

## Chapter 3: User Needs Assessment

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### 3.1 INTRODUCTION

This chapter provides a summary of transportation system user needs for Washington County gathered from project stakeholders through personal key stakeholder interviews, expanded stakeholder mail-out questionnaires, and a steering committee meeting that included key stakeholders. In addition, this chapter also includes a summary of the interviews and questionnaires including an assessment of regional strengths, weaknesses, opportunities, and challenges. The assessment of current and future transportation user needs in Washington County provides a backbone for the development and evaluation of potential ITS projects.

The *Stakeholders and System Users* section includes details from the interviews, questionnaires, and workshop. The *Summary of User Needs* section highlights the user needs identified by stakeholders organized by the following areas of interest:

- ◆ Travel & Traffic Management
- ◆ Information Management
- ◆ Maintenance & Construction Management
- ◆ Emergency Management

### 3.2 STAKEHOLDERS AND SYSTEM USERS

To ensure the success of the *Washington County ITS Plan*, a coalition of stakeholders and system users was created to gather input and build consensus. Personal interviews with key stakeholders targeted numerous subjects, while mail-out questionnaires focused primarily on gathering the big picture user needs from expanded stakeholders. After completion of the interviews a meeting was held with key stakeholders to discuss and verify the transportation needs that had been identified and to determine any additional needs.



#### 3.2.1 Personal Interviews

Key stakeholders with decision-making authority regarding matters such as ITS implementation and institutional coordination were interviewed personally. The interviews were conducted to identify user needs, regional transportation problems, institutional relationships, and obstacles to ITS implementation. Each interview lasted approximately one hour and the notes taken during the interviews are included in Appendix D. One or more representatives from the following seven agencies were interviewed:

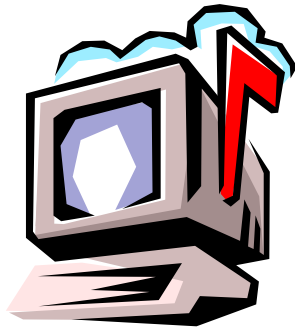
- ◆ Washington County
- ◆ The City of Beaverton

- ◆ The City of Tigard
- ◆ The City of Hillsboro
- ◆ WCCCA

- ◆ Tualatin Valley Fire & Rescue
- ◆ The City of Tualatin

### 3.2.2 Mail-Out Questionnaires

Questionnaires were e-mailed or mailed to the project’s expanded stakeholders to determine user needs and problems of the transportation system. The questionnaire was sent to public agencies indirectly involved with the project, private companies in the study area, and selected representatives of the general public. Overall, questionnaire recipients included the following:



- ◆ Smaller Cities (8)
- ◆ Metro
- ◆ Emergency Management Agencies (5 Police)
- ◆ Schools (3 School Districts)
- ◆ Special Interest Groups or Citizens of Interest (5)
- ◆ Major Employers (3)
- ◆ Railroads (2)

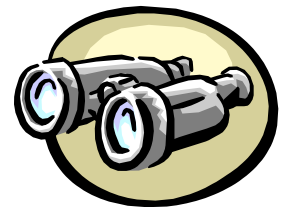
Of the approximately 27 questionnaires sent out, 9 were completed and returned and can be found in Appendix E along with a complete list of questionnaire recipients.

### 3.2.3 Steering Committee Meeting User Needs Assessment

On August 10, 2004, a meeting was conducted with key stakeholders to discuss the list of transportation user needs for Washington County. User needs documented from the interviews were discussed and additional needs were identified. The focus of the discussion was to reach consensus from all key stakeholders regarding the regional transportation user needs.

## 3.3 PROJECT MISSION, GOALS, AND OBJECTIVES

To guide the development and ultimate deployment of intelligent transportation systems in Washington County, key project stakeholders developed a mission statement and accompanying goals and objectives.



### 3.3.1 Mission Statement

Washington County, the Cities within the County, and ODOT seek to improve the safety, security and movement of goods, people, and services for all modes of the transportation network by using advanced technologies, coordinated management techniques, and by providing real time traveler information.

#### Goals

- 1) **Improve the safety and security of our transportation system.**

#### Objectives

- ◆ Reduce frequency, duration, and effects of incidents.
- ◆ Reduce emergency response times.

- ◆ Reduce recurrent congestion.
- ◆ Coordinate incident/security response with other local and regional agencies.
- ◆ Provide advanced incident information so responders arrive better prepared.

**2) Improve the efficiency of the transportation system.**

Objectives

- ◆ Reduce travel time for vehicles, including transit vehicles.
- ◆ Improve efficiency for all modes.
- ◆ Reduce travel time variability.
- ◆ Reduce fuel consumption and environmental impacts.
- ◆ Increase vehicle occupancy.
- ◆ Improve transit service reliability.
- ◆ Improve maintenance and operations efficiencies.
- ◆ Allow for real-time remote changes to signal timings.

