included:

1. Tulsa, OK voting piece

2. Michigan's Grand Vision Scorecard

3. A selection of example comments sheets from the Grand Vision

When asking the public to weigh in on the alternative scenarios, ask about individual criteria or elements of the scenario. Use a graphically easy to read format. This example is from PlaniTulsa, Oklahoma.

SURVEY

Please complete and return the survey no later than June 18, 2009.

Which Way, Tulsa?

Which growth scenario best reflects your thoughts and dreams for the future of Tulsa?

You can also take the survey online,
www.planitulsa.org

What to do with this survey?
Mail it. Fax it.
Or drop it off.

PLANiTULSA
OUR PLAN. OUR FUTURE.

mail survey to:
PLANiTULSA
City of Tulsa
Planning Department
175 E. 2nd Street
Tulsa, OK 74103

fax survey to:
918.699.3966

drop off locations:
City-County Libraries
in the City of Tulsa

detach survey
along perforation ▶

Please read the following statements. How well do you think the scenarios address these topics? For each question, **choose the scenario** that you think does the **best job. Please select only one scenario per question.**

		A Trends Continue	**B** Main Streets	**C** New Centers	**D** Centered City
1.	Provides me and my family with the range of transportation options we need	☐	☐	☐	☐
2.	Expands my access to good-paying jobs within the city	☐	☐	☐	☐
3.	Builds the kind of housing options that I need	☐	☐	☐	☐
4.	Invests transportation dollars in the things I care most about	☐	☐	☐	☐
5.	Creates a lively and interesting city that attracts and keeps young people here	☐	☐	☐	☐
6.	Makes it easy for me to access parks, the river, and open space	☐	☐	☐	☐
7.	Results in a future for Tulsa that I am excited about and would help support	☐	☐	☐	☐

Please read the following questions. Write your choice **(A, B, C, D)** in the space provided.

8. Which scenario do you **like the best**, overall? ☐

9. Which scenario do you like **second best**? ☐

CONTACT INFORMATION *(optional)*

What is your gender?
☐ Female ☐ Male

Name: _____

Email: _____

Where do you live in Tulsa?
☐ North   ☐ Midtown
☐ South   ☐ Southwest
☐ East   ☐ West

What is your age?
☐ Under 19   ☐ 50 – 64
☐ 19 – 29   ☐ 65 +
☐ 30 – 49

What is your ethnicity or race?
☐ African American
☐ Native American
☐ Asian
☐ Caucasian or White
☐ Hispanic
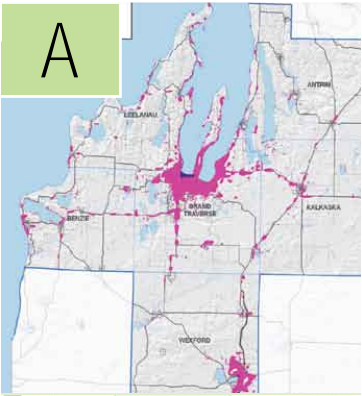☐ Vietnamese
☐ Other *(please specify)*
_____

10. What type of housing would you most want to live in? Please select your favorite.
☐ New single-family subdivision
☐ Existing single-family neighborhood
☐ Townhome or apartment on a main street
☐ Downtown condo or apartment

11. In what kind of place would you most like to work? Please select your favorite.
☐ Suburban retail/office development
☐ "Main street" building
☐ Downtown
☐ Industrial/office park

12. What kind of transportation investments are important to you? Please select your favorite.
☐ Widen existing roads
☐ Build new roads
☐ Improve/expand the bus system
☐ Build a light rail/streetcar system
☐ Improve bike/pedestrian paths

Please help us ensure that we're receiving input from residents throughout the city. No identifying information will be released, nor will this data be used for anything other than this survey.

Use visuals to share the results of the scenarios with the public. This example is from Grand Traverse Vision.

Future Growth Scenarios

A

Scenario A - **Future growth will follow the existing trend of low-density development in rural areas, with minimal growth in existing cities and villages.**
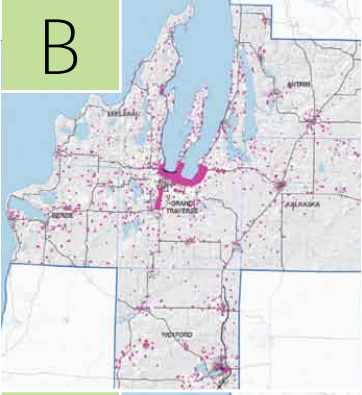
Transportation investments will be largely in widened roadways for commuters, and include some multi-use trails, but minimal investments in bus service and walkability

Scenario A: Transportation Priorities

| Additional Roads | Transit Availability | Ability to Bike or Walk |

B

Scenario B - **Future growth will occur in rural areas, but with new homes clustered to maximize open space, and minimal growth in existing cities and villages.**
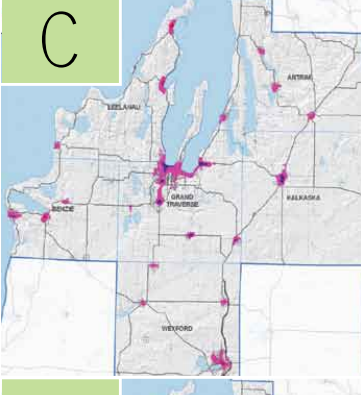
Transportation investments will be largely in new or widened roadways for commuters. This scenario includes some investment in walking and bicycling trails but the effectiveness of transit and walkability for commuting is limited by low densities

Scenario B: Transportation Priorities

| Additional Roads | Transit Availability | Ability to Bike or Walk |

C

Scenario C - **Future growth will occur primarily in the region's cities and villages, with additional growth in the main cities of Traverse City and Cadillac. Large amounts of rural open space are preserved.**
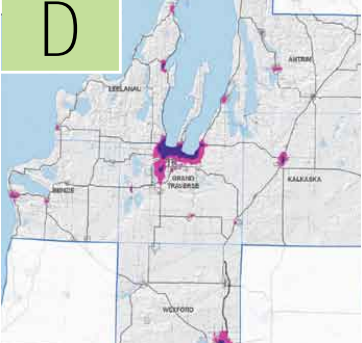
This development pattern will require investments in regional bus service, sidewalks and bike trails in villages and cities, with some investments in new or widened roadways.

Scenario C: Transportation Priorities
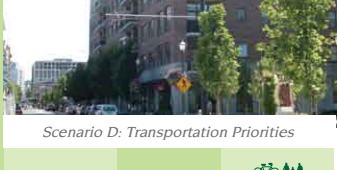
| Additional Roads | Transit Availability | Ability to Bike or Walk |

D

Scenario D - **Future housing development and job growth will occur primarily in the region's two main cities, Traverse City and Cadillac. Large amounts of rural open space are preserved.**

This development pattern will require investment in urban bus circulators, sidewalks and biking paths in those two main cities. This scenario has limited investment in new or widened roadways.

Scenario D: Transportation Priorities

| Additional Roads | Transit Availability | Ability to Bike or Walk |

Use graphics to show how the scenarios compared to each other based on the evaluation criteria. This example is from Grand Traverse Vision.

Scenario Tradeoffs

Land Use

The amount of land the region develops over the next few decades is directly related to the future height of buildings, the size of backyards and the amount of single-family vs. multifamily housing. Creating future housing with smaller yards and taller buildings will allow the region to preserve more farm and forest land and open space, but will mean that new residents will not have as much opportunity to find a new home in the country.

