

Appendix K: Deployment Plan Workshop

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Regional ITS Operations & Implementation Plan for the Deschutes County Area

“Expanded Stakeholder Workshop: Deployment Plan”



Date: Tuesday, January 18, 2005
Time: 9:30 am – 12:00 noon
Location: Deschutes Services Center
Barnes Conference Room
Address: 1300 NW Wall Street
Bend, OR 97701

Please R.S.V.P. by Tuesday, January 11, 2005 to:
Chris Maciejewski - csm@dksassociates.com, or by calling (503) 243-3500.

What Is It All About? To effectively meet the transportation needs of Deschutes County (including Bend, Redmond, Sisters, Mt. Bachelor, and Sunriver), an Intelligent Transportation Systems (ITS) Plan is being developed. An ITS Plan involves the application of advanced technology to solve transportation problems, to improve safety, to provide services to travelers, and to assist transportation system operators to implement suitable traffic management strategies. As part of this project, stakeholder input was gathered through interviews, questionnaires, and an expanded stakeholder workshop to determine the regional needs. The task at hand now is to determine ITS strategies that address these regional needs. This expanded stakeholder workshop will present the future deployment plan outlined for Deschutes County.

Why Attend? Your input and participation plays a key role in shaping the future of the regional transportation system. At this meeting, you will learn about the proposed plan for deploying ITS projects in Deschutes County and you will have the opportunity to provide comments on these projects and offer suggestions. In addition, this workshop will include a presentation from Cyrus Minoofar, who is the ITS

Program Director with the Alameda County Congestion Management Agency in the Bay area. Cyrus has over ten years of experience in coordinating ITS projects between 25 agencies in the east bay.



In Cooperation With:

- FHWA
- City of Bend
- City of Redmond
- Deschutes County
- Bend MPO
- Oregon State Police
- Deschutes County 911

Consultants:

DKS Associates
TRANSPORTATION SOLUTIONS



Meeting Agenda

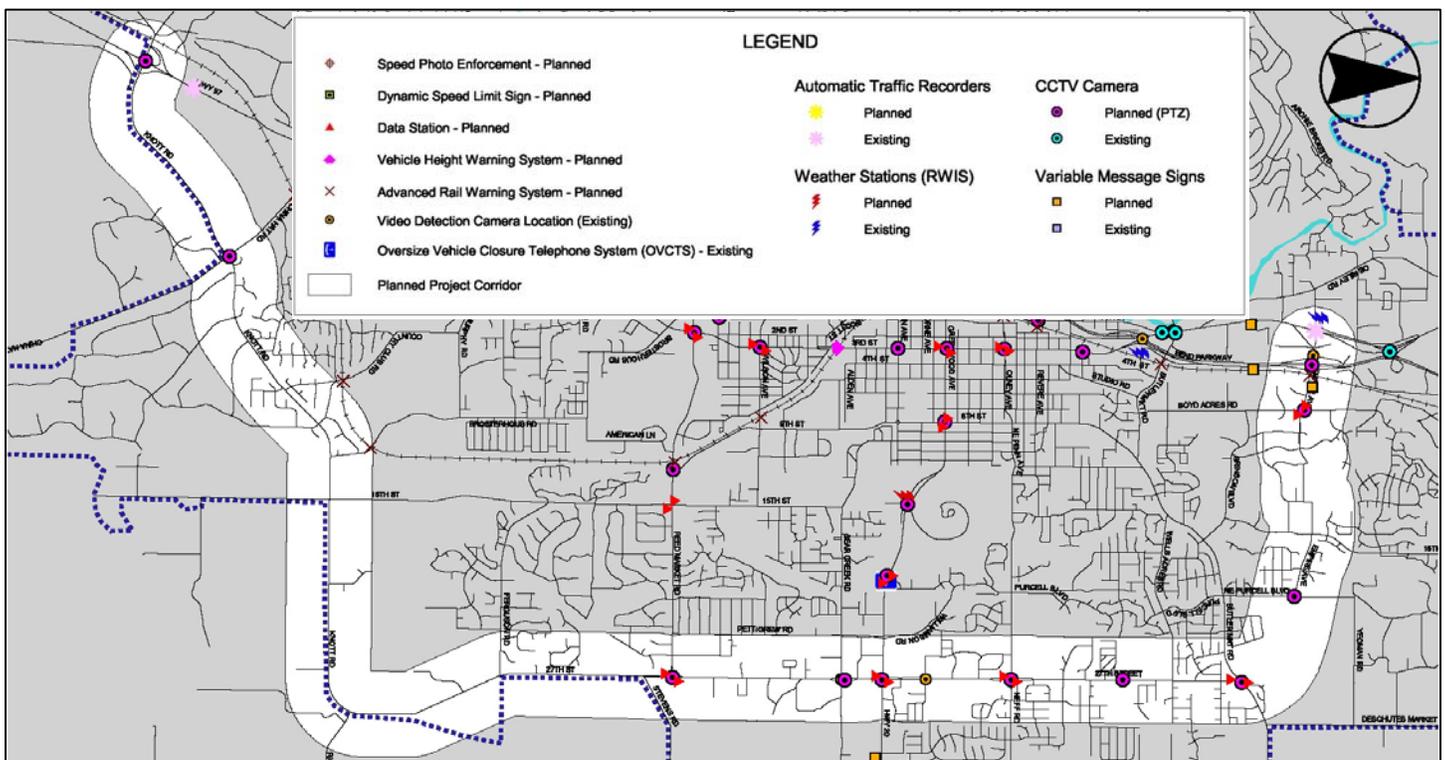
- 9:30 am: *Welcome & Introductions*
- 9:35 am: *Presentation by DKS Associates*
- Update of project status
 - Summary of proposed ITS deployment plan
- 10:00 am: *Breakout Session*
- Poster sessions will be set up around the room based on areas of interest and workshop participants will have the opportunity to ask questions and provide input on ITS deployment projects.
- 11:00 am: *Group Discussion*
- Group leaders will summarize poster session input and will lead a group discussion about potential modifications or additions to the proposed ITS deployment plan.
- 11:25 am: *Keynote Speaker*
- “Taking a Multi-Agency Approach to Transportation Management”
- 11:55 am: *Next Steps*

Sample Projects for the ITS Deployment Plan

The Deschutes County area is planning to apply technological solutions to improve the efficiency, safety, mobility, and convenience of the regional transportation system. Approximately 45 projects have been identified as possibilities to address the needs of the area. A sample description of some of the projects under consideration is provided below.

Key Corridor Safety and Efficiency Improvements

Continuing rapid regional growth and incidents such as crashes, disabled vehicles, spilled cargo, and other special events result in increased traveler delay and secondary crashes. A series of corridor improvement projects have been identified for 12 key corridors in the study area, including Century Drive to Mt. Bachelor, Hwy 97 between Bend and Redmond, 3rd Street in Bend, and Knott Road/27th Street/Empire Avenue in Bend. These projects will implement ITS devices to monitor and manage traffic flows, including video, count stations, weather stations, variable message signs, and advanced signal timing. The field devices in these corridors will be linked to local agency systems to provide real-time information, which can also be linked to traveler information systems.



Regional Traveler Information System

The purpose of this project is to provide travelers with real-time information regarding traffic conditions (ie. major incidents, current construction, road closures, severe weather locations, travel times) to help them make informed decisions. This information will be disseminated through ODOT's existing "TripCheck" website (www.tripcheck.com), the 511 telephone system, and highway advisory radio (HAR).



Agenda

**Regional ITS Operations & Implementation Plan
for Deschutes County**
Expanded Stakeholder Workshop – Deployment Plan

Tuesday, January 18, 2005
Deschutes Services Center
1300 NW Wall Street
Bend, OR 97701
Barnes Conference Room
9:30 a.m. – 12:00 noon

- | | | |
|------|--|------------|
| I. | Welcome and Introductions | 5 Minutes |
| II. | Presentation by DKS Associates | 35 Minutes |
| | <ul style="list-style-type: none">▪ Update of project status▪ Summary of proposed ITS Deployment Plan | |
| III. | Breakout Session | 60 Minutes |
| | <ul style="list-style-type: none">▪ Poster sessions will be set up around the room based on areas of interest and workshop participants will have the opportunity to ask questions and provide input on ITS deployment projects. | |
| IV. | Group Discussion | 15 Minutes |
| | <ul style="list-style-type: none">▪ Group leaders will summarize poster session input and will lead a group discussion about potential modifications or additions to the proposed ITS deployment plan. | |
| V. | Keynote Speaker, Cyrus Minoofar | 30 Minutes |
| | <ul style="list-style-type: none">▪ “Taking a Multi-Agency Approach to Transportation Management” | |
| VI. | Next Steps | 5 Minutes |

Deschutes County ITS Plan

(Regional ITS Operations & Implementation Plan
For The Deschutes County Metropolitan Area)



Deployment Plan Workshop

DKS Associates
January 18, 2005

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Meeting Agenda

"Improving Transportation Management and Operations"

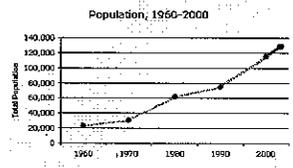
- 9:30 am Welcome & Introductions
- 9:35 am Project Summary Presentation
 - ✓ Project Update
 - ✓ Summary of Proposed ITS Deployment Plan
- 10:10 am Breakout Session
- 11:10 am Group Discussion
- 11:25 am Transportation Management Presentation
- 11:55 am Next Steps
- 12:00 pm ADJOURN



