Meeting Agenda

Washington County
Transportation Futures Study
Exploring options • Informing choices

Study Advisory Committee – Meeting #4

Thursday, August 13, 2015
3:00 p.m. – 6:00 p.m.
The Griffith Building 1st Floor Conference Room, 4755 SW Griffith Dr., Beaverton OR 97005

Purpose of Meeting

- Review and discuss land use scenarios, with the goal of providing guidance for two scenarios.
- Review approach for developing transportation investment packages, and begin discussing ideas for projects to include in the transportation investment packages.

Agenda Items

3:00pm	Welcome and Agenda Review	Andrew Singelakis, Washington County Jeanne Lawson, JLA Public Involvement
3:10pm	Drivers and Land Use Scenarios Review and discuss land use scenarios: one reflecting existing trends and options for a second that would reflect plausible drivers of change that could affect the way the county grows.	Matt Chwierut, ECONorthwest Erin Wardell, Washington County
4:10pm	Transportation Investment Packages Presentation and workshop to discuss the approach for developing transportation investment packages, and begin discussion on ideas for transportation projects to include and how to package them.	Scott Harmon, David Evans and Associates Dyami Valentine, Washington County
5:40pm	Public Comment	Jeanne Lawson
5:50pm	Next Steps and SAC Communications	Chris Deffebach Jeanne Lawson
6:00	Closing	Andrew Singelakis

Meeting Packet:

- Agenda
- SAC Meeting #3 Summary
- Land Use Scenario Development Memo
- Approach to Transportation Investment Packages Memo

Meeting Summary

Washington County
Transportation Futures Study
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Study Advisory Committee Meeting #3

June 25, 2015
3:00 p.m. to 6:00 p.m.
Beaverton Library, 12375 SW 5th St, Beaverton, OR

Members Present

Andrew Singelakis, Chair
Loren Behrman
Meeky Blizzard
Mark Fryburg
Robert Kellogg
Steve Larrance
Deanna Palm
Marc San Soucie
Pam Treece
Mayor Jerry Willey

Study Team and Staff

Chris Deffebach, Washington County
Mike Dahlstrom, Washington County
Erin Wardell, Washington County
Jay Lyman, DEA
Scott Richman, DEA
Matt Chwierut, ECONorthwest
Jeanne Lawson, JLA Public Involvement
Sylvia Ciborowski, JLA Public Involvement

Other Attendees

Robert Bailey, Save Helvetia
Lisa Frank, BTA

Welcome and Agenda Review

Andrew Singelakis, Washington County Director of Land Use and Transportation and SAC Chair, welcomed committee members. He directed members to the evaluation form, which will be handed out at each meeting to provide members with a chance to submit additional comments on discussion items or ideas for improving the meetings.

Jeanne Lawson, committee facilitator, reviewed the agenda.

May 21 Meeting Summary

Members provided the following edits to the May 21, 2015 SAC meeting summary:

- The summary should reflect that Transportation System Plans exist for *un*incorporated areas.
- The summary should reflect that Keith Peal was in attendance.

Chris Deffebach, Washington County project manager, reported that County staff is planning to meet with Save Helvetia representatives to discuss their concerns. The County is also setting up a meeting to follow up on Steve Larrance's suggestion to use AM peak traffic counts in the modeling. The County is not planning to use AM peak data, but believes that the planned approach addresses the concerns.

Community Values

Staff Presentation

Chris Deffebach and Jeanne Lawson kicked off the discussion. They referenced the meeting packet that includes an overview of SAC comments to date on the values. The purpose of the discussion today is to agree on a working version of the values that staff can use to develop evaluation measures.

Sylvia Ciborowski reviewed input from the Health and Equity Work Group that met on June 4, 2015. They recommended that the Social Equity value act as a lens for the evaluation framework. They noted that the Health value should be more than behavior-based, and address community health issues such as air and water quality impacts.

Committee Discussion

Members discussed each of the values and made the following comments and suggested evaluation measures:

1) Connectivity

- There is a need for **direct, clear routes** to allow one to go straight towards their destination. Although, recognize that routes that go straight through communities pose a tradeoff between connectivity and community identity. Direct, clear routes should go to **areas that *need* to be connected**.
- Need for **complete networks** for all modes.
- Need **redundancy in travel routes**. Alternate routes need to be available; the Highway 26 tunnel is an example.

2) Efficiency

- Include the word ***reliability***.
- Suggested evaluation measures:
    - **Queueing**, both for vehicle and transit movement. Transit queuing measures the number of people waiting for the next bus.
    - Measure whether traffic moves at **design speed**.
    - To measure reliability, ask how much **cut through traffic** moves through neighborhoods as a result of unreliable regular traffic routes.

3) Transportation Options

- Should include **freight mobility** (might use the word "commercial vehicles" to include farm vehicles as well).
- Need **complete networks** for all modes. Members noted that the concept of complete networks cuts across many values.
- Need for a **variety of roadways**. Currently people use roads in ways they are not designed for.

4) Community Identity (formerly Geographic Equity)

- **Livability** should be clearly articulated as a value. The focus should not be just on meeting needs and requirements—but also recognize **desired** character or **aspirations**.
- **One size does not fit all.** Each community has different needs and aspirations, and transportation investments should respond to these unique attributes. (Staff noted the difficulty in measuring this concept without knowing community visions beyond the 5-20 year plans.)
- Suggested evaluation measures:
    - Measure **how much transportation investment** various parts of the County receive.