**3) Provide improved traveler information.**

Objectives

- ◆ Provide real-time multi-modal transportation system information to travelers.
- ◆ Provide information about construction activities.
- ◆ Provide incident information.
- ◆ Provide real-time road condition and weather information.
- ◆ Provide one location where customers can access all regional and local traveler information.

**4) Deploy functional and cost efficient ITS infrastructure.**

Objectives

- ◆ Deploy systems that fit in with future improvements.
- ◆ Deploy systems with a high benefit-to-cost ratio.
- ◆ Deploy systems that maximize the use of existing infrastructure.
- ◆ Integrate deployments with other local and regional projects.
- ◆ Integrate systems that are consistent with existing systems policy.

**5) Integrate regional ITS projects with local and regional partners.**

Objectives

- ◆ Build consensus among the Steering Committee members.
- ◆ Share resources between local and regional agencies.
- ◆ Continue to coordinate and integrate projects with other agencies.
- ◆ Promote public and private partnerships for ITS deployment, operations, and maintenance.

**3.4 SUMMARY OF USER NEEDS**

This section contains paraphrased statements that summarize the user needs gathered from the interviews, questionnaires, and workshop. User needs are categorized by the following areas of interest: Travel & Traffic Management, Information Management, Maintenance & Construction Management, and Emergency Management. Some needs may apply to multiple categories and any similar user need statements are likely the result of comments from separate stakeholders. The transportation user needs contained in this

section will be mapped to the national ITS architecture user services (Chapter 3) prior to determining applicable ITS projects for Washington County.

### ***3.4.1 Travel and Traffic Management***

This section summarizes travel and traffic management user needs and deficiencies by the following areas of interest: traffic operations and management, incident management, special events, and traveler information.

#### **3.4.1.1 Traffic Operations & Management**

- ◆ Need to establish a communications link to the ODOT Traffic Management Operations Center (TMOC) and ODOT field devices to share video and data.
- ◆ Need to integrate systems between local agencies.
- ◆ Need to coordinate traffic signals with congested freeway off-ramps.
- ◆ Need to improve traffic signal operations.
- ◆ Need to improve traffic signal coordination across jurisdictional boundaries.
- ◆ Need a high speed remote connection to traffic signals.
- ◆ Need automatic notification of traffic signal faults
- ◆ Need traffic signals to respond in real-time based on traffic volumes.
- ◆ Need to address congestion at the following locations in particular:
  - Baseline from Hillsboro to 170<sup>th</sup>
  - Cornell Road (Eastern portion)
  - 185<sup>th</sup> Avenue
  - Scholls Ferry Road
  - Walker Road
  - TV Highway
  - Murray Boulevard
  - Allen Boulevard
  - Tualatin-Sherwood Road
  - Farmington Road
  - Beaverton-Hillsdale Highway
- ◆ Need improved bicycle detection
- ◆ Need remote monitoring capabilities of major roadways and intersections.
- ◆ Need to collect traffic volume data on arterial roadways.
- ◆ Need advanced warning systems that enhance safety.
- ◆ Need real-time weather information at locations prone to bad weather.
- ◆ Need to coordinate regional incident response.
- ◆ Need to document transportation system performance measures.
- ◆ Need to improve transportation safety.
- ◆ Need to reduce recurrent congestion.
- ◆ Need to monitor railroad crossings.
- ◆ Need transit signal priority on major arterials.
- ◆ Need better traffic signal recovery methods for emergency response and railroad pre-emption.

#### **3.4.1.2 Special Events**

- ◆ Need to enhance traffic signal operations during holidays on 185<sup>th</sup> Avenue and near Washington Square.

- ◆ Need to provide real-time road closure information for annual festivals in various cities.

#### 3.4.1.3 Traveler Information

- ◆ Need to expand the congestion flow map to arterial streets.
- ◆ Need to get congestion information to travelers prior to congested areas.
- ◆ Need to post congestion information along major roadways.
- ◆ Need to keep “real-time” information current (i.e. DMS signs, 511, highway advisory radio).
- ◆ Need to use multiple mediums to disseminate the information (i.e. radio, TV, 511, Internet, roadway signs).



#### 3.4.2 Information Management

User needs relating to information management includes the following:

- ◆ Need more automated data collection.
- ◆ Need better systems in the field for real-time traffic data acquisition.
- ◆ Need an information system that houses high-quality, consistent traffic count data.
- ◆ Need to make more information available on the Internet.
- ◆ Need a system to easily sort the data.



#### 3.4.3 Maintenance & Construction Management

The following user needs were identified for maintenance and construction management:

- ◆ Need to automate the construction project website and include other Cities and utilities projects.
- ◆ Need to improve safety in construction work zones.
- ◆ Need road weather information (road temperature, wind, humidity) at key locations like Barnes Road.
- ◆ Need weather forecast information.
- ◆ Need video images of key locations like Barnes Road to monitor weather conditions.