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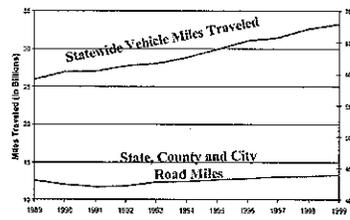
Deschutes County – Fastest Growing County in Oregon

- Deschutes County Population Growth
 - ✓54% increase (1990 – 2000)
 - ✓13% increase (2000 – 2003)



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Vehicle Miles Traveled Increasing, Miles of Road Remain the Same



| |
|---|
| Public Road Vehicle Miles Traveled |
| 1989 = 25.94 Billion |
| 1999 = 33.28 Billion |
| 28% Increase |
| State, County and City Road Miles |
| 1989 = 43,095 |
| 1999 = 43,956 |
| 2% Increase |

Increased Vehicle Miles Traveled with no increase in lane miles = More congestion on existing roads

Source: Association of Oregon Counties, Report to House Transportation Committee 03-07-03

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Focus on Improving Operations

- Recognize adding lanes is not the only solution
- Can improve safety and quality of life with improved operations

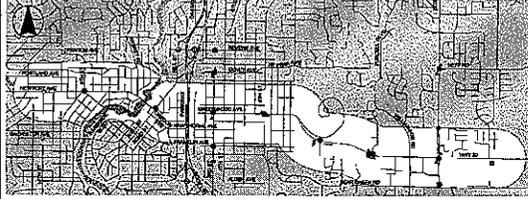




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Why Are We Here Today?

To receive feedback on the Deschutes County ITS Plan specifically related to the **20-year project list**



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Why Are You Here?

| | |
|------------------------|---|
| Operators/ Planners | What tools do you need to manage the transportation network? To plan for future improvements? |
| Maintenance | What tools do you need to maintain the transportation infrastructure effectively? |
| Emergency | What tools do you need to reduce response times and arrive better prepared? |
| Users | What tools do you need to plan your trip? What does your business need to move your goods? |

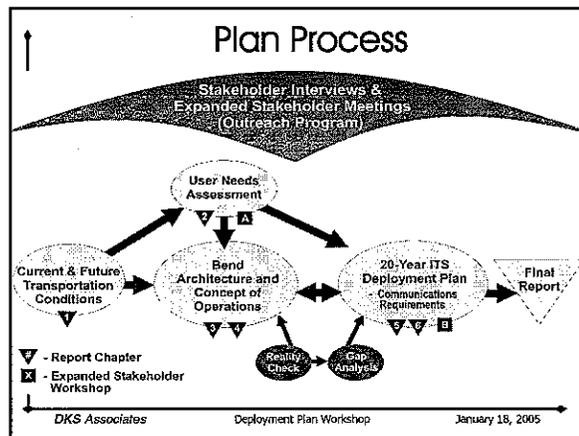
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Workshop Goals

- Obtain stakeholder input
- Identify any additions/modifications to the deployment plan projects and schedule
- Finalize Deschutes County deployment plan




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Deschutes County Mission

The Deschutes County area seeks to improve the safety, security and movement of goods, people, and services for all modes of the transportation network by using advanced technologies, establishing agency coordination, utilizing existing system capacity and infrastructure, and providing real time traveler information.

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Deschutes County Goals

- Improve travel safety and security
- Improve transportation efficiency
- Provide improved traveler information
- Integrate with local and regional partners
- Monitor transportation performance

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What is ITS?

Intelligent Transportation Systems apply technological solutions including computer hardware and software, communications, electronics and safety systems to improve safety and transportation system performance.










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ITS Solutions Include:

- Traffic Signal Control
- Freeway Management
- Incident Management
- Traveler Information
- Transit Management
- Work Zone Safety
- Emergency Response
- In-Vehicle Systems



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Real World Example #1



- What: Weather stations with video and pavement sensor
- Why: Provide weather data, pvmt temp, camera image
- Benefit: Info for maintenance, travelers, 911, Fire, planners – save time, know road conditions

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Real World Example #2

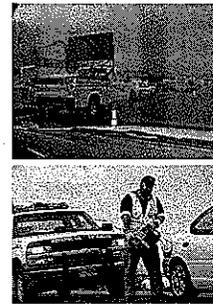
- What: Distribution of current traffic conditions and camera images to 911 Center
- Why: Provide dispatchers with more info for better dispatching
- Benefit: Quicker response, time savings – may save a life



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Real World Example #3

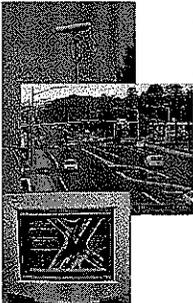
- What: Incident response with highway patrols
- Why: Respond and clear incidents, stalled vehicles, etc. quicker
- Benefit: Reduce secondary crashes, improve customer service, save lives



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Real World Example #4

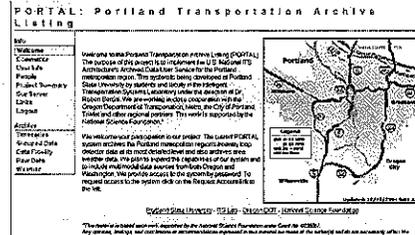
- What: Video & traffic responsive signal timing strategies
- Why: 1) provide timing plans that respond to changing traffic volumes; and 2) using cameras, we can monitor and change signal timing from the office
- Benefit: Maximize arterial efficiency, efficient for staff, provide images for travelers



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Real World Example #5

- What: Data archiving system (portal.its.pdx.edu)
- Why: Historical data for improved planning



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A Glimpse Into the Future

Travelers - Vehicle infrastructure integration, Dynamic route guidance, Mayday systems

- ✓ Collision avoidance systems
- ✓ Vehicle to vehicle communications
- ✓ Vehicle to roadside communications



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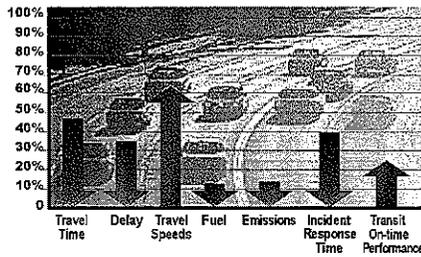
ITS Provides Regional Transportation Management Opportunities

- Opportunity to manage our (existing and future) infrastructure on the metropolitan area scale to improve safety and efficiency
 - ✓ ODOT Transportation Operations Center
 - ✓ ODOT TripCheck, 511, Channel 48

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How are ITS Benefits Measured?

- Safety
- Delay/Time
- Quality of Life
- Cost Savings
- Environment



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Benefits of ITS

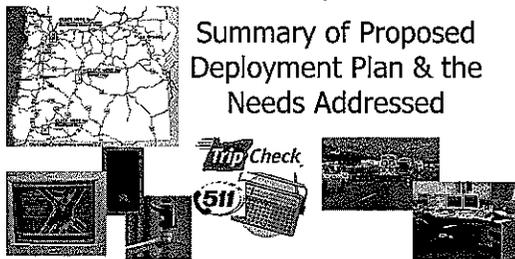
- Coordinated Traffic Signals
 - ✓ 10 to 40 percent reduction in stops
 - ✓ Up to 15 percent reduction in fuel consumption
 - ✓ 5 to 25 percent reduction in travel time
 - ✓ 15 to 45 percent reduction in delay
- Transit Management
 - ✓ 10 percent reduction in travel time



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Deschutes County ITS Plan Expanded Stakeholder Workshop

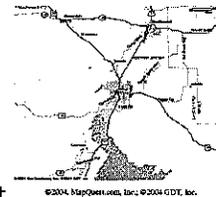
Summary of Proposed Deployment Plan & the Needs Addressed



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Deschutes County ITS Plan Project Categories

1. Travel & Traffic Management
2. Communications
3. Emergency Management
4. Information Management
5. Public Transportation Management
6. Maintenance & Construction Management
7. Advanced Vehicle Safety Systems



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Information Management Needs

- Automated data collection (volumes, speed, occupancy, vehicle classification, incidents)
- Standardized data format that is GIS-compatible
- Internet-accessible information
- Improved information for transportation planning
- Management/consistency of data between agencies
- GPS recorded collision data



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Maintenance & Construction Management Needs

- In-vehicle geo-coding of maintenance items (potholes, tree-limbs, signs)
- Weather information accessible to maintenance crews
- Central source for construction information
- Construction zone management to improve safety
- Real-time mapping of maintenance/snow plow vehicle locations



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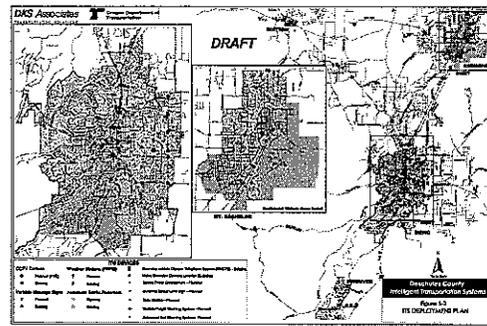
Public Transportation Management Needs

- Vehicle location system
- Transit signal priority
- Transit arrival information - web based and at stops