5) Social Equity

- The term "no disproportionate impact" measures equality, not equity. It is inevitable that some investments and actions will impact some more than others.
- Suggestion to include the term "**no discernible impact *or benefit***" to any one community.
- Suggestion to use the term "**including…**" rather than "*especially* those that have been historically represented."
- Members discussed which kinds of communities are most impacted by the transportation system. Communities located in urban centers are negatively impacted by the transportation system because of the high level of **cut-through traffic**. At the same time, other communities also deal with cut-through traffic. Some people want to live with easy access to the transportation system, so will choose communities with large roads.
- Suggested evaluation measures:
    - Measurement of **complete networks**.
    - Measure **distance traveled to meet daily needs**. This requires a look at land uses and locating homes within a reasonable proximity of other land uses to meet daily needs.

6) Environmental Sustainability

- Environmental ***stewardship*** might be more appropriate than "sustainability." For example, stewardship means farming in a way that protects land and opportunity for generations to come. Stewardship is a more active term, and can be applied to protection of parks and natural areas.

7) Strategic Investment

- This value should be about protection of **present and future investments**.
- Suggested using the term "***optimize…"*** instead of "*protect* investments"
- This value measures **how spending is allocated**, rather than measuring the transportation system itself. One measurement question might ask: Does the plan accurately invest in the things necessary to protect the investment, i.e. maintenance?
- Members asked **how investment costs will be reflected** in this Study. Staff responded that the transportation investment packages will include a comparison of investment and maintenance costs. Most likely, maintenance cost will be measured by the standard cost per mile maintenance figures. Members suggested including **avoidance costs** (i.e., if some infrastructure is added to the transportation system, this translates to reduced use of existing roads.)

8) Economic Vitality

- Suggest incorporating the idea of **economic stewardship**.
- **Moving goods to port** and points of distribution is a large expense for farming. An efficient transportation system and reduced transportation costs are important to be competitive in the market.
- **Last mile solutions** are important to provide a good connection from transit to employment centers.
- Suggest including **job growth and access to jobs** in this value.
- Consider movement of the **service sector** that uses the transportation system throughout the day (not just 9-5 commuters).

9) Health

- High levels of congestion can impact **mental health and increase stress levels** and frustration. This might lead travelers to do dangerous things they would not ordinarily do. This applies across modes. For example, it is stressful to cycle without bike lanes, and stressful to use an inefficient transit system that might require multiple transfers to reach a job.
- This value should include **environmental health**—including clean air and water. Poor efficiency and connectivity means that more vehicles are idling on roadways, which creates an environmental health problem that affects people.
- Include **air quality impacts**.
- The **value of time** is important. Time wasted in traffic impacts mental health and stress levels.
- Suggested evaluation measures:
    - Traditional **mode split** measure (i.e., how many travelers are biking, walking, driving, or taking transit).
    - **Fleet change**: Percentage of vehicles that will be burning fossil fuels as opposed to electric or other clean options.
    - **Queuing data** to measure the level of travel-related stress and frustration or waste of time.
    - **Time spent traveling** as a measure of the value of time.

10) Safety

- Include the safety issue of **moving hazardous waste** around the County.
- Include security and efficient movement of **emergency services vehicles**.
- The transportation system should be designed to **manage—and reduce—risk**. We should manage risk and move towards the aspirational Vision Zero goals.
- Suggested evaluation measures:
    - Measure the level of **avoidance** of using the transportation system because of **perceived safety risk**. For example, not using bike areas because they seem unsafe.

Other Comments

- Members generally noted that many of these values overlap, or have potential evaluation measures that will overlap. Some even conflict with one another and it is difficult to imagine a transportation system that can meet so many conflicting values. Staff responded that the Study team will work on developing an evaluation framework, and recognizes that the values do overlap. The evaluation will show the tradeoffs between investment packages.

- It is important to stay at a global level rather than looking at the impacts on particular neighborhoods within Washington County. The Study should first define the best way to move travelers to and from their destinations, and then consider ways to best meet other values.
- The evaluation framework helps keep this all in context. It is important to remember that there are transportation outcomes and non-transportation outcomes. We get some of the non-transportation outcomes (like health) as a result of the direct values of connectivity and efficiency. We should focus on the transportation-related outcomes.

Drivers and Land Use Scenarios

Staff Presentation

Staff reminded members that transportation drivers are those trends and considerations that may change our transportation system and the way we travel in the long-term future. The drivers will be used to develop land use scenarios.