Many participants in the Grand Vision have expressed a need for more affordable housing options for young people, working families, and the elderly. One of the most effective ways to increase affordable housing is to allow for more apartments, condominiums and townhouses.
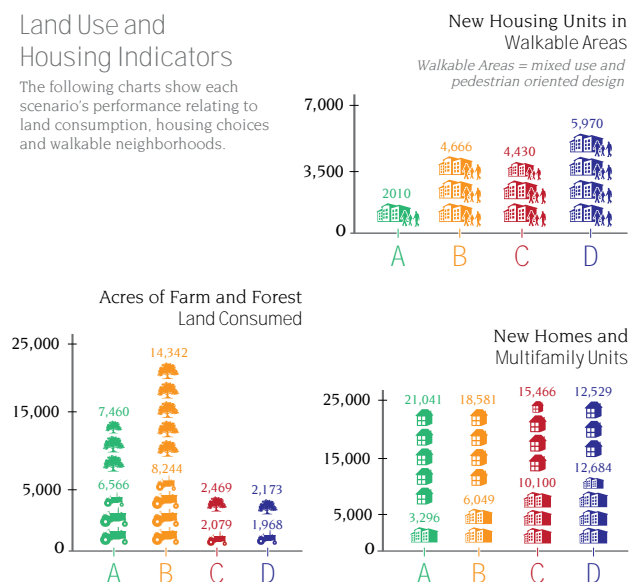
Transportation

How we live, work and travel via car, bike, bus or on foot has a dramatic effect on our daily lives, what our cities and towns look like and the health of our environment. Spreading development around the region in subdivisions and small acreages will ensure that more people can live on a quiet street, but will also mean that we will drive farther to work, there will be more congestion in the region and people will use more fuel.

Focusing the majority of future housing into existing cities and villages can dramatically decrease the distances we drive, what we spend on gas, and create more options for walking, biking and riding the bus. However, living closer together also means that we will spend less time commuting and pave fewer roads and parking lots, but we will experience more congestion in neighborhoods.

Land Use and Housing Indicators

The following charts show each scenario's performance relating to land consumption, housing choices and walkable neighborhoods.

New Housing Units in Walkable Areas
Walkable Areas = mixed use and pedestrian oriented design

A: 2010
B: 4,666
C: 4,430
D: 5,970

Acres of Farm and Forest Land Consumed

A: 7,460 / 6,566
B: 14,342 / 8,244
C: 2,469 / 2,079
D: 2,173 / 1,968

New Homes and Multifamily Units

A: 21,041 / 3,296
B: 18,581 / 6,049
C: 15,466 / 10,100
D: 12,529 / 12,684

Transportation Indicators

The following charts show each scenario's performance relating to getting around the region.

Annual Hours Spent Driving per Person

A: 227
B: 212
C: 208
D: 189

Total Cost of Lane Miles Needed

A: $142M
B: $86M
C: $78M
D: $58M

Annual Household Gas Expenditure*

A: $2,835
B: $2,721
C: $2,608
D: $2,381

*Assumes $4.00 per gallon gas

Annual Tons of CO2 Emissions

A: 1.2M
B: 1.14M
C: 1.13M
D: 1.04M
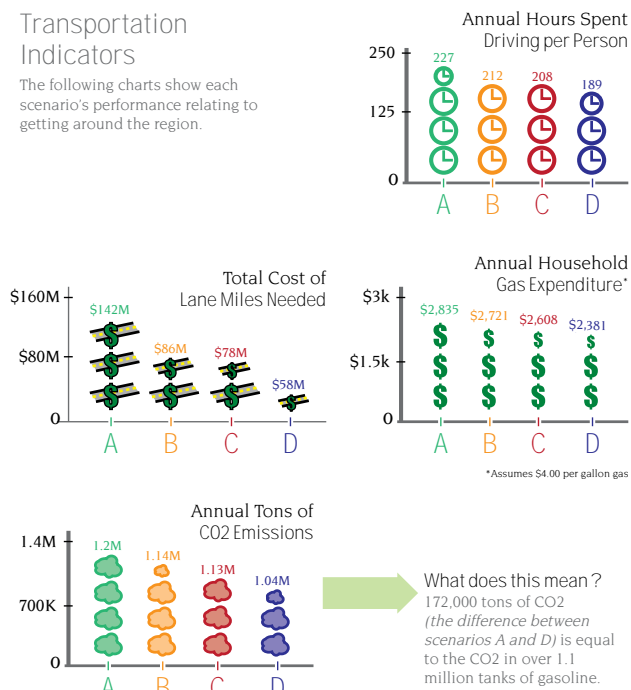
What does this mean?
172,000 tons of CO2 *(the difference between scenarios A and D)* is equal to the CO2 in over 1.1 million tanks of gasoline.

Growth Happens

For more detailed charts and graphs comparing the scenarios go to thegrandvision.org

Comment sheets distributed to collect feedback on four scenarios for Grand Traverse

TREND

Note: growth designated by workshop participants within conservation areas will be reconciled during the scenario building process.
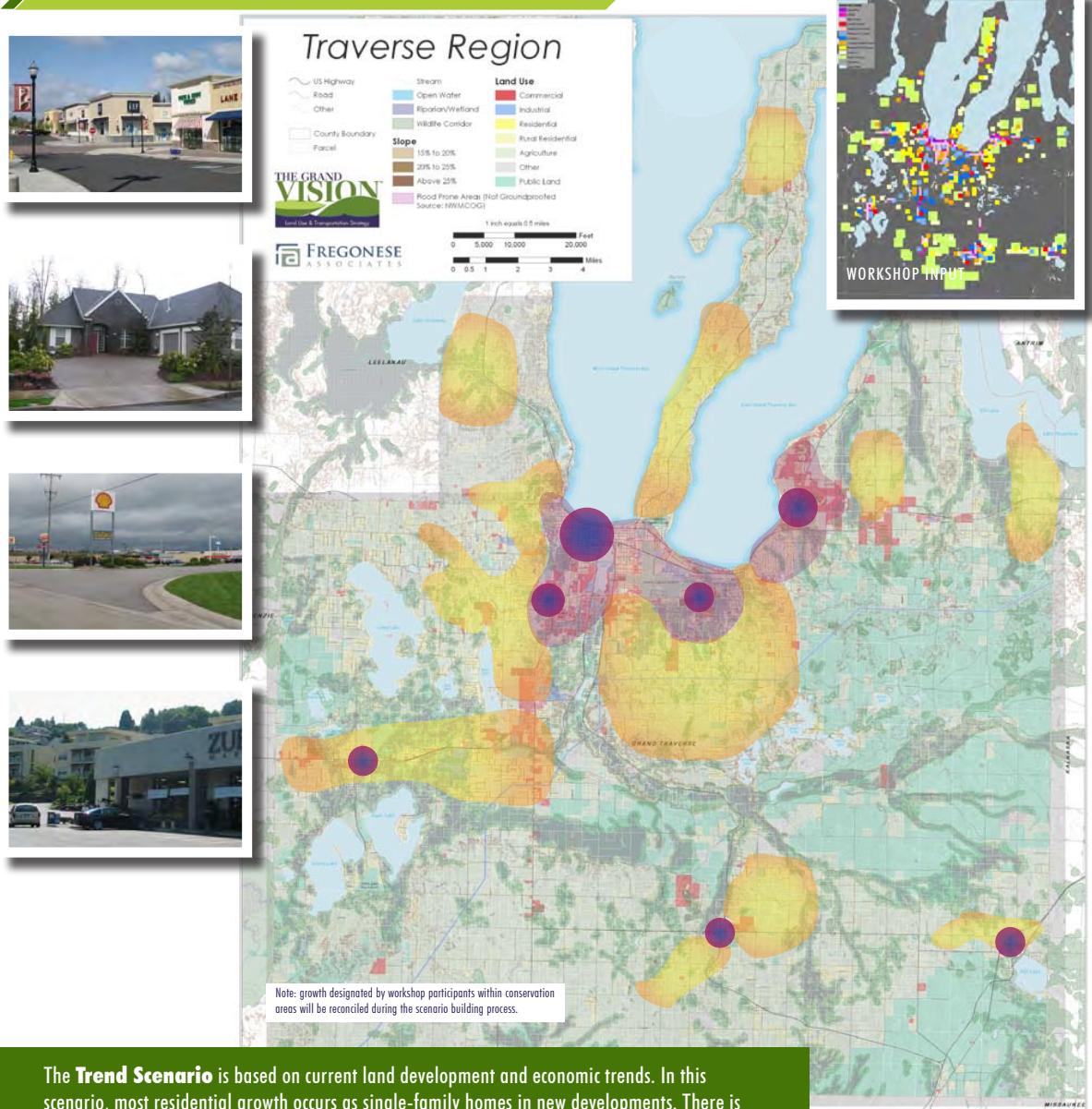
The **Trend Scenario** is based on current land development and economic trends. In this scenario, most residential growth occurs as single-family homes in new developments. There is little redevelopment of existing areas or infill development in the Trend scenario. Most of the job growth occurs in existing city and town centers. As the region's development spreads out, average automobile trips get longer and residents spend more time getting to their jobs, shopping and schools. Continuing the recent trends, development does occur on some land which is currently open space and used for agriculture. The transit system would consist largely of the current Cherriot bus system serving current Traverse City routes.

