Draft Transportation Investment Options Report

Prepared for

Washington County

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, OR 97201

January 8, 2016

Table of Contents

INTRODUCTION

In previous phases of the Washington County Futures Study ("study"), the team took a "look back" over the past 30 years to review how the county has grown and what major transportation decisions and investments have been made to respond to that growth. The study is currently focused on identifying alternative transportation investments to evaluate how well they address future challenges and values important to the community. The transportation investments will be evaluated relative to two alternative visions (referred to as scenarios) for how the county might grow in the next 40-50 years. The future scenarios reflect differing factors, or drivers of change, that are likely to influence the amount of population and jobs growth, and land development patterns in the county.

This report includes a summary of the guiding community values that create the basis for evaluation and reflect more commonly held visions of desired outcomes of the future transportation system, and the transportation investment options to be evaluated.

EVALUATION FRAMEWORK

An effective evaluation framework will expose trade-offs in the range of possible outcomes associated with different policies and transportation investments. The evaluation should provide enough information that informed value judgments can reasonably be made in order to understand the consequences and trade-offs. The focus of this study is examining the relative benefits and impacts of policy-level investment options. The following illustrates the types of questions this study will explore:

- What investments are needed to improve safety, especially the most vulnerable?
- What actions are needed to effectively manage vehicle demand in the future?
- What investments are needed to improve travel time and reliability, especially for goods movement?
- What investments are needed to provide affordable, accessible and efficient travel options to all groups within the County, including those that have been historically underserved?
- What investments are needed to support local community identify and the increased activity in urban centers?
- Which actions mitigate conflicts and support goals to slow down traffic and support more vibrant and walkable communities?
- What investments are needed to support the rural communities?
- What investments are needed to improve access to jobs and other major destinations?
- What investments are needed to support local economic development plans?
- What investments are needed to support air quality and climate change goals?
- What investments are needed to improve public health?

Community values tell us what's important to people who live and work in Washington County. The guiding community values, described below, reflect the key desired outcomes of a safe, efficient, connected and reliable transportation system. The guiding community values reflect dozens of community plans, visioning documents, and local transportation plans, the most recent of which was the Washington County Transportation System Plan, distilled by the Study team and confirmed by the Study Advisory Committee.

Economic Vitality

The transportation system plays a critical role in the economic vitality of Washington County. Continued economic health depends on effectively serving the transportation needs of businesses large and small, including the people who work, shop and/or provide services. For the movement of goods, this means providing reliable freeway and arterial access to and from major employment areas, and helping move goods efficiently and safely by rail. Employers also need access to a sufficient labor market within a reasonable commute time and by multiple modes. Rural economic vitality is supported by accommodating safe, reliable travel for the agricultural, forestry and tourism industries.

Environmental Health and Sustainability

All transportation modes, vehicle types and facilities – even electric vehicles and multi-use trails – have impacts on the natural environment, from localized habitat degradation caused by the horizontal footprint of a road or trail, to energy use and global climate change influenced by carbon emissions. Reducing vehicle demand and making the most efficient use of the transportation system supports environmental health and sustainability.

Community Identity

Most communities have adopted plans that define the vision for its future. This includes the role land use and transportation play in helping to facilitate that vision. Therefore, community identity means different things to different communities, but most would agree that good transportation is a critical component of a vibrant community. The transportation system should support each community's distinct visions.

Social Equity

Planning for equity often means examining socio-economic, demographic and geographic characteristics, and making a concerted effort to engage historically underrepresented populations of Washington County. Healthy, accessible and affordable travel options are essential components of the overall transportation system, meeting a variety of societal, environmental and economic goals.

TRANSPORTATION INVESTMENTS

Three different transportation investment options and three related sensitivity tests are proposed for evaluation. The options are designed to test varying policy options and reflect divergent investment levels of meeting long-term economic health and quality of life in the coming decades. The sensitivity tests are intended to provide additional information in areas of greater uncertainty. The options are:

Option A – Current policies with enhanced transit investments and demand management strategies
Option B – Extending current policies with a focus on arterial capacity expansion
Option C – Beyond current policies with a focus on throughway capacity expansion

Option A is intended to assess a policy direction that focuses on transit and demand management and assumes investments adopted in current plans for technology, bike and pedestrian facilities, local roadways and regional facilities.

Option B is intended to assess a policy focus on adding roadway capacity that is not currently in adopted financially constrained plans, but would be consistent with current policy direction, such as new arterials and widening of existing facilities. This option would help assess the effect of an expanded arterial network, access management and widening on Hwy 217 in addition to the other assumptions in Option A.