Matt Chwierut, ECONorthwest, gave a PowerPoint presentation on drivers as background for SAC members to consider as they provide guidance to the team on key drivers:

- The Study team developed a list of drivers using three inputs: 1) review of existing literature, 2) input from experts through online surveys, and 3) local input from Planning Directors and SAC members.
- The original list of 300 potential drivers was reduced to the top fifteen. From this list of fifteen, national experts felt that the following seven drivers are of top importance to consider:
    1. **Aging population** – In 20 years, 26% of the population will be retired, and our retired culture is changing. Retirees are expected to work, be healthier and more active, and be wealthier than past retirees. The associated impacts on housing, transportation and land use are unclear.
    2. **Pricing** – Demand side pricing is expected to occur (road pricing, Vehicle Miles Traveled fee, etc.) This will increase the cost of travel and likely increase the shift to other modes.
    3. **Growth in metro areas** – Growth in metro areas (as opposed to suburban and rural) will continue.
    4. **Autonomous vehicles** – There is general agreement that connected vehicles will come into practice. The impacts on development density are somewhat unclear; generally, there will be less space for parking and fewer miles of surface transportation needed to accommodate the same amount of service.
    5. **Climate change regulations** – Regulations will increase the cost of transportation and encourage shifts to living in denser areas closer to employment.
    6. **Privatization and partnerships in financing** – Transportation funding constraints will be a huge driver but the impact is unclear.
    7. **Increase in online shopping** – There is general agreement that online shopping will continue to grow, which means an increase in service deliveries.

Planning Directors' and SAC member input on drivers generally concurred with what national experts are saying, with more emphasis on the impacts of climate change regulation. The Planning Directors' input focused on funding limitations, autonomous vehicles, telecommuting and flexible work schedules, west coast shipping routes, and 3D printing.

Committee Discussion

Small Group Discussion

SAC members formed three groups, and each group discussed the top drivers they think are likely to affect transportation in the long term:

Group 1

Top five drivers that this group discussed include:

1. **Urban Growth Boundary** – The UGB is both a wall and increaser of density. Because of the region's unique regulatory structure, the County will likely experience more density than other communities in the U.S
2. **Climate change** – There are two drivers related to climate change. Climate change **regulations** will likely increase the cost of driving and have other impacts on multi-modal choice. Climate change itself can also impact transportation by bringing in **climate refugees** to our region.
3. **Demographic changes**
4. **Autonomous vehicles and related pricing changes** – The increase in autonomous vehicles will have its own impact on pricing and will be influenced by congestion pricing.
5. **Changes and growth in manufacturing** – The Washington County area is a manufacturing center and growth in manufacturing will likely continue, increasing commuter and freight transportation needs. Changes in the way we manufacture goods will have a great impact on local transportation (for example, local 3D printing rather than shipping).

Other drivers this group discussed:

- **Millennials** – Travel behavior and walkable community preferences of the newer generation.
- **Urban centers in suburbs** – County residents prefer to have services available within their own communities, rather than traveling to "the big city." Communities want their own urban centers and community identity.

Group 2

Top drivers for this group:

1. **Technology** – This includes more than just smart cars. It includes traffic technology, like smart signals, that are already happening in the County.
2. **Politics** – This includes **urban and rural reserves**. If the County had followed through with the urban and rural reserves it was mandated to create, then we could be more efficient in creating transportation grids with more certainty over the next 50 years. **Metro's land use choices** in terms of creating density will also impact the transportation grid.
3. **Cost of transportation** – The way we fund transportation, who pays, and how they pay will all affect transportation choices.

Other drivers this group discussed:

- **Uber and Rideshare** – The increase in rideshare options and their decreasing cost could affect transportation. For example, Uber's carpool option makes rideshare much less expensive. These are things we could never have envisioned a decade ago, and we're likely to see similar innovation in the future that we cannot plan for.
- **Work environment** – The workplace is changing. Innovative technology companies provide open, collaborate work environments with flexible schedules that are anything but the traditional 9-5 job. This will affect the way we travel and at what time of day.
- **Regulations** – Regulations will affect transportation.

Group 3

Top drivers for this group include:

- **People's attitudes towards transportation and livability** – This should be a top driver (though the experts discounted it in the survey work). People's attitudes and choices of how to travel can be influenced by many factors that decision makers have influence over. Millennials tend to drive less and prefer walkability and alternative modes of transportation.
- **Availability of options** – Attitudes towards transportation are shaped by the options available. Investment in options can increase convenience and usage.
- **Shifts in land use** – Policy makers can choose to put diverse uses closer together, which could reduce the need for some automobile trips. There is likely to be an increase in neighborhood commercial centers with local commerce and retail that will shape the distance that people have to travel.
- **Ease of lifestyle changes** – It is easier to make lifestyle changes than it used to be (for the middle and upper class). People today tend to change careers more often and move more often than they used to.
- **In-migration** – The number of people that come into the region will shape transportation.
- **Distance between home and work** – To the extent that drivers change the distance between employment and residential centers, it will affect transportation.

Large Group Discussion

Members made the following comments during the large group discussion on drivers:

- The **Urban Growth Boundary** was a top driver for each of the small groups, though each group discussed it in slightly different ways.
- **East coast port traffic** does not seem to be an important driver for Washington County. The team noted that the expanded Panama Canal will accommodate larger ships and move some marine freight activity away from congested West Coast ports, which could affect the west coast transportation system.
- Members discussed **change in manufacturing practices and 3D printing**. This could have two impacts as a driver. First, 3D printing might reduce the need to ship some goods, which will reduce travel demand. Second, Intel might become a leader in 3D printing and bring in a large employment base, perhaps causing a major shift similar to what Mountain View did for San Francisco.
- While policy drivers are important, it is also important to focus on one major issue in Washington County that other cities and regions do not struggle with—which is the lack of a **complete transportation system**. We need to focus on finding a way to not move 40% of our traffic through city centers, and the way to do that is by creating a complete system.
- **Behavioral change** will be an important driver. According to one study, there is a high tolerance level before someone will choose to shift from Single Occupancy Vehicle travel to some other form of transportation. Need to look at: how much congestion and increase in driving cost does it take to cause a behavioral change?
- Members discussed some of the **expert findings**: The increase in number of people working from home might mean that they choose not to live in denser urban areas, since they do not have to deal with a commute. Vehicle technology might actually increase the number of trips, since the vehicle will be automated and efficient.
- Members discussed the **SAC charge** regarding drivers. One member expressed that the committee's charge is to start by looking at the current transportation system and what can be done in the next five to twenty years to reduce gridlock. The Committee Chair and others explained that this Study is looking beyond the County's twenty-year TSP. If there is some project or opportunity that is not included in the TSP but which the Study identifies as important for the future transportation system, then that should be part of the discussion. In the end it will be up to decision makers to decide what to do with the information and conclusions that the Study produces.
- **Investment choices** made by Washington County leaders can change which drivers are most important.
- Members requested the opportunity to **expand on the drivers conversation** by sending in further comments to staff.

Next Steps

The next meeting will be held in late July 2015. This meeting will include further discussion on drivers. The Study team will also explain the process for developing transportation investment packages and may provide draft evaluation measures or framework for evaluating values.

Members requested a deeper explanation of the land use scenarios and transportation investment packages, and staff noted that this will be included in next meeting's agenda.

Members requested a better way to share information with one another, beyond posting documents in the online library or sending emails to staff. Staff will work on ideas for sharing information.

Andrew Singelakis noted that the Study team has requested help from Mayor Jerry Willey and Meeky Blizzard to act as a sounding board for SAC agenda topics and materials for future meetings.

Meeky Blizzard handed out a summary of nine resources posted on the Transportation Futures Study SAC Library.

Cover Memorandum

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To: Study Advisory Committee Members

From: Erin Wardell, Senior Planner

Date: August 6, 2015

Subject: Scenario Development

At the last Study Advisory Committee meeting, you provided input on the likely 'drivers of change' that will influence the way people in Washington County live and work in the future. At your next meeting, you will be asked for input on combinations of drivers of change to form two land use scenarios: one that reflects current growth trends and one that reflects a plausible alternative growth pattern. The study team will use the scenarios as an input to forecast travel demand, mode use, and transportation system conditions. The purpose of this memo is to provide you with more information about how the drivers will influence the scenarios and frame the discussion you will have at the meeting.

Background

An engagement process that collected information from a combination of national experts, local stakeholders, and the SAC resulted in a list of drivers of change that could define future land use in Washington County. Attachment A to this memo contains the list of drivers of change that were determined to be most likely through the engagement process, and that are possible to include in the modeling process. The drivers of change can influence land use in many ways, including:

- Total amount of growth
- Allocation within the county and adjacent counties
- Demand for different types of housing
- Demand for different employment type and locations (service v manufacturing)
- Demand for mixed use/higher density and lower density development
- Income or age differences.

Adopted land use plans and best available plans or local knowledge for the urban reserve areas will form the basis for land supply for both scenarios. Both scenarios assume the Urban Growth Boundary is still regulated by state law, that the existing Urban Reserves/Rural Reserve boundaries are in place, and that the Urban Reserves will develop consistent with state law. A 'Place Palette Land Use Typology Map' illustrating future development in the county under current plans will be available at the meeting for your reference. The map was created using information collected from the jurisdictions within Washington County.

Desired Outcome

The desired outcome of the meeting is to receive SAC input on the definition of two scenarios that the study team can use to allocate housing and job growth over the long term. One scenario is intended to reflect current trends while the second scenario is an alternative that is intended to be substantially different from Scenario 1 and will help the project team evaluate the resiliency of the transportation investment packages given the uncertainty of future land use patterns.

The draft descriptions of the scenarios were developed using the drivers of change that most directly impact land use. Some of the drivers (such as new technology, pricing and other transportation related changes) will be considered as potential concepts in the transportation investment packages. SAC members will have the opportunity to discuss these drivers more when developing the investment packages.

The SAC will have the opportunity to review the results of the land use scenario modeling at the October meeting.

Scenario 1

Scenario 1 is intended as the 'trend' scenario. It is based on a continuation of current trends of key drivers, such as aging and other demographics, job types and resulting incomes, preferences for multi-family/single-family homes and more. For example, it is widely accepted by demographers that the percentage of Americans over the age of 65 will continue to increase in the future, and that is reflected in the future population for this scenario. The specific trend information relating to this scenario will be presented at the meeting, and includes population and employment forecasts as well as information about aging, household size, vehicles per household, building permits, in-migration, and income.

Question: Does the trend scenario seem reasonable as a baseline forecast?

Scenario 2

The drivers of change that emerged as most likely from the review process were grouped into three scenario options by the project's consulting team at ECONorthwest. The drivers were grouped in order to make cohesive reasons for changes in the land use patterns. The groupings are preliminary and intended to generate discussion at the meeting. Each Scenario 2 variation would result in increased population and employment growth compared to the trend scenario in order to test the resiliency of the transportation investments to different travel patterns and demands. Attachment B contains a table showing how the groups of drivers relate to each scenario.