COMMENTS:

VILLAGES

WORKSHOP INPUT

Note: growth designated by workshop participants within conservation areas will be reconciled during the scenario building process.
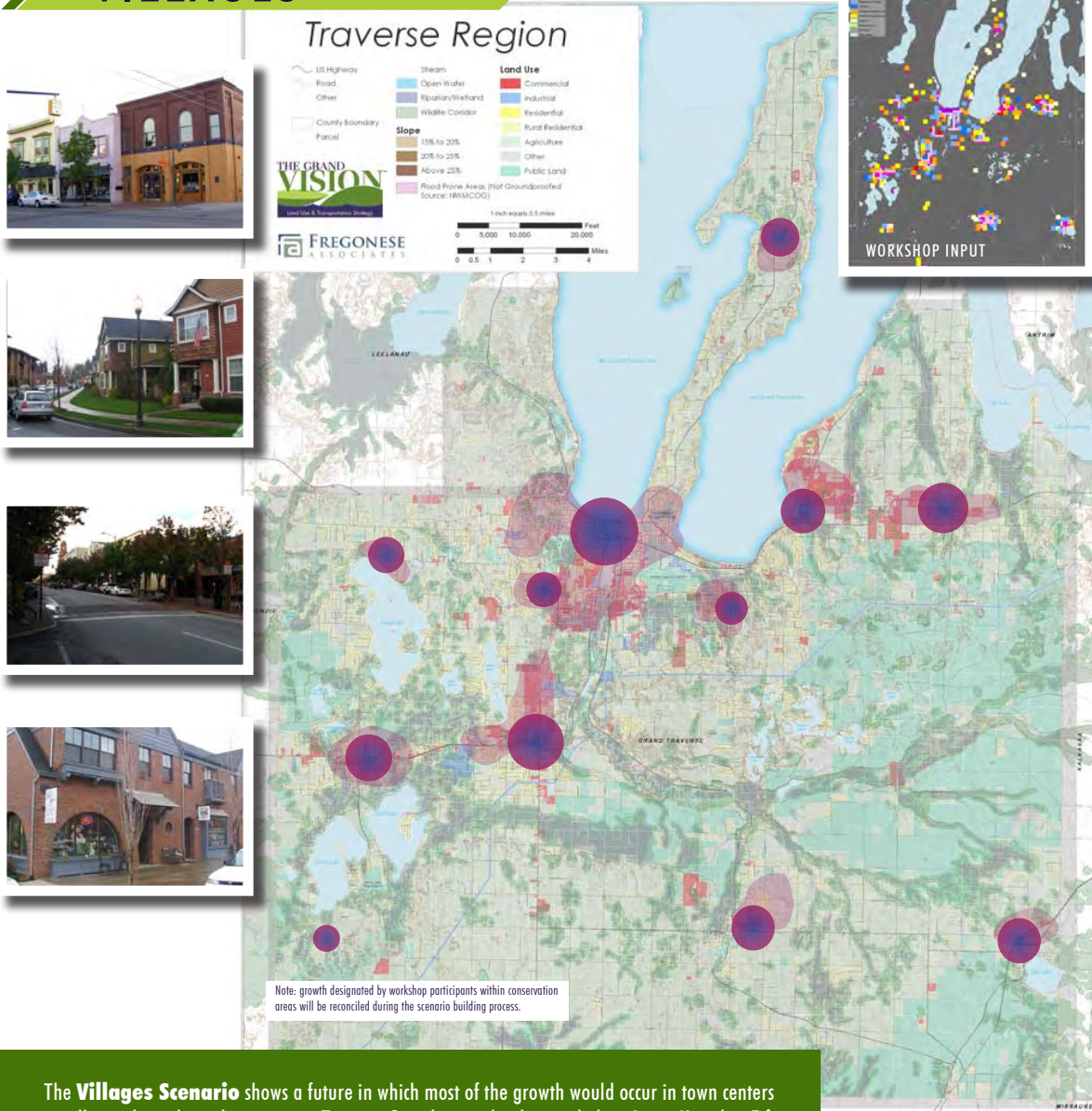
The **Villages Scenario** shows a future in which most of the growth would occur in town centers or villages throughout the region, in Traverse City along with others including Acme, Kingsley, Fife Lake and Interlochen. Significant amounts of this growth occur in mixed-use developments. New job growth and housing growth is fairly evenly spread throughout the region. Across the Grand Traverse region, average daily travel time is lower than in the Trend scenario, but congestion in each of the centers is significantly higher. Regional transit includes buses, commuter rail and a Bus Rapid Transit (BRT) system to connect the village centers.

COMMENTS:

WORKSHOP CONSENSUS

Traverse Region

US Highway
Road
Other

County Boundary
Parcel

THE GRAND
VISION
Land Use & Transportation Strategy

FREGONESE
ASSOCIATES

Stream
Open Water
Riparian/Wetland
Wildlife Corridor

Slope
15% to 20%
20% to 25%
Above 25%

Flood Prone Areas (Not Groundproofed)
Source: NWMCOG

Land Use
Commercial
Industrial
Residential
Rural Residential
Agriculture
Other
Public Land

1 inch equals 0.5 miles

WORKSHOP INPUT

Note: growth designated by workshop participants within conservation areas will be reconciled during the scenario building process.

The **Workshop Consensus Scenario** shares new growth between both existing and new communities in the region. Existing cities and towns, such as Traverse City and Kingsley, would add jobs and people, primarily in mixed-use developments. In addition, some new town centers would be built along major transportation corridors or at key intersections. Open space would create separation between developed areas. Regional transit consists of a multi-modal bus system and Bus Rapid Transit (BRT).

COMMENTS:

CENTRAL CITY

Traverse Region

WORKSHOP INPUT

Note: growth designated by workshop participants within conservation areas will be reconciled during the scenario building process.
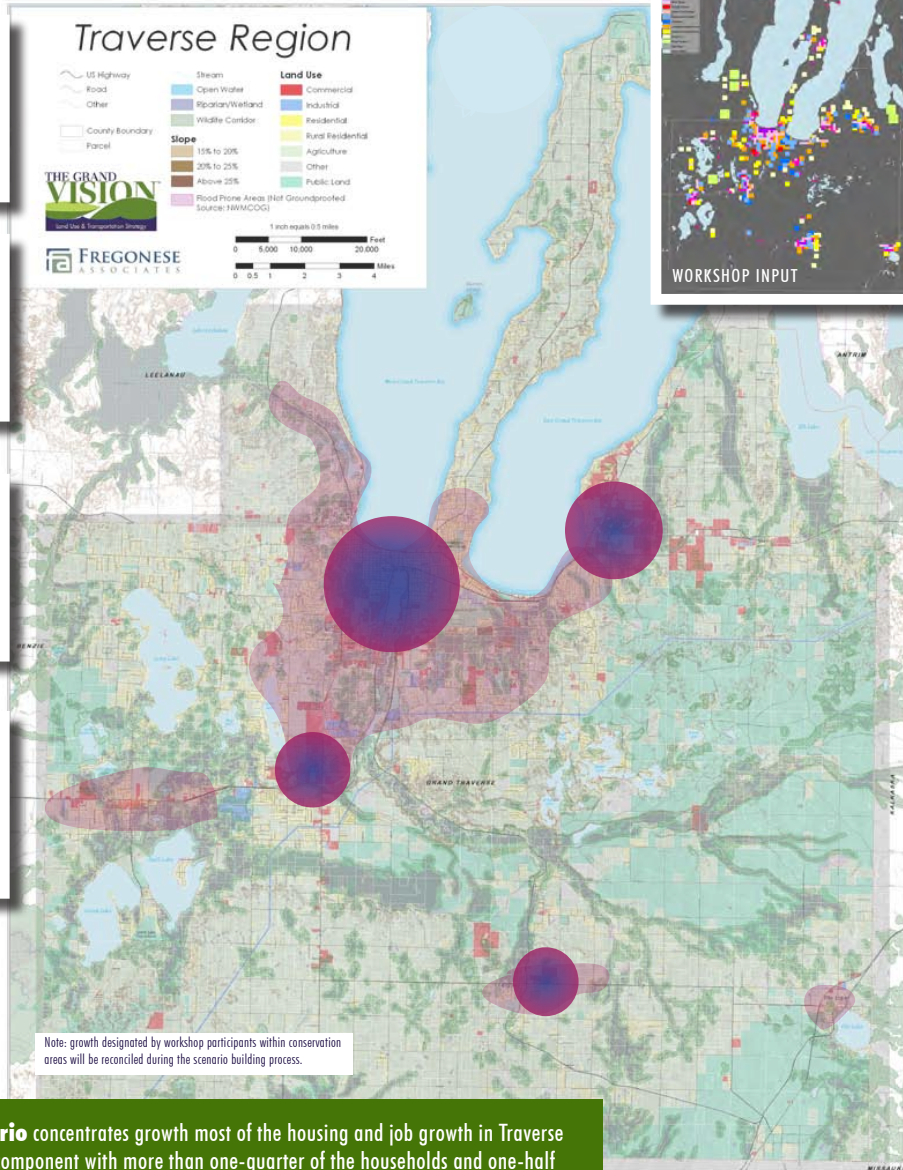
The **Central City Scenario** concentrates growth most of the housing and job growth in Traverse City. Infill is an important component with more than one-quarter of the households and one-half of the jobs accommodated on currently developed land. In the Central City scenario, the transit system would consist of an expanded Cherriot bus system designed to move residents to jobs primarily in the urban core. Along certain mixed-use corridors, the system includes Bus Rapid Transit (BRT).