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Twenty-Year ITS Plan



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Deployment Plan Phasing Criteria

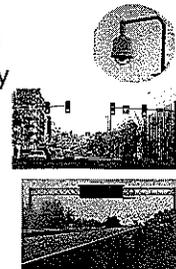
- Crash Prevention
- Corridor Volumes
- Key Decision Point
- Address User Needs
- Part of an Improvement Project
- Project Dependencies
- Technical & Institutional Feasibility
- Available Funding



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Traffic Management Projects

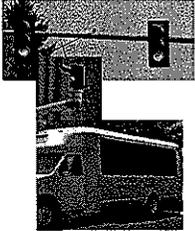
- Central Traffic Signal System
- Corridor Safety and Efficiency Improvements
 - ✓ Network Surveillance
 - ✓ Traffic Data Collection System
 - ✓ Dynamic Message Signs
 - ✓ Traffic Signal Coordination



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Public Transportation Management Projects

- Transit Signal Priority
- Real-Time Transit Information Displays
- AVL/CAD Transit Management System
- Automated Passenger Counting
- Automated Stop Announcements



#10 to Redmond 5 Min
#30 to 27th Avenue 10 Min

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Deschutes County ITS Plan Expanded Stakeholder Workshop

Breakout Session:
Deployment Plan Projects



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Goals of Breakout Session

- Review Proposed Deployment Plan Projects
 - ✓ Identify additions/deletions/modifications
 - ✓ Review for completeness/level of detail
- Review Proposed Deployment Schedule
 - ✓ Determine if project timing fits with other regional plans

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Poster Sessions

| Group | Moderator |
|--|-------------------|
| 1) Travel & Traffic Management | Peter Coffey |
| 2) Emergency Management, Information Management | Habib Shamskhou |
| 3) Public Transportation Management, Maintenance & Construction Management | Chris Maciejewski |
| 4) Communications | Jim Peters |

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Deschutes County ITS Plan Expanded Stakeholder Meeting

Group Discussion



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Deschutes County ITS Plan Expanded Stakeholder Meeting

Taking a Multi-Agency Approach to Transportation Management

Cyrus Minoofar
Alameda County Congestion Management Agency

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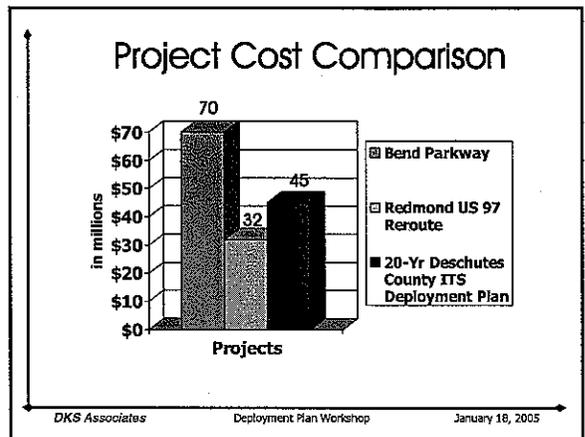
Keys to Implementation

- 20-Year Plan
 - ✓ 50 Projects
 - ✓ Approximately \$45M



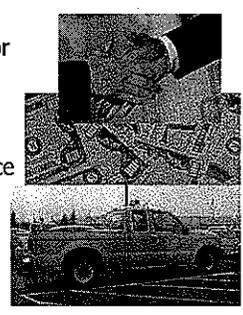
| ITS DEVICES | | |
|---|---|---|
| <ul style="list-style-type: none"> • CCTV Camera • Manual PTZ • Kiosk | <ul style="list-style-type: none"> • Weather Station (RTIS) • Planer • Backup | <ul style="list-style-type: none"> • Dynamic Variable Message System (DVMS) - Pending • Video Detection Camera Lending (Edging) • Road Price Enforcement - Planned • Dynamic Speed Limit Sign - Planned • Data Station - Planned • Video Night Vision System - Planned • Advanced Traffic System - Planned |
| <ul style="list-style-type: none"> • Variable Message Sign • Normal • Coding | <ul style="list-style-type: none"> • Automatic Traffic Recorder • Planer • Emergency | |

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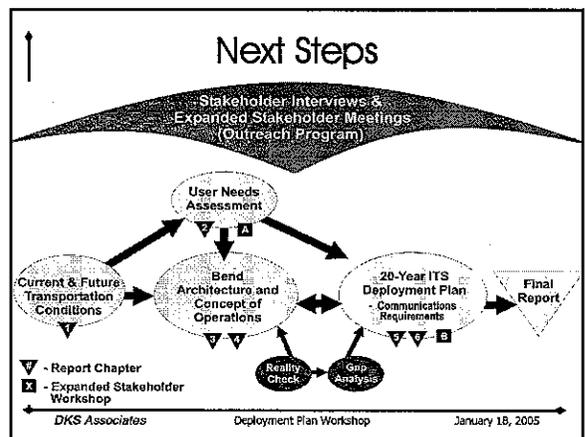


Keys to Implementation

- Partner and Coordinate for Funding
- Deploy Projects With Big "Bang for the Buck"
- Do not Forget Maintenance and Operations
- Learn From Your Peers



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Thank You!!

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Regional ITS Operations & Implementation Plan for Deschutes County

Expanded Stakeholder Workshop Deployment Plan

January 18, 2005

Project Mission Statement:

The Deschutes County area seeks to improve the safety, security and movement of goods, people and services for all modes of the transportation network by using advanced technologies, establishing agency coordination, utilizing existing system capacity and infrastructure, and providing real time traveler information

Project Goals:

- 1) Improve the safety and security of our transportation system.
- 2) Improve the efficiency of the transportation system.
- 3) Provide improved traveler information.
- 4) Develop and deploy cost efficient ITS infrastructure.
- 5) Integrate regional ITS projects with local and regional partners.
- 6) Monitor transportation performance measures.



In Cooperation With:

- City of Bend
- City of Redmond
- Deschutes County
- Bend MPO
- Oregon State Police
- Deschutes County 911
- Federal Highway Administration

Consultants:

DKS Associates
TRANSPORTATION SOLUTIONS



Regional ITS Operations & Implementation Plan for Deschutes County

Expanded Stakeholder Workshop Deployment Plan

January 18, 2005

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- Oregon State Police
- Deschutes County 911
- Federal Highway Administration

Consultants:

DKS Associates
TRANSPORTATION SOLUTIONS



Agenda

**Regional ITS Operations & Implementation Plan
for Deschutes County**
Expanded Stakeholder Workshop – Deployment Plan

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| V. | Keynote Speaker, Cyrus Minoofar | 30 Minutes |
| | <ul style="list-style-type: none">▪ “Taking a Multi-Agency Approach to Transportation Management” | |
| VI. | Next Steps | 5 Minutes |

Deschutes County ITS Deployment Plan

The projects included in the Deployment Plan were developed based on collaboration from the project Steering Committee and input received at the expanded stakeholder workshop. Project ranking were established by scoring each project based on the following criteria:

- Safety/Collision Prevention
- Traffic Volumes/Congestion
- Key Decision Point
- User Needs
- State-Wide Consistency
- Part of an Improvement Project

The resulting project rankings were used to create a prioritized 0-5 Year Plan, 6-10 Year Plan, and 11-20 Year Plan. The following sections discuss each ITS program area, including summaries of each project.

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| Advanced Vehicle Safety Systems | 27 |

Traffic and Travel Management

Projects within this program area are focused on improving the safety and efficiency of the existing roadway system by providing tools to better manage the existing infrastructure, to coordinate with regional partners, and to provide traveler information to the public. The purpose of most of these projects is to improve travel time, reduce crashes and the effects of crashes, provide incident response, and provide more traveler information. The plan projects are summarized in the following tables. The 0-5 year plan projects are discussed in more detail on pages 7-18.



| 0-5 Year Plan Projects | |
|---|---|
| Name | Description |
| Central Signal System | Install a central signal system and traffic signal interconnect via fiber optic through central Bend on 3 rd Street and the Bend Parkway, including video monitoring. This project will provide remote signal system management. |
| Hwy 97 Business (3rd St) Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom), variable message signs, data collection stations at traffic signals, advanced vehicle height warning system, signal timing improvements, and advanced signal timing |
| Hwy 97 (Redmond Parkway) Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom) and traffic recorders along the new Hwy 97 alignment. |
| Hwy 97 (Redmond) Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom), variable message signs, data collection stations at traffic signals, weather stations, and signal timing improvements |
| Regional Traveler Information System | Develop an integrated system (coordinated with ODOT TATII) to disseminate traveler information (511, Tripcheck, HAR, download to cell phones or PDAs). This could include kiosks at key traveler points (Bend Parking Garage). |

6-10 Year Plan Projects

| Name | Description |
|--|---|
| Hwy 20/Greenwood Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom), variable message signs, data collection stations at traffic signals, signal timing improvements, and advanced signal timing |
| Hwy 97 (Bend Parkway) Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom), and traffic recording. |
| Century Drive (to Mt. Bachelor) Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom), variable message signs, weather stations, dynamic speed limit signs, and speed photo enforcement |
| Incident Response Program - Vehicles | Develop a multi-jurisdictional regional incident response program to support emergency management agencies with incident management on state, county, and city roadways. This program includes vehicles, personnel, and dispatch. |
| Hwy 97 (Bend to Redmond) Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom) and variable message signs. |
| Hwy 97 (South of Bend) Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom), variable message signs, and weather stations |
| 27th/Empire/Knott Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom), data collection stations at traffic signals, signal timing improvements, and advanced signal timing |
| Region 4 TMC Upgrade | Expand/upgrade the Transportation Operations Center facility and equipment. |