A more extensive narrative description of the three scenario options is contained in Attachment C. The three scenario options are:

- Changing Climate (2a): reflecting an increased population due to climate change refugees, related regulations that would result in increased housing density and more expensive transportation, and a higher rate of job growth in service and technology.
- Rising Economic Tide (2b): reflecting increased regional economic growth, which would result in higher population due to in-migration and broad-based job growth particularly in export-oriented industries.
- Circuits and Sensors (2c): reflecting an increased technological focus of the economy, resulting in a higher population due to in-migration of workers, specific increase in technology, transportation and warehousing sectors, and a decrease in retail employment.

Question: Should the drivers be grouped differently to create Scenario 2? Are there other drivers that will strongly influence land use patterns that are not included? If so, where would they be grouped?

Next Steps

Based on SAC member input, the study team will finalize the descriptions of the scenarios and prepare the land use model inputs. The SAC will have the opportunity to review the population and employment forecasts from both scenarios at the October meeting.

Attachments:

The attachments to this memo were prepared by staff at ECONorthwest to better describe the process of creating scenarios and show how the drivers relate directly to future land use.

Attachment A shows in tabular form the drivers of change that emerged from the engagement process as highly likely to occur, as well as being drivers that are possible to include in the modeling process. The drivers are grouped into five overarching categories of change based on the type of impact they would have.

Attachment B shows in tabular form how the scenarios differ in the five categories of change. The impacts of the drivers vary from Scenario 1 through the three scenario options. These groupings of drivers were created to make cohesive reasons for an alternative future, but the groupings are preliminary and can be changed based on your feedback.

Attachment C is a narrative description of the three options for the alternative scenario. This description contains the same information from the previous attachment, but provides more information about the assumptions that were made to determine why our land uses may be different.

Attachment A: Drivers of Change

Demographics

- Aging population
- Climate change refugees
- In-migration
- Attitudes toward transportation (particularly Millennials)
- Urbanization and growth in metropolitan areas
- Ease of lifestyle changes and domestic migration
- Rural preference for urban centers in suburbs

Government and Regulations

- Land use plans that encourage co-location
- Urban Growth Boundary
- Road pricing
- Climate change regulations at the federal, state, and local level

Environment and Energy

- Intensifying weather and environmental conditions
- Natural resource constraints

Economy

- Increase in service- and technology-based industries
- Privatization and public-private partnerships in transportation and financing

Technology

- 3D-printing and impacts on manufacturing
- Telecommuting and flexible work schedules
- Uber and Ridesharing
- Autonomous vehicles
- Increase in online shopping
- Advanced ubiquitous intelligent tranportation systems (ITS), such as smart traffic signals

Note: Several drivers were mentioned by stakeholders but did not contain a direction of change. These are “demographic changes, availability of transportation options, behavior changes in transportation, Metro policitics around the Urban Reserves, regulations, distance between home and work, and availability of transportation options.” All of these are accounted for in the models. The one driver not accounted for directly in the model is “transportation funding.” This will be addressed in the Transportation Investment Packages.

Attachment B: Drivers by Scenario

	Scenario 1 Current and Expected Trends	Scenario 2a Changing Climate	Scenario 2b Rising Economic Tide	Scenario 2c Circuits and Sensors
Land Use Plans	• Local land use plans as adopted by cities and counties will be the same for both scenarios. • Urban reserve areas will be brought into the UGB within the study horizon. • Buildable lands inventory reflects recent updates.			
Demographics	An aging population, decreased household size, and decreased autos per household over time. Increased percentage of in-migration (compared to natural population growth) over time.	Higher population forecast as a result of in-migration of retirees and well-educated, mobile families. Modest adjustments to housing density to account for transportation preferences among Millennials	Much faster broad-based population growth as a result of in-migration. Increasing income inequality. Decreased autos per household over time	Higher population forecast as a result of job-related in-migration.
Economy	Increased average household income, although this is due to an increase in very high earners. Rate of increase in average income is lower than past forecast. Higher split of multi-family units than in the past.	Higher rate of job growth in service and tech industries.	Much faster broad-based economic growth, particularly in export-oriented regional industries.	Increases in technology-based employment and transportation and warehousing. Decreases in retail employment
Environment and Energy	Environmental protections limit development in floodplains, wetlands and other riparian habitat areas. Energy costs continue steady increase for transportation and utilities.	Modest adjustments to housing density to represent higher cost of transportation	No significant changes relative to Scenario 1	No significant changes relative to Scenario 1
Government and Regulation	Urban growth boundary is assumed to expand to include the Urban Reserves within study horizon. Capacity in satellite cities also increases over time to reflect expansions.	Climate change regulation makes living in a walkable, mixed use areas more attractive	No significant changes relative to Scenario 1	No significant changes relative to Scenario 1
Technology	Many impacts of technological advances are captured in other drivers categories or will be addressed in the Investment Packages and the transportation modeling.			

Attachment C: Scenario Narratives

As is common in scenario planning, the narratives that follow are written as if one were in the future and describing it in the present tense what one observes and otherwise has knowledge of, and describing in the past tense events that led to the situation in the future. These scenarios include elements that will be reflected in the transportation models, so they do not just describe land-use scenarios.

Scenario 1: Current and Expected Trends

Overall, the region largely resembles how all the Cities foresaw it decades ago through land use plans.