COMMENTS:

Target Rules Methodology

This document summarizes the policy and technical background for the Metropolitan Greenhouse Gas (GHG) Reduction Targets and outlines in detail the target calculation methodology using example model results. The information presented apply to the updated Target Rules (OAR 660-044) as adopted by the Land Conservation and Development Commission (LCDC) in 2017, with progress measured using the Oregon Department of Transportation's (ODOT) Regional Strategic Planning Model (RSPM). This information is intended to provide a more detailed understanding of the targets and modeling. However, application of the information provided here should be done in coordination with both ODOT and the Department of Land Conservation and Development (DLCD).

Policy Framework

This section presents the policy framework in which the Metropolitan GHG Targets relate to other state and federal policies and programs.

Oregon's Overall GHG Reduction Goals

HB 3543 (ORS 468A.205)

Adopted in 2007 by the Oregon Legislature, sets a 2050 goal for GHG emissions reductions across all sectors as follows:

- By 2010, arrest the growth of emissions and begin to reduce emissions.
- By 2020, achieve levels that are 10 percent below 1990 levels.
- By 2050, achieve levels that are at least 75 percent below 1990 levels.

GHG Reduction Targets for Metropolitan Areas

HB 2001 (Section 37 (6), chapter 865, Oregon Laws 2009), and SB 1059 (Section 5 (1), chapter 85, Oregon Laws 2010) direct the Oregon Land Conservation and Development Commission (LCDC) to adopt rules identifying greenhouse gas emissions reduction targets for emissions caused by *light vehicle travel* for each of the state's metropolitan areas. These statutes direct that the rules must:

- Reflect greenhouse gas emissions reduction goals set forth in ORS 468A.205 (described above)
- Take into consideration the reductions in vehicle emissions that are likely to result from the use of improved vehicle technologies and fuels
- Take into consideration methods of equitably allocating reductions among the metropolitan areas given differences in population growth rates

The legislation requires scenario planning and adoption of a preferred scenario to reach the reduction target for Portland Metro and required scenario planning to identify a scenario to reach the reduction target for the Central Lane Metropolitan Planning Organization (MPO). For all other metropolitan areas, scenario planning is voluntary.

2011 Metropolitan GHG Reduction Target Rules (OAR 660-044)

In accordance with the Metropolitan GHG Reduction Target Rules, LCDC first adopted GHG reduction targets for the state's metropolitan areas (OAR 660-044) in 2011. The rules establish the percentage reductions (from 2005 to 2035) in metropolitan area light vehicle GHG emissions beyond the reductions expected to occur due to changes to light vehicle technologies and the fuels they use. The establishment of these targets was informed by technical analysis performed by ODOT, Oregon Department of Environmental Quality (DEQ), and Oregon Department of Energy (ODOE) on future assumptions of vehicle technologies and fuels. In short, the analysis made recommendations on:

1. An overall light vehicle per capita emissions reduction goal
2. A range of forecasts for reductions in light vehicle emission rates due to changes in light vehicles and the fuels they use
3. The target percentage reductions needed to meet the per capita emissions reduction goal given the vehicle emission rate forecasts

Development of the targets was supported by the Agencies Technical Report (ATR) and the Target Rulemaking Advisory Committee (TRAC). The TRAC selected an emissions rate forecast they thought to be sensible and would result in achievable metropolitan area targets. This low-end emission forecast and the resulting targets were then adopted in the target rules.

2017 Metropolitan GHG Reduction Target Rules Update (OAR 660-044)

In January of 2017, LCDC adopted amendments to the Target Rules based upon the recommendations presented to the commission from a Target Rulemaking Advisory Committee (RAC) in the RAC Recommendations Report. In summary the updates to the Target Rules are as follows:

- Extends horizon year, providing flexibility in offering a schedule of targets for all years between 2040 and 2050
- Emission rates are specified more simply given new information and studies since the 2011 Target Rule. A single grams per mile rate for each year replaces details on vehicle mix, turnover rates, etc.
- Establishes one target for the Portland metropolitan area, and separate target for all other metropolitan areas. Prior rule distinctions among the smaller MPOs were attributed to adjustments in moving from the statewide 1990-based reduction goal, to the metropolitan targets 2005-based reduction goal. In retrospect, these distinctions in 1990 to 2005 vehicle and emissions variations by MPO were uncertain, given the age of this data. Thus, a common target is used for all non-Metro MPOs.
- Includes two new metropolitan areas, Albany Area and Middle Rogue MPOs
  o Relies upon the Statewide Transportation Strategy (STS) for future vehicle technology and fuel assumptions that align with state and federal policies.
  o Updated the latest county population forecasts. (Portland Metro 3-county, PSU Population Research Center where available, Office of Economic Analysis otherwise)
- Changed the definition of light vehicle travel to be considered; from light-duty vehicle travel on metropolitan area roadways to light-duty vehicle travel by metropolitan area households (and related light-duty commercial service vehicle travel).

The adopted targets for the state's metropolitan areas are identified in OAR 660-044-0020 (Portland Metro) and 660-044-0025 (other MPOs) for various planning years. The targets are in units of GHG percentage reduction per capita resulting from light vehicle travel in a metropolitan area needed in the planning year in order to meet the state goal of a 75 percent reduction in greenhouse gas emissions from 1990 levels by the year 2050. They represent reductions in GHG emissions from light vehicle travel beyond what is expected to occur from improvements to vehicle technologies and fuels.

The per capita units account for the differences in population growth rates among the metropolitan areas. The larger reduction targets for Portland Metro, reflect the capabilities demonstrated in scenario planning efforts in Metro relative to Strategic Assessments in Corvallis and Rogue Valley. Larger than all other metropolitan areas combined, Portland Metro can implement policies that would be difficult in other metropolitan areas since it contains areas of significantly higher density supported by high baseline levels of transit service and parking management.

> **OAR 660-044-0020 (Portland Metro), 660-044-0025 (other MPOs)**
>
> (a) Local governments in metropolitan planning areas may use the relevant targets of this rule as they conduct land use and transportation scenario planning to reduce greenhouse gas emissions.
>
> (b) This rule does not require that local governments or metropolitan planning organizations conduct land use and transportation scenario planning. This rule does not require that local governments or metropolitan planning organizations that choose to conduct land use or transportation scenario planning develop or adopt a preferred land use and transportation scenario plan to meet targets in section (2) of this rule.