11-20 Year Plan Projects

| Name | Description |
|---|--|
| Hwy 20 (Bend to Sisters) Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom), variable message signs, and weather stations. |
| Reed Market Rd Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom), data collection stations at traffic signals, signal timing improvements, and advanced signal timing |
| Expand the Incident Response Program - Plans | Develop signal timing plans, parking management plans, and deploy dynamic message signs to support the incident management program. |
| Advanced Rail Warning System | Deploy railroad crossing train detection and warning. Transmit data to in-vehicle systems. |
| Mountain Pass Information System | Develop and information and dissemination system to provide travelers with Santiam and US 26 Pass conditions information. |
| Transportation Operations Center Software (TOCS) Upgrade | Add local system functionality to the TOCS software. This could include and interface to the central signal system for traffic signal status information. |
| ORE 126 (Sisters to Redmond) Safety and Efficiency Improvements | This project will deploy video monitoring (pan/tilt/zoom), traffic recorders, and weather stations |
| S. Century Drive (Sunriver to Mt. Bachelor) Safety Improvements | This project will deploy variable message signs to display information for drivers traveling from Sunriver towards Mt. Bachelor. |
| Advanced Vehicle System - Vehicle Probes | Develop a system to link in-vehicle Geographic Positions System (GPS) data to the TOC to collect traffic flow information. |
| Advanced Vehicle System - Vehicle navigation system. | Develop a system to transmit traveler information to in-vehicle navigation systems. |
| Advanced Vehicle Systems - Mayday to TOC | Provide for information flow from vehicle Mayday systems to the TOC (notification of airbag deployment). |

Central Signal System

DC-TM-01

Page 1 of 2

Purpose

To install central signal system software that allows remote management of traffic signals and is integrated with other agencies throughout the region.

Existing Problems

- Lack of remote, continuous access to traffic signals.
- Too much staff time needed in the field to monitor signal status/condition and to download traffic count data.
- No automated alert system to identify operators of signal detector failure.
- Limited coordinated traffic signals along major corridors.



Stakeholders

- Primary: ■ ODOT
- Secondary: ■ Deschutes County
■ City of Bend

Description

This project will include the deployment of a central traffic signal system computer and software at the ODOT Transportation Operations Center (TOC) to manage regional traffic signals. Key features of the system will include remote control and monitoring capability, traffic signal controller error processing, and report generation. The system will also include enhanced traffic management system integration, provide for future adaptive control in response to real-time traffic conditions, accommodate regional signal priority needs, and allow more efficient integration of existing and planned roadside system enhancements. Additionally, the system will operate continuously without supervision and will allow multiple users to concurrently access and use the system. Prior to selecting a central signal system, ODOT should conduct an assessment of their local intersection control functional requirements and evaluate available local controller software to determine an application that best meets the region's needs.

Project Dependencies

This project is not dependent on other ITS projects in this plan. Rather, many arterial management projects are dependent on the completion of this project.

ITS Standards

- ITE TM 1.03, TM 2.01
- NTCIP 1101, 1102, 1103, 1201, 1202, 1210, 2101, 2102, 2103, 2104, 2201, 2202, 2301, 2303
- SAE J2540

Central Signal System

Communication Requirements

Communication will be required between the central signal system and the traffic signals. Where master controllers are used to interface with a number of traffic signals already interconnected, communication will only be required between the central signal system and the traffic signal that houses the master controller. It may not be practical or cost effective to connect all traffic signals in the Bend-Redmond area to the central signal system. In such instances, it may be more practical to use dial-up or cellular telephone lines to remotely access these signals off-system.

Goals Supported

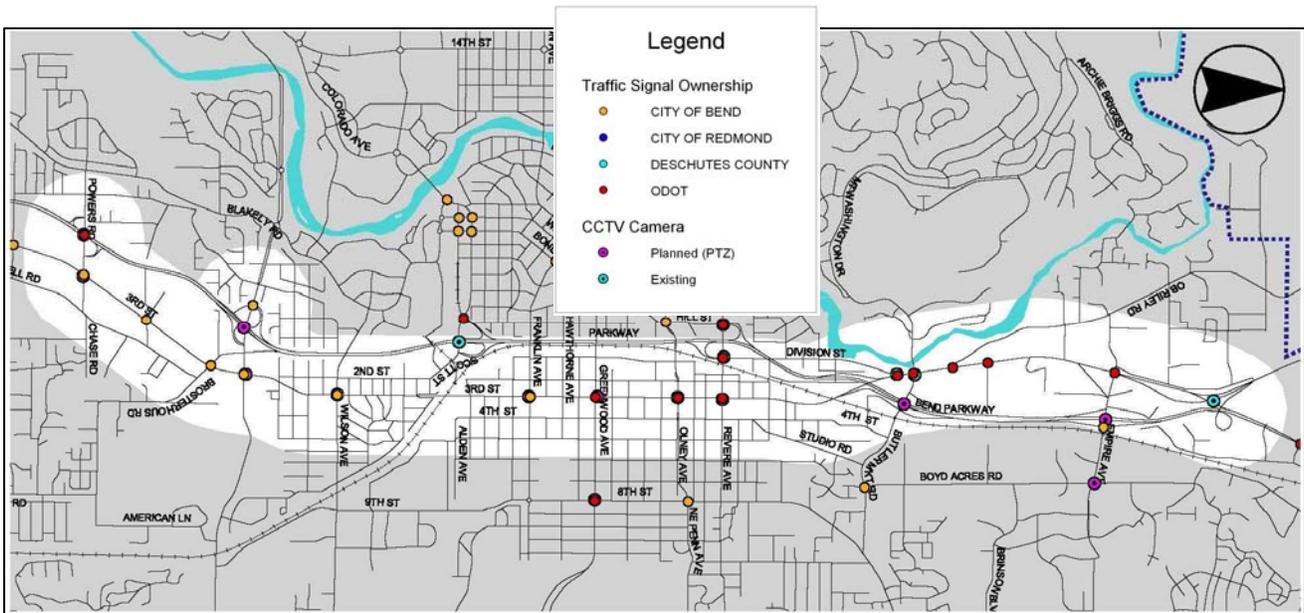
- Improve the efficiency of the transportation system.
- Develop and deploy cost efficient ITS infrastructure.
- Integrate regional ITS projects with local and regional partners.

Cost

| | |
|-------------|--------------------------|
| \$1,420,000 | Project Deployment |
| \$57,000 | Annual Ops & Maintenance |

Benefits

- Reduction in stops, fuel consumption, and vehicle delay.
- Improved travel time on major arterials.
- Integration of multi-jurisdictional arterial systems.
- Information sharing capabilities.
- Ability to monitor and control traffic control systems in real-time from a remote location.
- Ability to respond to complaints in a timely and cost-effective manner.
- Supports arterial management projects.



Hwy 97 Business (3rd St) Safety and Efficiency Improvements

DC-TM-02

Page 1 of 3

Purpose

To improve travel time and reduce crashes and the effects of crashes on Hwy 97 Business.

Existing Problems

- Existing and future recurrent congestion along entire corridor.
- Eight congested intersections along corridor and three congested intersections adjacent to corridor.
- Numerous high incident locations.
- Over height vehicle issues at the railroad undercrossing.
- Limited monitoring capabilities.
- Lack of traveler information.



Stakeholders

- Primary:
- ODOT
 - City of Bend

Description

To monitor roadway and equipment conditions:

Deploy CCTV cameras at key intersections and bring the video feed to the ODOT TOC. Use the camera viewing capabilities to troubleshoot complaints and to monitor the roadway for congestion, trouble spots, incidents, equipment failures, and traffic signal operations.

To improve travel time, and reduce stops, fuel consumption, and crashes:

Implement advanced signal timing along the corridor. At the time of project implementation either traffic-responsive signal timing (selection of pre-programmed signal timing plans based on current volumes) or adaptive signal timing (automatic adjustment of signal timings in real-time based on current traffic conditions) should be selected. Both methods provide

greater benefits compared to traditional traffic signal timing. Some traffic signal hardware and software may need to be updated to support advanced signal timing.

To prevent over height vehicle collisions with the railroad undercrossing:

Deploy an advanced vehicle height warning system that detects when a vehicle is too tall for the undercrossing. Automatically warn the driver that their vehicle is over height through a dynamic or changeable message sign or a static sign with flashing beacons.

To reduce incident response time:

Install field devices to detect, verify, manage and clear incidents. Install ATR's and count stations to automatically detect incidents. Install CCTV cameras on Hwy 97 Business and transmit the video feed to the ODOT TOC to detect and verify incidents.

Description (continued)

To disseminate traveler information to the public prior to their trip:

Install ATR's and count stations to collect volume, occupancy, and speed information and display on a congestion map on the TripCheck website. Install CCTV cameras along Hwy 97 Business, particularly at high crash locations and key congested intersections. Display the camera images on the TripCheck website and provide a video feed to the local media.