Option C is intended to assess a policy focus on additional throughway capacity that is not currently in adopted plans and would require changes to existing policies, such as roadway expansion in rural reserves and expansion of throughways beyond those proposed in regional plans. While Option B focuses on arterial expansion and limited throughway widening, Option C focuses on new and expanded throughways as investment priorities. The throughway focus is intended to direct traffic away from existing arterials and provide alternative access opportunities to the north, south and east. It includes the assumptions in Option A.

Each option includes assumptions for future investments in technology, demand management, transit, bike and pedestrian facilities, local roadways and regional facilities. Sensitivity tests – in which only one variable is changed – are proposed to test the effect of emerging technologies, such as connected and autonomous vehicles, new freight consolidation facilities, road user charges and tolling.

All three of the options exceed revenue forecast for the 20-year plans and would require additional revenue sources even for the longer 40-50 year horizon. The evaluation process will include an assessment of how strategic these investments are and can help set priorities for a future with limited funding. Funding was intentionally not included as a constraint in the initial definition of options for evaluation. Study findings may indicate that different combinations of Options A, B or C are worth further refinement and action.

OPTION A – CURRENT PLANS WITH ENHANCED TRANSIT INVESTMENTS AND DEMAND MANAGEMENT STRATEGIES

Option A builds upon adopted transportation plans with additional investments in demand management efforts and transit investments that reflect the increased travel needs anticipated as the region grows and the county becomes more urbanized. This section summarizes the proposed assumptions for Option A.

- **Technology**: Consistent with adopted plans, assumes communication upgrades and adaptive signals in key corridors countywide that improve traffic flow and provide for pedestrian, transit and freight priority. Also assumes increased electrification of fleet consistent with regional and statewide policies.
- **Demand Management**: Assumes increased trip reduction strategies beyond those that exist today consistent with more urban density and changing technologies including, increased street connectivity, expanded parking management programs, integrated mobility including more car, bike, and ride-sharing services, increased telecommuting, transit pass and reduced fare programs.
- **Transit:** Assumes an expanded transit grid network with transit priority on arterials and extensions to existing HCT system, circulators and connectors consistent with adopted plans. Additional transit services are included in this option to reflect increased demand transit with additional HCT service expansions, express services and increased services within urban areas and to adjacent counties.
- **Bike and Pedestrian facilities:** Consistent with direction in adopted plans, assumes **a** complete bike/ped network on all arterials and collectors, and regional trails. Urban centers are assumed to have increased bike and pedestrian connectivity with signal priority and supportive amenities.
- **Local Roads**: Assumes arterial and collector roads as reflected in adopted transportation system plans. This includes some new arterials, arterial widening, and new collector street connections. Local street connections in future urban reserves are also included. No additional arterials and collectors are assumed beyond those that are in these financially constrained plans. All arterials will be designed to accommodate use by all travel modes, including automobiles, bicycles, freight delivery vehicles, transit vehicles, and pedestrians of all ages and abilities.
- **Regional Facilities:** Assumes limited expansion of regional facilities targeted to bottlenecks as reflected in adopted regional financial constrained transportation plans.

OPTION B – EXTENDING CURRENT POLICIES BY FOCUSING ON ARTERIAL CAPACITY

Investments proposed for Option B focus on adding arterial capacity and reflect an extension of current policies. The assumptions for technology, demand management, transit and the bike/ped network builds on Option A. The following additional investments are proposed for Option B.

- **Technology:** Assumes ITS upgrades on all new arterials.
- **Demand Management**: Assumes the same strategies as in Option A.
- **Transit:** Adds transit service on new roads.
- **Bike/Pedestrian facilities:** Adds separation and protection on high speed roadways.
- **Local Roadways:** Proposes additional investments:
    - Expand arterial grid network where reasonable in urban reserves and undesignated areas with multimodal capacity for future urbanization of these areas and connections between urban centers. This includes arterials around Cooper Mountain and on Cornelius Pass Road between Hwy 26 and Hwy 30.
    - Add crossings of regional facilities spaced approximately one mile apart, where reasonable, to improve access to centers and address congestion at interchanges,
    - Upgrade a select number of major intersections.
    - Widen arterials in rural areas to allow for passing lanes and reduce conflict with bikes.
- **Regional facilities:** In addition to the investments in Option A, Option B assumes increased capacity on existing throughways through widening, access management, realignments and adding passing lanes and give freight priority access.