Statewide Transportation Strategy

The Statewide Transportation Strategy (STS) was developed in response to legislative direction in Senate Bill 1059 (Chapter 85, Oregon Laws 2010), which required ODOT to develop a strategy on greenhouse gas (GHG) emission reductions to aid the state in achieving the reduction goals set forth in ORS 468A.205 (a 75% reduction below 1990 levels by 2050). The STS identifies short- and long-term actions and strategies to reduce transportation-related GHG emissions in Oregon while supporting other important goals such as livable communities, economic vitality, and public health. Three key travel markets included in the STS are ground passenger and commercial services, freight, and air passenger. The STS was completed in 2013, and an ODOT Short-Term Implementation Plan created shortly thereafter. Among other efforts, the Implementation Plan calls for ODOT and DLCD to support scenario planning in metropolitan areas.

When the original metropolitan GHG targets were adopted by LCDC in 2011, the STS was still being developed requiring the targets to be set independent of the STS. The metropolitan GHG reduction targets adopted in 2017 were set assuming the future vehicle fleet, fuel, and technology assumptions set forth in the STS (built in collaboration with the Departments of Energy and Environmental Quality), as well as the statewide actions identified in the preferred scenario.

Technical Considerations

The following are technical considerations when calculating a metropolitan area's anticipated GHG reduction against the Target Rule OAR 660-044. Some are requirements identified in the rule, while others are best practices with more flexibility.

1. Household-based Travel,

The targets capture emissions from light-duty vehicle travel related to the activities of households (and university group quarters populations) that live within the metropolitan area regardless of where the driving occurs. This includes the full extent of the solid-line trips shown in Figure 1 (excluding "External-Internal" and "Through" trips). These are assumed to be the trips that are most fully influenced by policy actions of the local metropolitan area. In addition to the travel of household members, the GHG Target rule travel definition also includes travel by light duty commercial vehicles related to household members or household demand (for example household deliveries
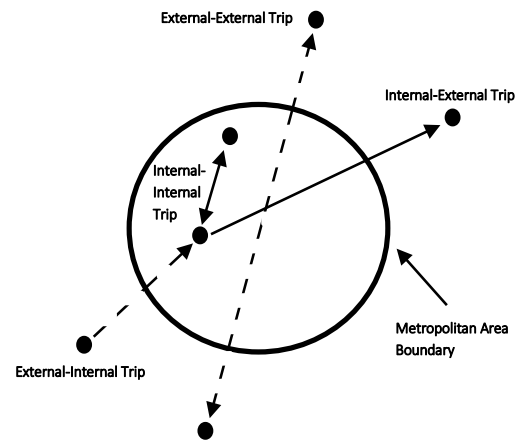

Figure 1. Example of Household Trip

OAR 660-044-0005 Definitions (selected)

(4) "Greenhouse gas" has the meaning given in ORS 468A.210. Greenhouse gases are measured in terms of carbon dioxide equivalents, which means the quantity of a given greenhouse gas multiplied by a global warming potential factor provided in a state-approved emissions reporting protocol.

(5) "Greenhouse gas emissions reduction target" or "target" means a reduction from 2005 emission levels of per capita greenhouse gas emissions from travel in light vehicles. Targets are the reductions beyond reductions in emissions that are likely to result from the use of improved vehicle technologies and fuels.

Travel in light vehicles includes all travel by members of households or university group quarters living within a metropolitan area regardless of where the travel occurs, and local commercial vehicle travel that is a function of household labor or demand regardless of where the travel occurs. Examples include commuting to work, going to school, going shopping, traveling for recreation, delivery vehicles, service vehicles, travel to business meetings, and travel to jobsites.

(7) "Light vehicles" means motor vehicles with a gross vehicle weight rating of 10,000 pounds or less.

(9) "Metropolitan planning area" or "metropolitan area" means lands within the planning area boundary of a metropolitan planning organization.

(10) "Metropolitan planning organization" means an organization located wholly within the State of Oregon and designated by the Governor to coordinate transportation planning in an urbanized area of the state pursuant to 49 U.S.C. 5303(c). The Longview-Kelso-Rainier metropolitan planning organization and the Walla Walla Valley metropolitan planning organization are not metropolitan planning organizations for the purposes of this division.

(11) "Planning period" means the period of time over which the expected outcomes of a scenario plan are estimated, measured from a 2005 base year, to a future year that corresponds with greenhouse gas emission targets set forth in this division.

(13) "Statewide Transportation Strategy" means the statewide strategy accepted by the Oregon Transportation Commission as part of the state transportation policy to aid in achieving the greenhouse gas emissions reduction goals set forth in ORS 468A.205 as provided in chapter 85, section 2, Oregon Laws 2010.

and work travel by household members). This allows metropolitan areas to get credit for vehicle programs such as compressed natural gas and renewable natural gas used in local commercial fleet and public transit vehicles.

2. Taking Credit for State-led Actions

The Target Rules specify that metropolitan areas may take credit for allowable state-led actions found in the Statewide Transportation Strategy (STS), which are reflected in the default emissions rates. These actions include pricing programs such as pay-as you-drive insurance, mileage based taxes (e.g. vehicle miles traveled fees), social cost recovery fee pricing (e.g., carbon tax), and congestion pricing (Metro area only).

In evaluating whether scenarios meet the GHG reduction target, the rules allow metropolitan areas to take credit for selected state-led policies and programs included in the STS other than those from vehicle technologies and fuels), implying local support for these policies and programs. These actions, although orchestrated at the state level, are unlikely to be adopted or successfully implemented without support from communities across the state. To include these in the analysis, support for these policies should be explicitly mentioned in the scenario

> **660-044-0030(3) (a)**
> Projections of greenhouse gas emissions may include reductions projected to result from state actions, programs, and associated interactions up to, but not exceeding, the levels identified in the STS; however local governments may choose to assume a lower level of state actions.
>
> **044-0030(3) (b)**
> Projections of greenhouse gas emissions may include local or regional actions similar to actions in the STS if the local governments have authority to and have adopted plans that would implement the actions.

planning report when comparing to Target Rule reductions. Absent local support for these state-led actions, metropolitan areas are allowed to propose an alternative set of policy actions in an attempt to reach the target requirement.

A list of the key allowed state-led policies and actions are identified below. For the most current information, please contact DLCD/ODOT:

- **Full Cost Pricing**, including *Pay-as-you-Drive (PAYD) insurance, Mileage-based fees* (e.g., gas tax replacement, expected surcharge from the Oregon Renewable Fuels Program), **Social cost recovery fees** (e.g., through a carbon tax), and *Electricity prices* (reflecting costs to clean up the electric grid, important with the shift to electric vehicles)
- **Driving Efficiency Programs**, including *Eco driving* and *Low-rolling-resistance tire* programs.

3. Default Statewide Emission Rates for Vehicle Technologies and Fuels

Policies that move vehicular travel to newer vehicle technologies (with higher fuel efficiency and or electrification) and fuels (with lower emissions) are critical to achieving state and metropolitan GHG reduction goals. Since these policies affect every mile of emissions, they are the most impactful in meeting GHG targets. Default GHG emission rates (grams per mile) are specified in 660-044-0030(2), shown in the last column of

Table 3 below. These are the vehicle emissions projected to result from the use of improved vehicle technologies and fuels through 2050. The emissions rates are reflected in the model assumptions about mix of vehicles sold each year and rates of vehicle turnover specified for the target rules analysis. When the model is run, households are assigned vehicles of a certain age, and the attributes of those vehicles determine emissions, fuel consumption, and household travel cost. The metropolitan GHG reduction target only considers light duty vehicle emissions.
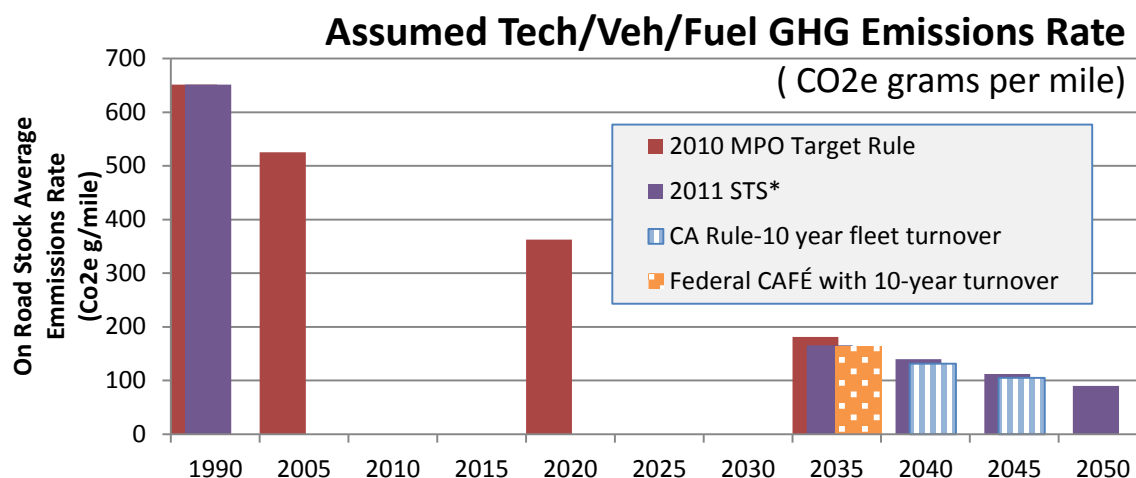
> **660-044-0030(2) (a)**
>
> Projections of greenhouse gas emissions may use the emission rates listed below, which are based on the Statewide Transportation Strategy and reflect reductions likely to result by the use of improved vehicle technologies and fuels. Rates are measured in grams of carbon dioxide equivalent (CO_2e) per vehicle mile.
>
> *See the last column in Table 3 for the Statewide Default Emission Rates*