To disseminate traveler information to the public during their trip:

Install VMS's at key locations and keep information current in the 511 traveler

information system. Display pertinent traveler information about delays and incidents on the VMS's and include the same information in the 511 system.

To collect roadway performance data for planning future improvements:

Install ATR's and count stations to collect and store traffic counts (volume, occupancy, and speed). This will automate the data collection process replacing counts conducted manually today. These devices will also provide traffic count data year round and can be used to enhance transportation planning and traffic signal timing plan development.

Communication Requirements

A connection is required between the proposed CCTV cameras, VMS's and ATR's and the ODOT TOC. The communications connection between the traffic signals and the central signal system at the TOC will be installed as part of Project #15. The count stations may be connected to the closest traffic signal controller. Some type of detection method will be required to measure vehicle height and a communications connection will be required between the selected detection method and the driver feedback sign for vehicle height warnings.

Project Dependencies

Project DC-TM-01: Central Signal System needs to be completed to implement advanced signal timing along the corridor.

ITS Standards

- IEEE P1512 – 2000, P1512.1
- ITE TM 1.03, TM 2.01
- NTCIP 1101, 1102, 1103, 1201, 1202, 1203, 1205, 1206, 1209, 1211, 2101, 2102, 2103, 2104, 2201, 2202, 2301, 2303
- SAE J2353, J2354, J2529, J2540, J2540

Hwy 97 Business (3rd St) Safety and Efficiency Improvements

Project DC-TM-02

Page 3 of 3

Goals Supported

- Improve the safety and security of our transportation system.
- Improve the efficiency of the transportation system.
- Provide improved traveler information.
- Develop and deploy cost efficient ITS infrastructure.
- Monitor transportation performance measures.

Associated Market Packages

- ATIS01: Broadcast Traveler Information
- ATIS02: Interactive Traveler Information
- ATMS01: Network Surveillance
- ATMS03: Surface Street Control
- ATMS06: Traveler Information Dissemination

Benefits

- Integration of multi-jurisdictional arterial systems.
- Improved safety and efficiency.
- Reduced delay.
- Reduced collisions.
- Reduced emergency response times.
- More effective traffic management, incident management, and maintenance management.
- Timely and cost-effective complaint response.
- Increased traveler information.
- Availability of additional volume, speed, and occupancy data.

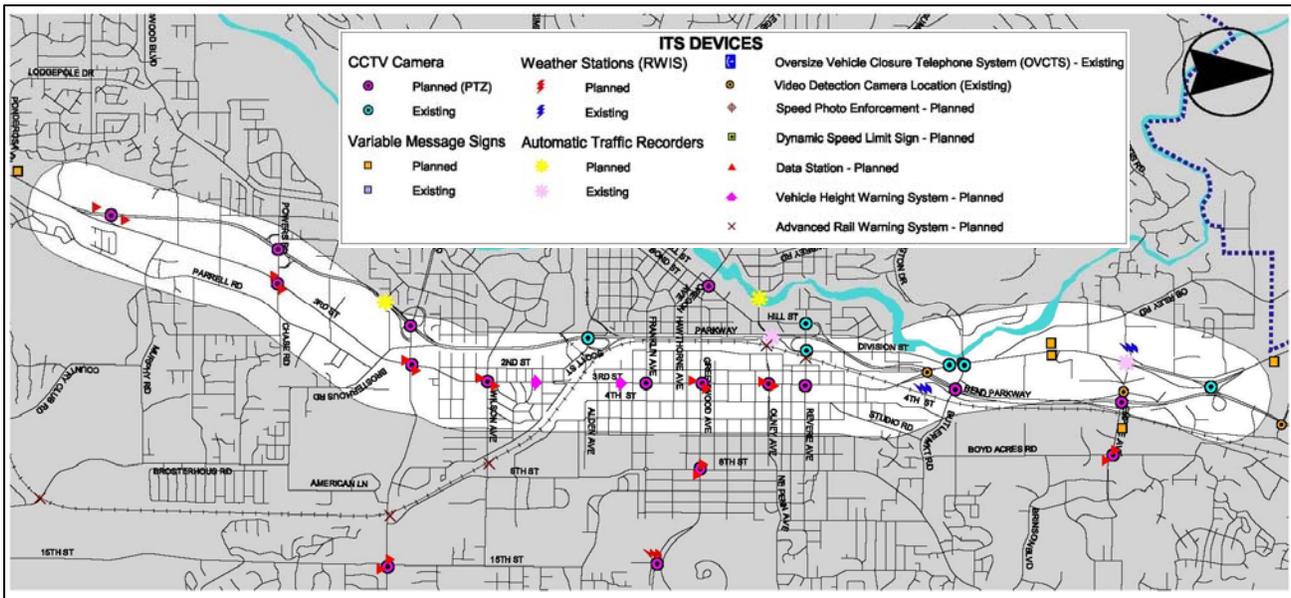
Phased Plan

0 – 5 Years: Project Deployment

Cost

\$959,000 Project Deployment

\$26,000 Annual Ops & Maintenance



Hwy 97 (Redmond Parkway) Safety and Efficiency Improvements

Project DC-TM-03

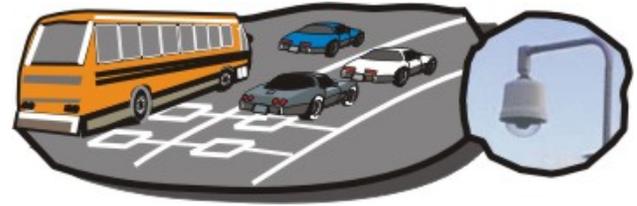
Page 1 of 2

Purpose

To include monitoring and data collection capabilities in the construction of the new section of Hwy 97 (Redmond Parkway).

Existing Problems

- Anticipation of high traffic volumes along new Hwy 97 section.
- Limited monitoring capabilities.
- Lack of traveler information.



Stakeholders

- Primary:
- ODOT
 - City of Redmond

Description

To monitor roadway and equipment conditions:

Deploy a CCTV camera east of Negus Way and bring the video feed to the ODOT TOC. Use the camera viewing capabilities to troubleshoot complaints and to monitor the roadway for congestion, trouble spots, incidents, equipment failures, and traffic signal operations.

To reduce incident response time:

Install field devices to detect, verify, manage and clear incidents. Install a count station east of Negus Way to automatically detect incidents. Install a CCTV camera on Hwy 97 and transmit the video feed to the ODOT TOC to detect and verify incidents.

To disseminate traveler information to the public prior to their trip:

Install a count station to collect volume, occupancy, and speed information and display on a congestion map on the TripCheck website. Install a CCTV camera along Hwy 97 and display the camera images on the TripCheck website and provide a video feed to the local media.

To collect roadway performance data for planning future improvements:

Install a count station to collect and store traffic counts (volume, occupancy, and speed). This will automate the data collection and will also provide traffic count data year round that can be used to enhance transportation planning and traffic signal timing plan development.

Communication Requirements

A communication connection is required between the proposed equipment (CCTV camera and count station) and the ODOT TOC. The count station may be connected to a nearby traffic signal controller if traffic signals are included along Redmond Parkway.

Hwy 97 (Redmond Parkway) Safety and Efficiency Improvements

Project DC-TM-03

Page 2 of 2

Project Dependencies

This project should be incorporated into the design of Redmond Parkway and constructed at the same time as the new roadway.

Goals Supported

- Improve the safety and security of our transportation system.
- Improve the efficiency of the transportation system.
- Provide improved traveler information.
- Develop and deploy cost efficient ITS infrastructure.
- Monitor transportation performance measures.

Associated Market Packages

- ATMS01: Network Surveillance

Cost

\$819,000 Project Deployment
 \$16,000 Annual Ops & Maintenance

ITS Standards

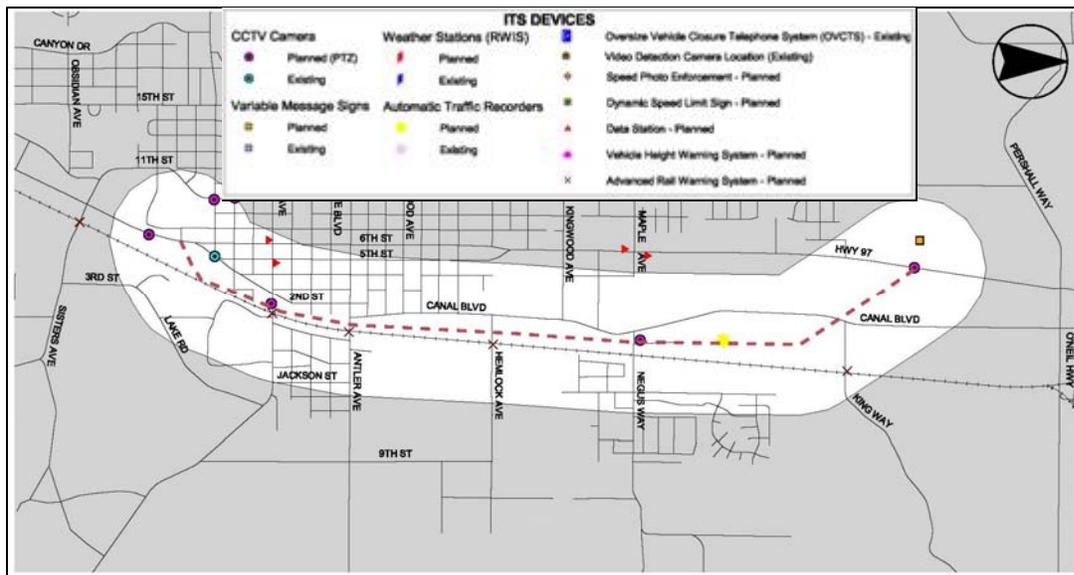
- ITE TM 1.03, TM 2.01
- NTCIP 1101, 1102, 1103, 1201, 1205, 1206, 2101, 2102, 2103, 2104, 2201, 2202, 2301, 2303

Benefits

- Integration of multi-jurisdictional arterial systems.
- Improved safety and efficiency.
- Reduced delay.
- Reduced collisions.
- Reduced emergency response times.
- More effective traffic management, incident management, and maintenance management.
- Timely and cost-effective complaint response.
- Increased traveler information.
- Availability of additional volume, speed, and occupancy data.