In 2050, the region hasn't lost its character or its edge in technology, and many parts of the region have caught up to the downtown Portland core as centers of livability. Population and employment growth slowed from the boom years of the late 20th and early 21st century. Immigration and fertility rates fell slightly in the US and also in the Portland region, but over time, in-migration became a larger source of population growth than it had been in the past. Increasing life expectancy has led to more and more older residents. Meanwhile, average household size has fallen, and with it, average car ownership per household.

Overall US economic performance neither plummeted nor rocketed, and the entire economy continued a shift to services, particularly healthcare and government. The Portland region fared slightly better than the nation as a whole, however, and by 2050 the entire region had grown. The Portland region's manufacturing sector grew, buoyed by demand from overseas for many products, but its growth was slower than growth in the services and government sector. Average income rose, driven heavily by growth in very high income earners, but middle income workers lagged behind.

Scenario 2

Potential narratives for Scenario 2 follow. These represent plausible futures, given feedback from national experts and regional stakeholders. These are just examples. The Combined Planners Group and the Study Advisory Committee will help define a single scenario narrative, which could be a combination of these three scenarios.

Scenario 2a: Changing Climate, Changing Region

Starting around 2020, the climate began changing rapidly. Weather anomalies in the early 21st century (including droughts across the West and severe winter storms across the East) became the new normal. As climate change remade weather maps across the United States, governments passed increasingly aggressive climate change regulations aimed at curbing CO_2 emissions. Many policy packages targeted transportation and land use, effectively increasing the cost of transportation for gasoline-powered vehicles. Road pricing, which had been slowly gaining support as a congestion-mitigation and revenue-raising tool, got a boost because of its ability to include carbon costs in prices and, in raising prices, further reduce carbon-producing travel.

These events influenced attitudes toward transportation. Millennials had helped make cycling and transit 'cool' modes of transportation; they later led the way in mainstreaming the car-lite family lifestyle. Their children, who grew up in the face of an increasingly chaotic climate, came to view carbon reduction as basic social policy and behavior.

Weather patterns also encouraged domestic migration. While the US did not experience the same climate catastrophes faced by many other countries lacking sufficient infrastructure, new weather patterns changed the quality of life in many cities and region. The Pacific Northwest was spared from the worst: the heat waves and water scarcity of the Southwest, the storms of the East Coast, and the winter blizzards of the Midwest. Oregon became a destination for wealthy, mobile retirees and families who could afford to move for quality-of-life purposes—so-called 'climate expats,' a term coined to describe the middle-class who voluntarily relocates for weather reasons. Washington County, with its diverse land patterns, access to the coast, and proximity to the Willamette Valley wine country, displaced Scottsdale, AZ in the popular ranking of retirement regions.

This population stimulus dovetailed with the region's growing strengths in technology and services. The taxes targeting carbon accelerated the shift in the US economy from producing goods (particularly low-value goods) to services, which involve fewer emissions. The region benefited from a strong, existing economic base in technology and services, and an influx of educated workers provided a labor force. Many companies did not expand production capabilities in the Portland Metro, but they doubled down on R&D, design, and sales.

Scenario 2b: A Rising Economic Tide

By 2050, the Portland Metro had enjoyed unexpected economic success. No single factor explained this success: a combination of policy, natural advantages, and a little bit of luck combined to help the region ride economic cycles effectively.

An emerging global middle class caused demand for many middle-class goods to surge: consumer electronics, sports apparel, even wine. This spelled success for many companies located in the Portland region. Employment across industries grew rapidly and, as happens with growing regional economies, people of all occupations flowed in. The increasing popularity of metropolitan living certainly helped. Business practices on telecommuting helped ease peak-time congestion.

There were no industry-defining breakthroughs in transportation technology, but the gradual incorporation of information technology into all aspects of travel allowed some cities across the US to keep congestion from becoming gridlock.

One trend that started in the early 21st century matured: dynamic ridesharing, pioneered by Uber. The concentration of people and the need for more jobs created economic conditions not dissimilar to the San Francisco Bay Area—wealth inequality, high cost of living, and incentives for finding sources of income. These services became increasingly common and cost-competitive, and adoption rose.

These services were most popular among Millennials, who increasingly preferred denser, walkable environments in which ride-sharing services were economical. Transit also became more popular as

reliable, widespread consumer broadband opened the digital world to transit and carpooling commuters. Car ownership rates overall fell, though few households went completely car-free.

Scenario 2c: A World of Circuits and Sensors

The Portland Metro fostered a culture of early adoption in next-generation mobility. Smart vehicles became mainstream more quickly than many analysts anticipated in 2015, bringing changes in lifestyle, travel behavior, and traffic levels. In 2050 the transportation system has changed in some fundamental ways. Vehicular travel is now a service, not just a benefit to those who own cars, and many sections of the fleet can communicate wirelessly. New vehicle designs, including vehicles with multiple personalized sections for passengers, create a continuum of vehicle capacities from single-person pod cars to 50-person buses. 'Driving'—or rather, riding in an autonomous vehicle—simply became more fun, and more people do it.

The change wasn't cheap though. The vehicles themselves were costly. Overall, the cost of traveling a mile in a motorized vehicle became higher, but it also is less stressful and offers the ability to enjoy other activities when traveling.

Online shopping became the new norm; autonomous, connected delivery vehicles bring purchased products directly to one's door. Online shopping evolved into on-demand retail. Some retail outlets remain, but they focus primarily on low-cost goods or have branded themselves as a vintage, 20th-century shopping experience.