During the 2017 Metropolitan Target Rule update, DOE and DEQ confirmed these default statewide emission rates were consistent with statutory long term state programs and requirements. However they also cautioned that there are risks and challenges as policies are not fully in place to reach these emission rate goals by 2050. ODOT, along with DOE and DEQ, is monitoring progress in achieving the assumed emissions rate reductions. Significant changes, such as significant vehicle advances or repealing of existing vehicle or fuel emission reduction programs could prompt review of the metropolitan area GHG target rule.

Comparing Emission Rates – Oregon, California, and Federal Projections

Although the vehicle and fuel assumptions in the STS are aggressive, they are not out of line with other state and federal policies, including the federal CAFE standards and California Rule/multi-state Zero Emission Vehicle (ZEV) standards. The figure below approximates comparable values over time against the STS emission (all metropolitan areas, as used in the 2017 Metropolitan Target Rule update). To do so, the 2025 CAFE and 2030/2035 ZEV new car sales standards were simply assumed to represent average fleet values 10 years later (2014 Bureau of Transportation Statistics data notes the national average vehicle age of 11.4 years).

Assumed Tech/Veh/Fuel GHG Emissions Rate
(CO2e grams per mile)

Legend:
- 2010 MPO Target Rule
- 2011 STS*
- CA Rule-10 year fleet turnover
- Federal CAFÉ with 10-year turnover

* STS only reported on years 1990 and 2050, although interim years were modeled.

4. More Ambitious Vehicle Technologies and Fuels Assumptions

There are actions within a metropolitan area that can result in emission rates that differ from the statewide actions, noted above. OAR 660-044-0030(2) (b) allows for this option.

This is an important point, since vehicle technologies and fuel assumptions do not just affect the emissions rates; they also affect the operating cost and ultimately the amount of vehicle travel. Indeed, many metropolitan area land use and transportation scenarios are likely to include programs or actions that may impact emission rates. Below are a couple of examples of possible reasons a metropolitan area emission rate (grams per mile) might differ from the statewide default:

> **660-044-0030(2) (b)**
>
> Projections of greenhouse gas emissions may use emission rates lower than the rates in 660-044-0030(2) (a) if local or regional programs or actions can be demonstrated to result in changes to vehicle fleet, technologies, or fuels above and beyond the assumption in the Statewide Transportation Strategy (STS). One example would be a program to add public charging stations that is estimated to result in use of hybrid or electric vehicles greater than the statewide assumption in the Statewide Transportation Strategy.

- **Local Actions on Vehicles and Fuels**: Localities can adopt policies that have a direct impact on local emission rates. These include provision of alternative fuels for light duty vehicles, such as Rogue Valley's Clean Cities efforts that have developed a compressed natural gas (CNG) station that fuels government/ commercial vehicle fleets and buses, with plans to shift to cleaner renewable natural gas (RNG) (capturing landfill gas for fuel usage), or alternatively providing subsidies to increase adoption of hybrid or electric vehicles within the metropolitan area.

- **Operating Cost Impacts**: Miles driven can be affected by the significantly lower operating costs with higher MPG and Electric Vehicles (on average gas-powered cars cost around three times as much per mile as electric vehicles, depending upon gas prices), or pricing policies that affect per mile fees. This is called the rebound effect and is important to account for in emissions models. That is, policies implemented to reduce vehicle miles traveled (VMT) can have positive or negative impacts on emission rates (grams per mile).

- **Land Use Impacts**: Plug-in hybrid electric vehicles (PHEVs) are powered both by electricity from the grid and by on-board fuels. The relative portions depend on the amount of use each day as well as the battery range. In general, households who live in denser areas are more likely to own PHEVs and these PHEVs will be more likely to power a larger portion of their travel using electricity rather than fuel because they have fewer daily miles traveled and/or shorter trips. The extent to which electricity can replace on-board fuel use, then those households will have lower emission rates as well as lower operated costs.

- **Congestion Impacts**: Emissions rates for internal combustion engine vehicles are affected significantly by congestion because of efficiency losses due to idling and to frequent acceleration and deceleration. In contrast, the "stop-start" technology included in newer hybrid vehicles of all sizes, means idling, such as in congestion, emits significantly less emissions Local Policies can affect congestion and hence emissions rates.

- **ITS/Op Impacts**: Newer Advanced Traffic Management programs, such as implemented on OR217 in Portland, including variable speed signs, changeable message signs and advance ramp metering, are designed to reduce congestion and incidents, but also have impact on emissions. "Speed harmonization" which limits acceleration and deceleration also reduce emissions from vehicles on the roadway.

- **Other Impacts**: VMT-reducing policies consistently reduce emissions, but have an indirect and thus varying effect on congestion. For example, a policy which reduces VMT by limiting roadway capacity does so by increasing congestion (people make fewer vehicle trips or drive shorter distances to avoid spending more time on the road). On the other hand, a road pricing policy can reduce both VMT and congestion. If metropolitan areas identify other actions with substantial impact on emissions rate, estimation of the amount of GHG emissions reductions expected to result within the metropolitan area from these programs and actions may be allowable if analysis and methods are made in consultation with DLCD and ODOT.

Because the rate of emissions and amount of travel are bound together (i.e., local actions can enable decreases in both VMT and emissions rate) localities can reach their target by either reductions in travel demand or, emission rates.

5. Analysis Tool for Estimating Greenhouse Gas Emissions and Emissions Reductions

The Regional Strategic Planning Model (RSPM) is the recommended tool, given its use in setting the GHG reduction targets. RSPM is a metropolitan version of the GreenSTEP strategic planning model, developed by ODOT for use in the STS, and is part of the VisionEval suite of tools, supported by cities and state transportation departments with help from the FHWA. Beyond consistency with other state and local efforts, using RSPM in Target Rule calculations provides the following advantage over other tools (e.g., application of emission rates to travel demand model VMT):

> **660-044-0040(2) - Applies only to Portland Metro**
>
> (d) Use evaluation methods and analysis tools for estimating greenhouse gas emissions that are:
>
> > (A) Consistent with the provisions of this division;
> >
> > (B) Reflect best available information and practices; and,
> >
> > (C) Coordinated with the Oregon Department of Transportation.

- Matches the Target Rule's definition of household-based travel emissions
- Captures impact of pricing and policy actions on travel and emissions
- Captures interaction of policy actions on travel behavior and emission rates (e.g., see Consideration #4 above)

ODOT supports the use of RSPM for metropolitan area GHG target rule calculations. This may include running the tool, working with MPOs to gather data, design scenarios, and interpret results, as well as efforts that work to build such capacity through training.