Phased Plan

0 – 5 Years: Project Deployment



Hwy 97 (Redmond) Safety and Efficiency Improvements

Project DC-TM-04

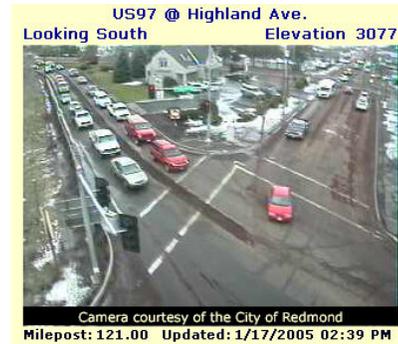
Page 1 of 2

Purpose

To improve travel time and reduce crashes and the effects of crashes on Hwy 97.

Existing Problems

- Existing recurrent congestion along the mid-section of the corridor.
- Future recurrent congestion along almost the entire corridor.
- Five high incident locations.
- Limited monitoring capabilities.
- Lack of traveler information.



Stakeholders

- Primary:
- ODOT
 - City of Redmond

Description

To monitor roadway and equipment conditions:

Deploy CCTV cameras at key intersections and bring the video feed to the ODOT TOC. Use the camera viewing capabilities to troubleshoot complaints and to monitor the roadway for congestion, trouble spots, incidents, equipment failures, and traffic signal operations. Install a weather station to monitor roadway surface conditions.

To improve travel time, and reduce stops, fuel consumption, and crashes:

Implement coordinated signal timing along the corridor during peak periods. Some traffic signal hardware and software may need to be updated.

To reduce incident response time:

Install field devices to detect, verify, manage and clear incidents. Install count stations to automatically detect incidents. Install CCTV cameras on Hwy 97 and transmit the video feed to the ODOT TOC to detect and verify incidents.

To disseminate traveler information to the public prior to their trip:

Install count stations to collect volume, occupancy, and speed information and display on a congestion map on the TripCheck website. Install a weather station to determine pavement temperature, surface conditions, and atmospheric conditions and display the information on the TripCheck website. Install CCTV cameras along Hwy 97, particularly at high crash locations. Display the camera images on the TripCheck website and provide a video feed to the local media.

To disseminate traveler information to the public during their trip:

Install a VMS at a key location and keep information current in the 511 traveler information system. Display pertinent traveler information about delays and incidents on the VMS and include the same information in the 511 system.

Hwy 97 (Redmond) Safety and Efficiency Improvements

Project DC-TM-04

Page 2 of 2

Description (continued)

To collect roadway performance data for planning future improvements:

Install count stations to collect and store traffic counts (volume, occupancy, and speed). This will automate the data collection process replacing counts conducted manually today. These devices will also provide traffic count data year round and can be used to enhance transportation planning and traffic signal timing plan development.

Communication Requirements

A communication connection is required between the proposed equipment (CCTV cameras, VMS's, count stations, and RWIS) and the ODOT TOC. The communications connection between the traffic signals and the central signal system at the TOC will be installed as part of Project #15. The count stations may be connected to the closest traffic signal controller.

Project Dependencies

Project DC-TM-01: Central Signal System needs to be completed to implement advanced signal timing along the corridor.

ITS Standards

- IEEE P1512 – 2000, P1512.1
- ITE TM 1.03, TM 2.01
- NTCIP 1101, 1102, 1103, 1201, 1202, 1203, 1205, 1206, 1209, 1211, 2101, 2102, 2103, 2104, 2201, 2202, 2301, 2303
- SAE J2353, J2354, J2529, J2540, J2540

Goals Supported

- Improve the safety and security of our transportation system.
- Improve the efficiency of the transportation system.
- Provide improved traveler information.
- Develop and deploy cost efficient ITS infrastructure.
- Monitor transportation performance measures.

Benefits

- Integration of multi-jurisdictional arterial systems.
- Improved safety and efficiency.
- Reduced delay.
- Reduced collisions.
- Reduced emergency response times.
- More effective traffic management, incident management, and maintenance management.
- Timely and cost-effective complaint response.
- Increased traveler information.
- Availability of additional volume, speed, and occupancy data.

Associated Market Packages

- ATIS01: Broadcast Traveler Information
- ATIS02: Interactive Traveler Information
- ATMS01: Network Surveillance
- ATMS03: Surface Street Control
- ATMS06: Traveler Information Dissemination

Cost

| | |
|-------------|--------------------------|
| \$1,116,000 | Project Deployment |
| \$22,000 | Annual Ops & Maintenance |

Regional Traveler Information System

Project DC-TM-05

Page 1 of 2

Purpose

To integrate the dissemination of traveler information for the general public and to provide en-route information at several key locations.

Existing Problems

- Limited availability of accessible, pre-trip and en-route real-time traveler information.
- Lack of real-time information at key traveler locations (i.e. airport, new Bend parking garage).
- Severe winter weather information that needs to be widely disseminated because it affects travel in the mountain passes.



Stakeholders

- | | |
|------------|--------------------|
| Primary: | ■ ODOT |
| Secondary: | ■ Deschutes County |
| | ■ City of Bend |
| | ■ City of Redmond |

Description

To seamlessly disseminate traveler information to the public:

Integrate local systems with the ODOT TransPort Advanced Traveler Information Implementation (TATII) system. The TATII project is currently underway to develop a regional advanced traveler information system infrastructure that will allow users of the system a means to input traveler information data in a standard format. That information will then be automatically forwarded to TripCheck, 511, and HAR and will also be downloadable to mobile phones and personal digital assistants (PDA's).

To provide information to travelers en-route:

Deploy traveler information kiosks at Roberts Field Airport and the planned Downtown Bend Parking Structure. The kiosks will include computerized touch-screens that provide access to traveler information, including a link to TripCheck. Other links may include information from weather services and the Central Oregon Visitor's Association.

Communication Requirements

Each agency that wishes to disseminate traveler information will need a connection to the TATII system, which may only require Internet access and possibly a software interface. The kiosks will require a connection to the Internet so that TripCheck information may be disseminated.

Regional Traveler Information System

Project DC-TM-05

Page 2 of 2

Project Dependencies

Full integration with regional traveler information providers cannot be achieved until ODOT's TATII system is in place. Until then, less direct methods (i.e. phone calls, e-mails, faxes) will need to be used to communicate with regional traveler information providers. Additionally, the traveler information that can be disseminated through this project is mostly limited to the available data from ITS equipment that has already been deployed. More information will become available as more equipment is deployed. The deployment of the kiosk at the planned Downtown Bend Parking Garage will need to be coordinated with the construction of the garage.

Goals Supported

- Improve the efficiency of the transportation system.
- Provide improved traveler information.
- Develop and deploy cost efficient ITS infrastructure.
- Integrate regional ITS projects with local and regional partners.

Benefits

- Real-time and static traveler information.
- Pre-trip planning capabilities and en-route information that allow travelers to make informed travel decisions.
- Reduced congestion and delay.
- Customer satisfaction.

ITS Standards

- IEEE 1512.4
- NTCIP 1201, 1301, 1404, 2202, 2304
- SAE J2353, J2354, J2369, J2529, J2630

Associated Market Packages

- ATIS01: Broadcast Traveler Information
- ATIS02: Interactive Traveler Information
- ATMS06: Traveler Information Dissemination

Phased Plan

0 – 5 Years: Project Deployment

Cost

\$588,000 Project Deployment
 \$20,000 Annual Ops & Maintenance

Communications

The communication system provides the backbone for deployment of projects in the other five program areas by providing a network for exchanging information to and from field devices and stakeholder agencies. For the most part, the communication network will be deployed on a project-by-project basis throughout the next 20 years to support the ITS Plan as needed. The attached communications figure shows the planned fiber and communications hub locations to support the ITS Plan.