OPTION C – BEYOND CURRENT POLICIES BY FOCUSING ON ADDED THROUGHWAY CAPACITY

Option C also builds on the assumptions in Option A and proposes the following additional investments:

- **Technology:** Additional ITS upgrades on all new facilities.
- **Transit:** Additional express transit services using new regional facilities supported with additional park and ride.
- **Bike and Pedestrian Facilities:** New bike highways in dedicated right of way adjacent to throughways.
- **Local Roadways:** New arterials in rural reserve areas and upgraded arterials that access throughways.
- **Regional facilities**: Assumes a new south-north limited access road from I-5 and I-205 to Hwy 26 through the rural area and a new limited access facility between Hwy 26 and Rivergate in North Portland for access to the airport and Clark County. Option C also assumes additional widening of regional throughways beyond current plans outside of Portland: US 26 to Hwy 217, I-5 and I-205 with freight and transit use priority.

SENSITIVITY TESTING

It is critical to acknowledge the uncertainties inherent in attempting to anticipate transportation demands, travel patterns and systems beyond the typical 20 year planning horizon. In addition to the use of two different growth scenarios, the study team proposes to include sensitivity tests for select policy variables to test the resilience of the transportation investment options under different future conditions.

This section summarizes the policy variables that some concepts with Scenario 2 growth assumptions could be tested against to analyze the transportation implications:

1. Emerging technology tested on Option A
2. Congestion pricing tested on Option C and road user charges tested on Option B
3. Freight evaluated under all options

Emerging Technologies

Below is an overview of how the study will include emerging technologies.

Ubiquitous Intelligent Transportation Services (ITS)

Smarter traffic lights, real-time traffic information, and efficient vehicle routing are only some of the promises of ubiquitous ITS. Past projects have seen efficiency improvements of 5 to 25 percent on corridors with ITS systems and moderate congestion.

Proposed Sensitivity Test:

To reflect widespread use of ITS systems all concepts will have intersection capacities increased by 5 percent on arterials reflective of intersection operational improvements and throughway roadway capacity will be increased by 5 percent reflective of Active Traffic Management tools similar to the OR 217 system with variable speeds, queue warning and traveler information.

Autonomous vehicles

There are major uncertainties about how autonomous vehicles will impact driver behavior, land use, and the broader transportation system. Will people move further away from urban cores and accept longer commutes in they don't need to drive? Or will people choose to live in denser areas where ubiquitous autonomous vehicles mean private cars aren't needed and there's more non-parking space for amenities?

However, one impact is less ambiguous: vehicles will be able to use existing roadway more efficiently because they can travel more closely together and coordinate their driving. There is no measurable data on the real work efficiency gains of autonomous vehicles as they are not yet widespread in the transportation system. Industry groups project roadway capacity gains of 10 to 20 percent.

Proposed Sensitivity Test:

To reflect widespread adoption independent of infrastructure investments, a sensitivity test of Option A with a 10 percent increase in roadway capacity on throughways and arterial is proposed.

Congestion pricing and road user charges

Proposed Sensitivity Test:

Pricing transportation is seen as one of the more effective tools to promote efficient use of the transportation system. Sensitivity testing of Options B and C will be completed for two more distinct approaches to pricing:

Option B
Road User Charge would be implemented region wide and would be implementation of what the State of Oregon is testing with the alternative to the fuel tax that is based on how many miles a person drives.

Option C
Corridor congestion pricing would look at turning existing freeway lanes or added lanes into toll-ways and/or "managed lanes" where drivers pay a charge to use a lane that is less congested than adjacent general purpose vehicle lanes.

Freight

While predicting how freight movement will change in the future involves a significant amount of uncertainty, some expected trends that will affect freight can guide consideration of future investments. For example, continued growth in the high-tech, manufacturing, and agricultural industries, will put added strain on the surface transportation system. Online shopping is expected to substantially increase, which could decrease large truck traffic to retail areas, and increase neighborhood traffic from smaller delivery vehicles.

Proposed Sensitivity Test:

In thinking to the future, a number of ideas have been raised to make moving goods into and out of the county reliable and efficient. Transportation investment options to address future freight travel needs include modifying existing routes to improve freight movement (freight signal timing, ramp meter bypasses, etc.), and providing freight with mobility priority over general (single occupant vehicle) traffic on new routes. All options will be tested with the operational freight improvements along with the assumption of a regional freight transfer and distribution "hub" facility in Washington County, potentially at or near the Hillsboro Airport. The testing of a Westside "hub" facility would assess an alternative for travel to the freight consolidation at the Portland Airport.