6. Fiscal Constraints

The target rules requirements for Portland Metro allows their preferred scenario meeting the targets to include projects without programmed funding if a discussion of estimated costs and sources is identified. For other metropolitan areas, there is no fiscal constraint. However, best practices are for a metropolitan area to assess the GHG impacts of their fiscally constrained "Adopted plans", as a gauge for progress towards the target. This scenario would include the region's best assessment of anticipated funding and policies, as represented in Regional

> **660-044-0040 - Applies only to Portland Metro**
>
> (i) Evaluate if the preferred scenario relies on new investments or funding sources to achieve the target, the feasibility of the investments or funding sources including:
>
> (A) A general estimate of the amount of additional funding needed;
>
> (B) Identification of potential/likely funding mechanisms for key actions, including local or regional funding mechanisms; and,
>
> (C) Coordination of estimates of potential state and federal funding sources with relevant state agencies (i.e. the Oregon Department of Transportation for transportation funding); and,
>
> (D) Consider effects of alternative scenarios on development and travel patterns in the surrounding area (i.e. whether proposed policies will cause change in development or increased light vehicle travel between metropolitan area and surrounding communities

Transportation Plans (RTP) and Transportation System Plans (TSP), and anticipated funding sources for transit and transportation options programs. It is recommended that other scenarios be run as well, reflecting more ambitious policies (e.g., longer time frame with more funding), as well as resilience testing of policies under alternative conditions (e.g., different economic growth and fuel price scenarios). This scenario planning approach can provide a basis for understanding "what would it take" to meet the targets, and provide the basis for discussion of GHG as well as other regional performance measures, resulting in a desired long term policy mix that meets the region's goals.

Target Rule Calculation-Technical Detail

Figure 2 illustrates how the metropolitan area GHG reduction **TARGET** is calculated from the per capita emissions reduction **GOAL** and the forecast for reduction in the light vehicle emissions **RATE**. It uses the Portland Metro 2050 target reductions from Table 3, as an example. The circle represents total metropolitan area per capita emissions from light duty vehicles in 2005 while the grey slice shows per capita emissions that still remain in

Figure 2. Calculating Metropolitan Area Target from the Goal
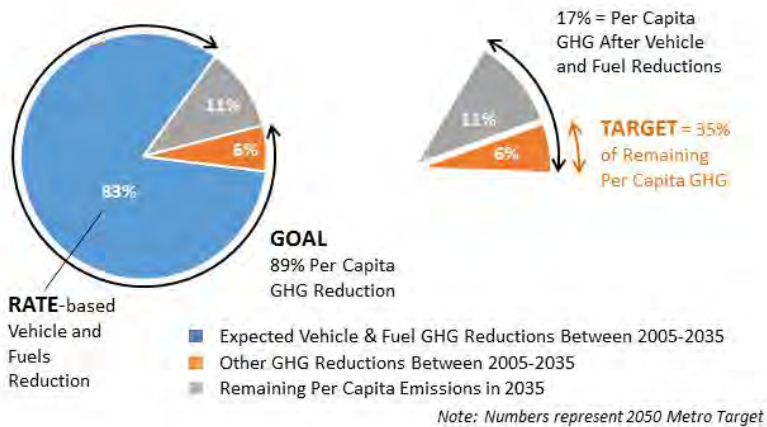
2050 after reductions from all sources. Since the overall **GOAL** is to reduce per capita emissions by 89% from 2005 to 2050, the remaining per capita emissions in 2050 (gray slice) would be 11% of the 2005 emissions (100%-89% = 11%). The blue slice indicates the reduction in per capita emissions due to the forecasted change in the light vehicle emissions **RATE**, i.e., expected improvements in vehicles and fuel policies. Since forecasted change in the emission rate would reduce per capita emissions by 83%, the remaining emissions in 2050 would be 17% of the 2005 emissions (100% - 83% = 17%) if only the forecasted changes to light vehicles and the fuels they use occur. An additional 6 percentage point reduction is necessary to meet the overall 89% reduction goal (89% – 83%). That represents 25% of the remaining emissions (6% ÷ 17%). This 35% is the 2050 Metropolitan **TARGET** for Portland Metro; the percentage reduction in emissions beyond the reductions expected from changes in vehicle technologies and fuels.

The overall **GOAL** (89% in figure 2), emission RATE (results in 83% reduction in figure 2), and resulting metropolitan **TARGET** (6% in figure 2) are shown in Table 3 for each year, reflecting Target Rule OAR 660-044. Analysis showing a metropolitan area meets either the **TARGET** or the **GOAL** is mathematically equivalent. Analysis must compare local light-duty GHG reductions relative to 2005, and show that the metropolitan region meets (A) the **TARGET** reduction of GHG reduction per capita beyond vehicle technologies and fuels (or equivalent GOAL reduction) as well as (B) comparing the change in the average vehicle emissions per mile to the default **RATE**.

Targets vs Goals

Communicating what the existing targets mean and how they relate to other expressed goals (e.g. reducing total emissions statewide by 75%) is challenging. The **TARGET** is not a percent of total emission reductions or a percentage point portion of the overall reduction. In some circumstances, it may be useful to communicate using the **GOAL**, i.e., the overall reduction in total per capita emissions, including the impacts from vehicles and fuels. In contrast, the **TARGET** makes an additional step to remove reductions from vehicle and fuel policies to be comparable to the Target Rule Table 3 values. Using the RULE (overall emissions reductions per capita) rather than the **TARGET** (emission reductions beyond the default vehicle and fuels emission rate) may be easier to explain given that it involves less steps (skips step 4) and is somewhat more comparable units with the statutory statewide GHG emissions reduction requirement (75% between 1990 and 2050 in total state emissions, which translates to 89% in *per capita* emissions just within *metropolitan* areas between *2005* and 2050). Since the **RULE** and **TARGET** are mathematically equivalent, either can be used in communication.

Table 3. Metropolitan Target Rule Values

Year	PER CAP: GHG Reductions (% Light-Duty Vehicle emissions relative to 2005)				PER MILE:
	Metropolitan TARGET (beyond vehicles & fuels)		Overall GOAL		Default Emission RATE (CO²e grams per mile)
	Portland	Other MPOs	Portland	Other MPOs	
2040	-25%	-20%	-80.1%	-78.7%	140
2041	-26%	-21%	-81.2%	-79.9%	134
2042	-27%	-22%	-82.3%	-81.0%	128
2043	-28%	-23%	-83.2%	-82.0%	123
2044	-29%	-24%	-84.2%	-83.0%	117
2045	-30%	-25%	-85.1%	-84.0%	112
2046	-31%	-26%	-85.9%	-84.9%	108
2047	-32%	-27%	-86.7%	-85.7%	103
2048	-33%	-28%	-87.4%	-86.5%	99
2049	-34%	-29%	-88.1%	-87.3%	94
2050	-35%	-30%	-88.8%	-88.0%	90

To determine whether a metropolitan area meets the GHG reduction target involves the following steps:

1. Model the Metropolitan Area Travel & Emissions using RSPM, Reflecting the Following:
- **Base Year and Trend Scenarios**: 2005 base year and future year Adopted Plans scenarios. Future year should reflect fiscally constrained adopted plans (e.g., RTP or TSP)
- **Emission Rates**: Statewide default emission rates (i.e., carbon intensity of technology and fuels) shown above in Table 3 for the future year Trend Scenario (adopted plans). These rates can be used directly or as part of a series of tables (vehicle sales mix by vehicle age plus fuel carbon intensity tables by year), as used in the RSPM.
- **Units**: GHG emissions are measured in carbon dioxide equivalents (CO_2e), reflecting the calculations of combining the various man-made GHGs with different heat retention capabilities created with the combustion of fossil fuels. The quantity of man-made GHG emissions is typically represented in terms of the weight of CO_2e emitted. Only household and commercial light duty vehicles (less than 10,000 lbs.) are included in the Metropolitan Target Rule calculations.

    GHG emissions are expressed in metric tons of CO_2e per person.
    Emission rates are expressed in grams of CO_2e per mile of travel.

2. Using the Model Results:
   a) Calculate the modeled GOAL (overall percent change in per capita GHG emissions)
   b) Calculate the modeled RATE (change in the average GHG emissions per mile)

3. **Compare per Capita Emissions**
   a) Calculate the modeled TARGET: percent change in per capita GHG emissions beyond vehicle technology and fuels, by dividing the modeled GOAL reduction by the modeled RATE reduction, as follows:

$$Target = Goal / Rate$$

   b) Compare the modeled TARGET change to the rule specifications (Table 3 first column). The modeled change should be equal to or less than the change specified in the rule.