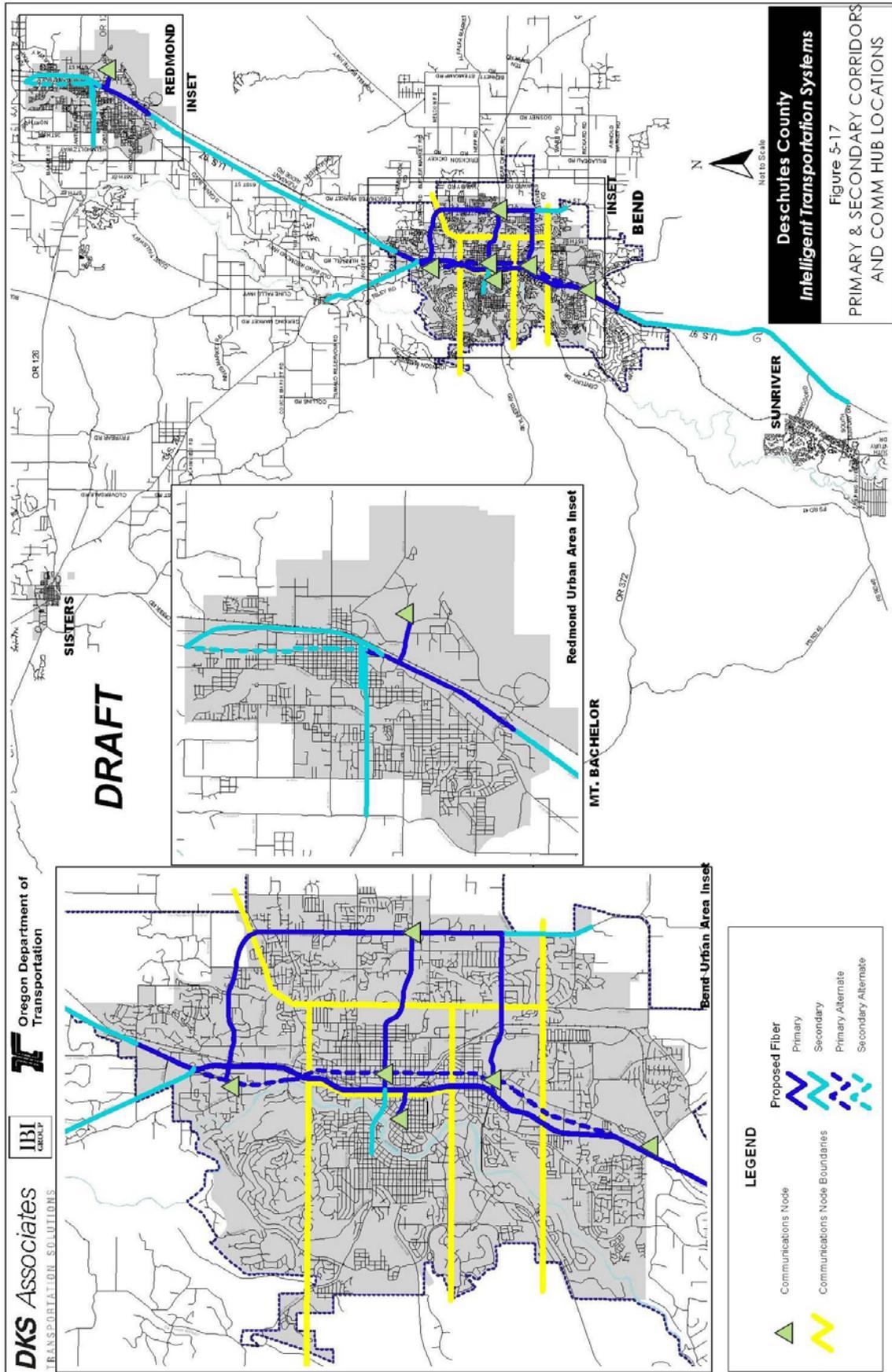


| <i>0-5 Year Plan Projects</i> | |
|---|--|
| Name | Description |
| Communication Network (Costs included in Traffic and Travel Management Projects) | Expand the communication network to support additional field devices and connect operations centers to the regional communications network as needed. The following corridors support 0-5 year corridor projects: <ul style="list-style-type: none"> ▪ Hwy 97 - 3rd Street ▪ Hwy 97 – Redmond Parkway ▪ Hwy 97 – Redmond |

| <i>6-10 Year Plan Projects</i> | |
|---|---|
| Name | Description |
| Communication Network | Expand the communication network to support additional field devices and connect operations centers to the regional communications network as needed. The following corridors support 6-10 year corridor projects: <ul style="list-style-type: none"> ▪ Hwy 20/Newport Ave/Greenwood Ave ▪ Hwy 97 – Bend Parkway ▪ Hwy 97 – Bend to Redmond Hwy 97 – Bend to Sunriver ▪ 27th Ave/Knott Rd/Empire Ave |
| Document Communication Design Standards | Document design standards for communications to ensure standardization, compatibility, connectivity, and reliability between multiple jurisdictional agencies. |

11-20 Year Plan Projects

| Name | Description |
|-----------------------|---|
| Communication Network | Expand the communication network to support additional field devices and connect operations centers to the regional communications network as needed. The following corridors support 11-20 year corridor projects: <ul style="list-style-type: none">▪ ORE 126 – Highway 97 to Hemholtz Way▪ Hwy 20 – Bend to Tumalo▪ Reed Market Road – Hwy 97 to 27th Ave |



Public Transportation Management

Public transportation management technologies address two major aspects of transit operations: (1) transit agency operations and management and (2) transit traveler information systems. The projects in this program area are intended to enhance future Bend fixed route service and to improve transit traveler information. The timing of public transportation management projects is dependent on the formation of the Bend Transit District. Given the recent voter rejection of the transit district, the projects identified in this plan are designated as 11-20 year projects.



| <i>11-20 Year Plan Projects</i> | |
|--|---|
| Name | Description |
| Automated Vehicle Location (AVL)/Computer Aided Dispatch (CAD) Transit Management System | Install an automated vehicle location (AVL) system on the RVTB fleet and install a computer aided dispatch (CAD) system at the RVTB dispatch center. RVTB plans to put 10 new buses, which are designed to accommodate an AVL system, into service in the fall of 2004. AVL should be deployed on these 10 buses, and the rest of the fleet should be outfitted with AVL as vehicles are replaced. Integrate the CAD system with the AVL system so that dispatchers may track the fleet in real-time and monitor on-time performance. |
| Real-Time Customer Information Displays | Deploy real-time dynamic message signs at key locations such as transit centers and bus stops where multiple routes pass through, and at stops with large bus headways. |
| Transit Security System | Install video on transit vehicle fleet and develop a system to transmit data to Bend Transit for surveillance |
| Transit Signal Priority | Install transit signal priority equipment and software at key intersections on transit routes and on transit vehicles |
| Automated Passenger Counting | Install an automated passenger counting system that electronically records boardings and departures at each transit stop |
| Electronic Fare System linked to Smart Cards | Install an electronic fare collection system that includes Smart Card support (linked to Bend Parking Garage Smart Cards). |

Emergency Management

The main purpose of projects included in this program area is to reduce emergency response times and to integrate emergency management with transportation management. Most emergency management projects included in the ITS Plan are included later in the schedule, although they could be implemented sooner if funding sources (e.g. Homeland Security) become available.



| <i>0-5 Year Plan Projects</i> | |
|--|---|
| Name | Description |
| Integration Between Traffic/Transit Management Systems and Emergency Management Systems (\$675,000) | Provide a two-way information flow (i.e. video images, congestion flow map, emergency calls) between transportation management systems and the metropolitan area 911 and emergency dispatch centers. |
| Integration Between Traffic Management Systems and Emergency Operations Centers (EOCs) (\$65,000) | Provide an interface between the TOC and/or other traffic management systems and each of the emergency operations centers to allow access to traffic control devices during emergency situations at the EOCs as well as to share information between agencies. This would include workstations, monitors, and a communications interface at EOCs. |

| <i>6-10 Year Plan Projects</i> | |
|---------------------------------------|---|
| Name | Description |
| Real-Time Information to MDTs | Provide real-time traffic information to mobile data terminals housed in emergency response vehicles. |
| Ambulance-Hospital Information System | Enable the exchange of real-time information (video, audio, and data) between regional ambulances and hospitals through the regional communication network (St. Charles micro-wave communication system). |

11-20 Year Plan Projects

| Name | Description |
|---|---|
| Traffic Adaptive Emergency Response | Deploy an integrated emergency response system that provides for pre-trip planning, en-route guidance (static route plan), and dynamic route guidance (traffic-adaptive route plan) for emergency vehicles. |
| Responder Video System | Provide emergency responders with video cell phones and develop a link to the TOC to link video to other agencies. |
| Common Radio System | Deploy a communication system and radio equipment to provide a common radio system between emergency response agencies. |
| Traffic Signal Preemption by Vehicle ID | Implement preemption equipment to provide traffic signal preemption by specific vehicle ID. |
| Roundabout Preemption | Implement an emergency vehicle preemption system for roundabouts located on primary response routes. |

Information Management

Collecting, archiving, and managing various types of transportation-related data is an integral part of this ITS Plan. Prior to deploying a regional data management system, field devices and systems to collect data must be deployed. Therefore, the information management project is included in the 6-10 year plan following device deployment.

The screenshot shown below is a sample of the PORTAL data archiving system run by Portland State University (<http://portal.its.pdx.edu>), which archives data for the Portland metropolitan area. This provides a useful example of collecting system data and providing an on-line user interface.