These waves of innovation also advanced 3D printing, which in 2050 has restructured local economies and logistics networks across the world. Complex technologies and products still need the steady hand of experts, but many basic middle-class goods are 'printed' at local fabrication shops rather than imported and exported between regions and nations. These outfits cropped up in Washington County; given the hardware expertise in the region, they were among the most advanced local fabrication shops in the country.

National shifts to technology- and innovation-based industries has meant economic growth in the Portland metro region and in Washington County. These jobs attracted educated professionals.

Washington County
Transportation Futures Study
Exploring options • Informing choices

To: Study Advisory Committee

From: Dyami Valentine, Washington County

Scott Harmon, David Evans and Associates

Date: August 6, 2015

Subject: Approach to Transportation Investment Packages

The Transportation Futures Study will evaluate two different transportation investment packages (IPs) designed to address the challenges associated with two plausible future land use scenarios in Washington County. At the next SAC meeting, you will be asked for input on the approach to defining the investment packages, including investments that may be needed to meet future transportation challenges and themes that could be used to sort the investments into two distinct approaches to these challenges. This will be the first of several input opportunities for the SAC.

The purpose of this memo is to help set the context for thinking about future needs, beyond 2040. This memo identifies some known challenges based on modeling and discussions with partners and stakeholders; and outlines an approach to develop two conceptual transportation investment packages.

At the next SAC meeting on August 13 the discussion will focus on the following:

1. What future challenges you think are critical to address through this study?
2. What investment choices and factors are important to consider in developing the IPs?

BACKGROUND AND PLANNING CONTEXT

Public policies at the federal, state, regional, county and local levels provide policy direction and legal requirements for transportation planning from establishing broad visions to project development in Washington County. Local and regional transportation system plans (TSPs) are required to identify needs and develop transportation alternatives to address those needs for a 20- year horizon.

Washington County's transportation system includes nearly 1,300 miles of roads, shared by motor vehicles, bicycles, pedestrians, trucks and public transit. Washington County's TSP identifies general policies, strategies and system improvements necessary to address travel needs, system safety, impacts on the built and natural environment, system funding, and system implementation and plan management. The TSP also includes more specific policies and strategies pertaining to the roadways, transit, demand management, pedestrians, bicycles, freight, as well as air, rail, pipeline, and water elements. It identifies system needs under each of these elements through the year 2040, and identifies alternatives for financing improvements necessary to address identified needs. The identified transportation needs and projects for the 25- year horizon respond to anticipated future travel demand

and help guide future investments. Once adopted in a TSP further studies and project development processes prioritize projects for construction. For example, Washington County's Major Street Transportation Improvement Program prioritizes projects for construction generally over a 5 year period (currently MSTIP 3d is programed for 2012-2018).

This study is an effort to think beyond the 2040 horizon, and assumes fully implementing current plans. The Investment Packages will build from these existing plans and policies to include additional projects that can address the needs of the growth in the land use scenarios looking beyond 2040. Because this is a study and not a plan, Federal, state, regional and local requirements can help determine the feasibility of a project but do not need to be considered as a limiting factor necessarily. For example, it is assumed that the transportation investment packages will be multi-modal, not just to be consistent with requirements, but to reflect community values and the importance of transportation options. Additionally, this study has the unique opportunity to look beyond current regulatory financial constraints and identify aspirational projects to address long term needs.

CURRENT TRENDS

Washington County has grown considerably during the last 40 years, and is expected to continue growth trends in population, employment and travel demand. By the year 2035, the population of Washington County is expected to increase to 758,500, an increase of 42% over 2010. Washington County contains several regionally significant employment areas, including the high tech Sunset Corridor of Hillsboro and Beaverton, the Tigard Triangle, and the Basalt Creek / Tualatin-Sherwood industrial corridor. By 2035 the employment in Washington County is expected to increase to about 382,000 jobs. This would be an increase of about 150,000 jobs above the 2010 employment. The growth envisioned in population and employment forecast translates directly into transportation system needs.

Future travel patterns, based on traffic modeling of future population and employment growth, shows increased travel demand for all travel within the county as well as travel between Washington County and adjacent counties. The highest travel demand continues to be east-west travel patterns between Washington County and Multnomah and Clackamas counties. However, there is increasing north-south travel demand within the county as well as from Clark County.

Adopted plans go a long way to addressing future needs. However, challenges remain including implementing adopted plans and keeping investment levels on pace with projected growth.

CHALLENGES

Based on discussions with local planners, other stakeholders and comments from the SAC the Study Team has identified some of the existing and persistent challenges that may not be adequately

addressed in current plans. The following provides some examples of commonly noted high-level challenges:

- Lack of network redundancy in both east-west and north-south travel corridors along with major bottlenecks on the freeway network (e.g. Sylvian Tunnel, Hwy 217, and I-5 between Hwy 217 and Charbonneau/Boone Bridge) will continue to impact local arterial and collector roadways.
- Deficiencies on the local system, such as a lack of a grid network and roadways that are not constructed to urban standards, which are exasperated by spillover traffic attempting to avoid major bottlenecks .
- System deficiencies in proximity to newly urbanizing areas and urban reserves, where current regulations present challenges to providing a complete transportation network, places a significant burden on existing rural roads that are not designed to accommodate high volumes of urban-to-urban travel.