4. **Compare per Mile Emissions**

Compare the calculated 2005 emissions to the future year change in the modeled RATE with the default statewide rule specification (Table 3 last column). The modeled emissions rate change should be equal to or greater than the change specified in the rule.

Comparison to statewide default emission rates is necessary in order to determine that the TARGET is not being met just because more ambitious assumptions are being made about improvements to vehicle technologies and fuels. However, a metropolitan area may assume a greater reduction in the modeled emissions RATE than the rule default if the difference is due to synergistic interactions due to local policy actions (see Technical Consideration #3 above). To use a lower rate, the cause for the difference must be explained in a manner acceptable to DLCD.

Example Calculation

The Example Calculation in Table 4 below walks through a hypothetical assessment of GHG emission reductions for a non-Portland MPO based on possible RSPM model outputs, providing formulas to calculate model-based GHG reduction estimates. The shaded box to the right hand side of Table 4 shows the comparable Target Rule values from Table 3.

To start, 2005 and 2050 RSPM scenarios would be run using the assumptions noted above. These include assumptions on vehicle, fuels, state-led actions, etc.
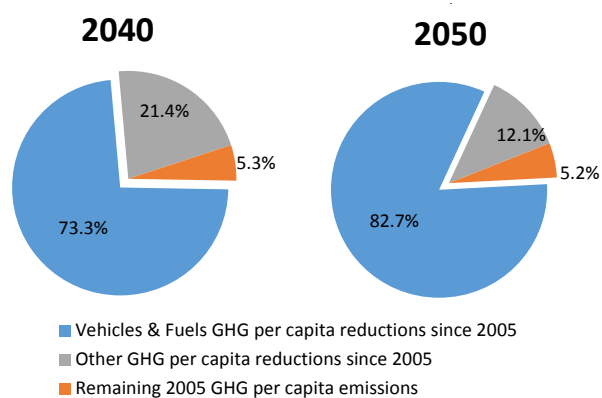
The hypothetical 2005 and 2050 results from the model runs are shown in the top two sections of Table 4. This includes the MPO population (households and university group quarters), as well as GHG emissions and vehicle miles travelled (VMT) for light duty vehicles (all travel by residents and local commercial vehicle distribution). In each year, the GHG per capita and GHG per mile are calculated by dividing emissions by population and VMT, respectively. The emission rates (g/mile) are compared to Table 3 values. The 2005 emissions rate is slightly lower but a reasonable match to the average metropolitan value after accounting for local vehicle mix variations (e.g., due to a lower share of light trucks or higher share of hybrid/electric vehicles than average metropolitan values). The estimated 2050 emission rate is below the allowed 90 g/mile. Thus, further justification is provided that the 2050 vehicles and fuels inputs reflect the region's investment in CNG infrastructure, which provides 6000 GGEs at 15% lower carbon intensity than diesel that fuel a portion of the region's light duty fuel needs, mostly commercial vehicle fleets. Additional GHG reductions from CNG use by the region's (heavy duty) public transit buses (tabulated elsewhere in the model), does not count in the light duty vehicle target rule.

After that, the 2005-2050 reductions are calculated and compared to the Target Rule values. This includes taking the ratio of the 2005 and 2050 GHG/cap and GHG/mile values, resulting in the colored cell values. Collectively these colored cells correspond to the pie slices of Figure 2, where the full pie represents the 2005 emissions per capita. In this example the region does not meet the 2050 target rule values of Table 3. The model-estimated 84.8% combined or 8.7% beyond vehicles and fuels do not meet the Rule's 88% GOAL or equivalent 30% TARGET (Table 3). However the CNG programs have contributed significantly to the region's emission reductions, and other non-vehicle & fuel policies, both local actions (e.g., transit service, bike diversion, ITS policies) and the region's endorsement of state-led policies (e.g., PAYD insurance, carbon tax, eco-driving programs) reduce daily VMT per capita from 25.7 to 24.0 accounting for the remaining GHG emission reductions.

Targets over Time

The state mandated GHG reductions for the transportation sector will be a challenge to meet and will require collaborative federal, state, and local efforts. However, continued progress in shifting to cleaner vehicles and fuels led by the federal and state governments will take the burden off of local agencies.

To emphasize that point, the charts below show the 2005 emissions per capita (full pie) and the reductions expected from vehicles and fuels (blue) under anticipated policies, along with reductions from "Other" actions (orange) beyond those affecting vehicle and fuels. A small slice of the original 2005 emissions remains (gray) in future years.

2040

2050

- ■ Vehicles & Fuels GHG per capita reductions since 2005
- ■ Other GHG per capita reductions since 2005
- ■ Remaining 2005 GHG per capita emissions

Looking over time, the emission reductions from vehicles & fuels (blue) grows, while reductions from "other policy actions" (orange) stays roughly the same. This highlights how, although the Metropolitan GHG reduction target values (Table 3) increase over time, this is due to a shrinking amount of emissions "beyond vehicle and fuel reductions" (orange plus gray), not the need to further push "Other" policies (orange). It is also important to note that the chart is in units of emissions per capita, and the effort required to maintain the "Other" policies given anticipated population growth is not insignificant.

Table 4. Example Target Rule Calculation

Step	Variable Definition	Units	Variable	MODEL					2050 non-Metro TARGET RULE
				2005					
1	Population[1]	---	A	85,500					
1	LDV GHG[2]	MT/day	B	1,147					
1	LDV VMT[2]	miles/day	C	2,196,798					
1	LDV VMT/Cap[3]	miles/day	D	25.7					
1	LDV GHG/Population	MT/cap/yr	E	4.90					
1&4	LDV GHG/VMT	g/mile	F	522					
				2050					
1	Population[1]	---	G	163,700					
1	LDV GHG[2]	MT/day	H	334					**2050 Emission per mile**
1	LDV VMT[2]	miles/day	I	3,928,800					
1	LDV VMT/Cap[3]	miles/day	J	24.0					
1	LDV GHG/Population	MT/cap/yr	K	0.74					
1&4	LDV GHG/VMT	g/mile	L	88			M	≥	90 g/mile
				2005-2050 reduction					
			formula	ratio	%				**2005-2050 Emission per capita**
2&4	GHG/Cap ratio	---	N=(1-K/E)	0.152	84.8%	GOAL		≥	88%
2		---	O = (1-N)		15.2%	Remaining emissions			
2	GHG/Mile ratio	---	P = (1-M/F)	0.172	82.8%	V&F Policies-Default[4]			
2	GHG/Mile ratio	---	Q = (1-L/F)-P	0.169	0.4%	V&F Policies-Local[4]			-or-
3		---	R = 1-(O+P+Q)		1.6%	Other Policies[6]			
3					100.0%				
4	Local GHG/Cap beyond default Vehicles & Fuels	---	S = (Q+$)/(O+Q+R)		11.8%	TARGET		≥	30%

[1] Population includes persons in households and university group quarters

[2] LDV GHG & VMT include "household-based" light duty vehicle travel, from residents & locally-based commercial vehicles to all locations

[3] RSPM VMT is not comparable to VMT from regional travel demand models. For instance, household-based travel in RSPM differs from a travel demand model that captures all VMT within the MPO boundary. RSPM also captures different policy actions and uses a more aggregate representation of roadway capacity and congestion which avoids the network details of a travel demand model.

[4] Vehicle & Fuel Policies that reduce emission rates, includes "Default" using Rule's 2050 RATE, and added reductions due to "local" policies

[5] Policies beyond vehicles and fuels that reduce VMT per capita, including local and allowed state actions

Note: 1 Metric Ton = 1,000,000 grams of Co2e; 1 year = 365 days

  LDV = Light Duty Vehicles (autos and light trucks less than 10,000 lbs)

  GHG = Carbon Dioxide-equivalent (CO2e) emissions

References

2017 LCDC Rules Advisory Committee (RAC) Recommendations on Metropolitan GHG Reduction Targets Report:
https://www.oregon.gov/LCD/CLIMATECHANGE/Documents/Target__Recommendations_Report_Final.pdf

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https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=3093

Oregon Statewide Transportation Strategy (STS), A 2050 Vision for GHG Emissions Reduction (2013):
https://www.oregon.gov/ODOT/Planning/Documents/Oregon_Statewide_Transportation_Strategy.pdf