#### 3.4.4 Emergency Management

Emergency management user needs include both communications and emergency management operational needs.

##### 3.4.4.1 Communications

- ◆ Need a communications connection to ODOT TMOC at the 911 dispatch center.
- ◆ Need a communications connection to regional hospitals (St. Vincent’s or OHSU) for monitoring of major incidents that would impact them.
- ◆ Need communication connection to all emergency operations centers.

#### 3.4.4.2 Emergency Management Operations

- ◆ Need to estimate incident duration quickly.
- ◆ Need video images at 911 centers and dispatch centers to aid with dispatch (injury incident or not).
- ◆ Emergency services need railroad crossing information.
- ◆ Need to integrate transportation information with mobile data terminals housed in emergency response vehicles.
- ◆ Need to integrate real-time transportation information with emergency computer aided dispatch to select fastest route.
- ◆ For corridors with multiple traffic signals, need pre-emption at downstream intersections to clear downstream bottleneck.
- ◆ Need to place cameras along response routes with medians.
- ◆ Need real time construction information so emergency vehicles can alter routes.

### 3.5 STRENGTHS, WEAKNESSES, CHALLENGES, AND OPPORTUNITIES

During the interviews and the steering committee meeting, the project team identified strengths, weaknesses and challenges, and opportunities that may affect the deployment of ITS projects in Washington County. Table 2-1 through Table 2-3 highlights the information gathered and provides corresponding suggestions for how to address each strength, weakness and challenges, or opportunity, respectively.

**Table 3-1. Strengths**

Strength	Suggestion(s) on How to Capitalize on Strength
<ul style="list-style-type: none"> <li>◆ ODOT and TriMet have had successful ITS project deployment in Washington County.</li> <li>◆ IRIS (Integrated Road Information System)</li> <li>◆ Significant existing communications infrastructure between centers.</li> <li>◆ Existing Emergency Computer Aided Dispatch (CAD) system.</li> <li>◆ Planned regional data warehouse at Portland State University.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Learn from past experiences and use existing ITS deployments as examples of proven benefits to the public.</li> <li>◆ Include an inventory of ITS equipment in the database.</li> <li>◆ Utilize the existing TriMet and WCCCA fiber optic cable within Washington County to interface with other jurisdictions.</li> <li>◆ Integrate transportation congestion/incident information with emergency CAD.</li> <li>◆ Establish a connection to planned regional communication network.</li> </ul>

**Table 3-2. Weaknesses and Challenges**

Challenge	Suggested Preventative Measures
<ul style="list-style-type: none"> <li>◆ Lack of funding (capital, maintenance, and operations).</li> <li>◆ Limited communications to field devices.</li> <li>◆ Traffic signal operations</li> <li>◆ Large expected growth over next 20 years</li> </ul>	<ul style="list-style-type: none"> <li>◆ Identify projects that improve efficiencies for maintenance operations.</li> <li>◆ Clearly demonstrate the benefits of ITS in an outreach and education program, and by collecting before/after information from ITS deployments.</li> <li>◆ Implement a plan to update signal timings frequently.</li> <li>◆ Implement projects to maximize efficiencies for existing roadways.</li> </ul>

**Table 3-3. Opportunities**

Opportunity	Suggested Action Plan
<ul style="list-style-type: none"> <li>◆ Existing ODOT Traffic Management Operations Center (TMOC) in Portland.</li> <li>◆ Mobile data terminals used (or planned for use) in a number of emergency management vehicles.</li> <li>◆ Computer Aided Dispatch (CAD) used by emergency management.</li> <li>◆ Broadband User's Group (BUG)</li> <li>◆ Planned MSTIP/Local Projects</li> <li>◆ Existing Washington County Construction Project Website</li> <li>◆ The City of Portland currently has as Series 2000 license to add all traffic signals within Washington County to their central traffic signal system.</li> <li>◆ Statewide 511 traveler information phone system.</li> <li>◆ ODOT's TripCheck website.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Establish a communications link to the TMOC for coordinated transportation management, and information sharing.</li> <li>◆ Integrate transportation and emergency management systems and enhance information sharing.</li> <li>◆ Integrate transportation information with the existing CAD system to select routes based on real time construction, railroad crossing, and congestion delay information.</li> <li>◆ Explore opportunities to share this infrastructure for center-to-center communications.</li> <li>◆ Capitalize on new construction projects and install communications infrastructure (i.e. conduit) and ITS equipment as defined in this plan.</li> <li>◆ Provide real time construction information (i.e. lane closures, construction hours, expected delays).</li> <li>◆ Coordinate with the City of Portland for integrating signals with the existing central signal system.</li> <li>◆ Deploy ITS field devices to collect traffic congestion and incident information that can be distributed in a timely manner via the 511 telephone number.</li> <li>◆ Display camera images, incident information, construction information, etc... for Washington County on ODOT's TripCheck web site.</li> </ul>