The following table (Table 1) describes some of the other identified challenges anticipated over the next 25 years and beyond.

Table 1 **Investment Category**	**Challenges**
Streets and Highways	Cost of congestion, freight reliability and access to ports
	Over-reliance on the arterial network impacting community livability
Bike and Pedestrian	Major gaps in biking and walking routes across the county
	Constrained ROW for enhanced/protected biking and walking facilities
	Dedicated funding is limited
Transit	Improving access to transit for pedestrian, bicyclists and drivers • Last mile connections needed to serve employment and industrial areas
	Hub and spoke network provides inefficient transit travel to key destinations within Washington County.
	Preserving affordable housing options near transit
	Constrained funding and ROW limiting system expansion in exclusive ROW
Demand Management	Limited travel options is a social equity issue – factors such as families with children, long transit times, night and weekend work shifts not well served by transit
	Increase the efficiency and use of under-utilized capacity in the transportation system

Fleet and Technology	Understanding the implications of technology, like car-sharing, ubiquitous ITS, and autonomous vehicles on the transportation system
	Changing travel behavior and fleet management as a result of new technology
Funding and Regulation	Trends suggest greater uncertainty in federal and state funding and a greater reliance on local public and private sources of revenue to meet local needs.
	Impact of regulation and pricing (opportunity costs) on implementation of technology
	Changes in driving habits and declining purchasing power of existing funding sources due to inflation and fuel efficiency improvements

THINKING BEYOND 2040

The Washington County Transportation Futures Study is a unique opportunity to imagine potential long-term futures and examine how future transportation investments can best support the county's economic health and quality of life beyond the current 2040 planning horizon. By looking at a horizon year beyond the standard 20-year planning process this study provides a framework to examine how long-term transportation investment choices and tradeoffs support community values in two plausible futures – not forecasts per se but alternative futures that can be influenced by actions taken by the County and its partners. To evaluate transportation choices and tradeoffs, two conceptual transportation investment packages (IPs) will be developed and their resiliency will be tested against the two scenarios.

The development of the IPs builds off of current adopted transportation plans and starts with identification of projects that are assumed complete within the current Metro planning horizon of 2040. The Study Team proposes to use the federal financially constrained Regional Transportation Plan (RTP) with the addition of the enhanced transit package from the Metro Climate Smart Communities Strategy and a basic local grid transportation system in the Urban Reserves as the basis for the project lists. From this common base the unique transportation investments for each of the two IPs will be developed.

The two IPs will be multimodal in nature but diverse in how and where investments are applied. The IPs will consist of a set of projects for modeling purposes but evaluated at a conceptual level with project level results used for illustrative purposes.

As a study the purpose of this project is to highlight long-term transportation investment choices and tradeoffs that are durable to the uncertainty inherent in long-term planning. Additional studies and

planning work may follow the WCTFS to identify transportation projects and/or elaborate on study outcomes to incorporate into 20-year transportation plans.

The following table describes some of the investment choices and factors that influence transportation identified through research, experts in the field of transportation, conversations with local planners, and as discussed by the SAC.

Table 2 **Investment Category**	**Potential Investment Choices**
Streets and Highways	• Completing the planned transportation network • Freeway lane management • New and/or expanded arterials • Expansion of highway capacity • Optimized roadway performance • Major intersection improvements
Bike and Pedestrian	• Completing the planned transportation network • Greater separation of modes and new connections • Dedicated regional bikeways • First and last mile connections to transit and major destinations • Increase bike storage and transfer facilities on transit • Expanded bike detection and priority • Expanded mid-block bike and pedestrian facilities
Transit	• Expanded transit priority • Expansion of urban and intercity transit • Transit lane management • Expand frequent bus service • Express bus service • Major employer front door service • Expanded real time arrival • Real time park and ride use information
Demand Management	• Education, marketing, and incentives • Commuter programs • Parking management • Stronger integration of land use and business operations in demand management

Fleet and Technology	• Vehicle technology • Alternative fuels • Traffic management • Consumer and communication technology • Car and ride sharing
Funding and Regulation	• VMT based fueltTax • User fees • Declining federal and state transportation funding • Road and congestion pricing • Decreased transit subsidies • GHG regulations • Increased funding through public-private partnerships

FUTURE INPUT OPPORTUNITIES

The Study Team will continue to seek input from other stakeholders, including local and regional partners, on the transportation investment package approach and possible investments for evaluation.

At the next meeting in October, the SAC will review the two possible transportation investment packages along with the population and employment forecasts from the two land use scenarios. Based on SAC input, the Study Team will refine the two transportation investment packages and seek broader public input.

The SAC will have another opportunity to review the transportation investment concepts in December, prior to initiating the transportation modeling and analysis.

In addition, staff is proposing that the SAC members meet in small groups in August and September to provide additional input opportunities and to spend more time discussing the "Transportation 101" basics that play an important role in the development and evaluation of the transportation packages.

MOVING FORWARD

The packages will be tested using the Regional Travel Demand Model, which will forecast travel demand, mode share, delay and other performance metrics and costs. The performance of transportation investment packages will be further evaluated using the County's more detailed Westside model and other operations tools will be used. This modeling and other GIS analysis tools will provide data for use in evaluating the trade-offs and how the packages support community values.