PORTAL: Portland Transportation Archive Listing

| | | |
|--|--|---|
| <p>Info</p> <p>Welcome</p> <p>People</p> <p>Project Summary</p> <p>Our Server</p> <p>Links</p> <p>Login</p> <p>Request Account</p> <p>Comments</p> | <p>Welcome to the Portland Transportation Archive Listing (PORTAL). The purpose of this project is to implement the U.S. National ITS Architecture's Archived Data User Service for the Portland metropolitan region. This system is being developed at Portland State University by students and faculty in the Intelligent Transportation Systems Laboratory under the direction of Dr. Robert Bertini. We are working in close cooperation with the Oregon Department of Transportation, Metro, the City of Portland, TriMet and other regional partners. This work is supported by the National Science Foundation.*</p> <p>We welcome your participation in our project. The current PORTAL system archives the Portland metropolitan region's freeway loop detector data at its most detailed level and also archives area weather data. We plan to expand the capabilities of our system and to include multimodal data sources from both Oregon and Washington. We provide access to the system by password. To request access to the system click on the Request Account link to the left.</p> <p style="text-align: center;">Portland State University - ITS Lab - Oregon DOT - National Science Foundation</p> <p style="font-size: small; margin-top: 10px;">*This material is based upon work supported by the National Science Foundation under Grant No. 0236567. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.</p> |  |
|--|--|---|

| 6-10 Year Plan Projects | |
|---------------------------------|--|
| Name | Description |
| Regional Data Management System | Create a data management system for archiving data, collecting real-time data, and accessing data. The system should have geospatial capabilities and data should include at a minimum traffic counts, speed data, crashes (vehicles, pedestrians, and bicycles), incident information, and transit information. |

Maintenance and Construction Management

These projects are aimed at improving the safety of motorists and workers in construction zones, improving the efficiency of construction management and control, enhancing construction scheduling, and improving maintenance efficiency.



0-5 Year Plan Projects

| Name | Description |
|--|--|
| Maintenance, Construction, and Special Event Coordination System | Develop an information management system that contains details about region-wide maintenance and construction activities by public agencies, utility companies, and private contractors, as well as special event information including location and event duration. |

6-10 Year Plan Projects

| Name | Description |
|--|--|
| Develop Work Zone Management Standards | Develop standards for safety enhancements and management techniques in work zones such as variable speed limits, incident detection and management, lane merge controls, and queue detection with electronic feedback signs. |

11-20 Year Plan Projects

| Name | Description |
|--|---|
| Portable Construction Zone Equipment | Deploy moveable dynamic message signs and variable speed limit signs for use in work zones. |
| GPS/AVL Maintenance System | Deploy GPS/AVL equipment in maintenance vehicles (e.g. snow plows). Implement a system to automate coding of maintenance needs from vehicles and provide route information for coordinating maintenance between agencies. |
| Portable Sidewalk Closure Message System | Develop and deploy a sidewalk closure audible message system to re-route pedestrians and meet ADA requirements. |

Advanced Vehicle Safety Systems

These projects are aimed at supporting future intelligent vehicle technologies to improve safety by providing local information to in-vehicle devices. While these technologies will be primarily private sector initiatives, limited public agency deployment to support these technologies may be required. Public sector deployment may include short range communications from roadside devices and area-wide communications infrastructure to support the transmission of transportation information.



Source: www.garmin.com

| <i>11-20 Year Plan Projects</i> | |
|----------------------------------|--|
| Name | Description |
| Weather Conditions | Install short-range communications at weather stations to transmit road temperature to vehicles. |
| Congestion Warning System | Deploy warning system devices at entry points into urban areas to warn drivers of upcoming signals/congestion (implemented with future vehicle technology) |
| Intersection Collision Avoidance | Install devices to transmit traffic signal information (signal indication change from green to yellow) to in-vehicle systems |
| Wildlife Detection | Deploy Hwy 97 (South of Bend) wildlife detection transmission to in-vehicle system. |

Traffic & Travel Management (TMM)

- Central Signal System

- Corridor Safety and Efficiency Improvements
 - ✓ Network Surveillance
 - ✓ Traffic Data Collection System
 - ✓ Dynamic Message Signs
 - ✓ Traffic Signal Coordination

Deployment Plan Workshop

January 18, 2005

Traffic & Travel Management (TMM)

- Incident Management
 - ✓ Response Vehicles
 - ✓ Operational Plans

- County Fairgrounds Special Event Management

Deployment Plan Workshop

January 18, 2005

Traffic & Travel Management (TMM)

- Advanced Rail Warning System

- Mountain Pass Information System

- TMC Upgrade

- TOCS Software Upgrade

Deployment Plan Workshop

January 18, 2005

Emergency Management (EM)

- Integration Between Transportation Mgmt Systems and Emergency Mgmt Systems

- Provide Transportation Information at EOC's

- Traffic Signal Preemption by Vehicle ID

Deployment Plan Workshop

January 18, 2005

Emergency Management (EM)

- Provide Real-Time Traffic Info to MDT's

- Ambulance-Hospital Information System

- Traffic Adaptive Emergency Response

Deployment Plan Workshop

January 18, 2005

Information Management (IM)

- Regional Data Management System

Deployment Plan Workshop

January 18, 2005

**Public Transportation
Management (PTM)**

- AVL/CAD Transit Management System
- Transit Priority
- Real-Time Customer Information Displays

Deployment Plan Workshop

January 18, 2005

**Public Transportation
Management (PTM)**

- Automated Passenger Counting
- Automated Stop Announcements
- Electronic Fare Collection with Smart Cards

Deployment Plan Workshop

January 18, 2005

**Maintenance &
Construction Mgmt (MCM)**

- Automated Maintenance Logging System
- On-line Maintenance, Construction, and Special Event Coordination System

Deployment Plan Workshop

January 18, 2005

**Maintenance &
Construction Mgmt (MCM)**

- Winter Maintenance Vehicle Tracking
- Roadway Weather Information Systems

Deployment Plan Workshop

January 18, 2005

Meeting Minutes

Regional ITS Operations & Implementation Plan For Bend Metropolitan Area *User Needs Workshop*

Tuesday, January 18, 2005
Deschutes Services Center
Bend, OR
Barnes Conference Room
9:30 a.m. – 12:00 noon

Attendees:

| | |
|--|--|
| <input checked="" type="checkbox"/> Cyrus Minoofar, Alameda County CMA | <input checked="" type="checkbox"/> Ernie Pool, Mt. Bachelor Inc. |
| <input checked="" type="checkbox"/> Mark Kaupp, Bend Broad Band | <input checked="" type="checkbox"/> Arleigh Mooney, ODOT |
| <input checked="" type="checkbox"/> Tyler Deke, Bend MPO | <input checked="" type="checkbox"/> Bill Hilton, ODOT |
| <input checked="" type="checkbox"/> David Knitowski, City of Bend | <input checked="" type="checkbox"/> David Foster, ODOT |
| <input checked="" type="checkbox"/> Robin Lewis, City of Bend | <input checked="" type="checkbox"/> Galen McGill, ODOT |
| <input checked="" type="checkbox"/> Scott Gillespie, City of Bend | <input checked="" type="checkbox"/> Joel McCarrol, ODOT |
| <input checked="" type="checkbox"/> Tony Tirico, City of Bend | <input checked="" type="checkbox"/> Swede Barber, ODOT |
| <input checked="" type="checkbox"/> Gene Zinkgraaf, Central Oregon CC | <input checked="" type="checkbox"/> Jay Casbon, OSU-Cascades Campus |
| <input checked="" type="checkbox"/> Gary Judd, Deschutes County | <input checked="" type="checkbox"/> Todd Sprague, St. Charles Hospital |
| <input checked="" type="checkbox"/> Steve Jorgensen, Deschutes County | <input type="checkbox"/> Wanda Gray, City of Bend |
| <input checked="" type="checkbox"/> Don Webber, Deschutes County | <input type="checkbox"/> Chris Doty, City of Redmond |
| <input checked="" type="checkbox"/> Chris Maciejewski, DKS Associates | <input type="checkbox"/> Robert Bussabarger, City of Bend |
| <input checked="" type="checkbox"/> Habib Shamskhov, DKS Associates | <input type="checkbox"/> Doug Spencer, ODOT |
| <input checked="" type="checkbox"/> Jim Peters, DKS Associates | <input type="checkbox"/> Carl Rhodes, Oregon State Police |
| <input checked="" type="checkbox"/> Peter Coffey, DKS Associates | <input type="checkbox"/> James Wittenburg, ODOT |
| <input checked="" type="checkbox"/> Nathaniel Price, FHWA | <input type="checkbox"/> Laverne Essyltn, Deschutes County 911 |

| PRESENTATION | ACTION ITEMS |
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| <p>DKS Associates began the workshop with a presentation covering the following areas:</p> <ul style="list-style-type: none"> • Purpose of the workshop • Project background • Review of ITS (real world projects, benefits) • Review of User Needs • Review of Deployment Plan Projects • Format of Workshop <p>An Expanded Stakeholder Workshop handout was distributed to the group, including a complete list of Deployment Plan projects and preliminary project phasing.</p> | |

| POSTER SESSIONS | ACTION ITEMS |
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| <p>The workshop was split up into the following three poster sessions so that attendees could circulate and provide input into each of the deployment plan areas:</p> <ul style="list-style-type: none"> • (1) Travel and Traffic Management • (2) Emergency Management and Information Management • (3) Public Transportation Management and Maintenance & Construction Management | |
| <p>The following comments were collected from the Travel and Traffic Management Poster Session:</p> <ul style="list-style-type: none"> • The central signal system project should adhere to the ITS Standards so all agencies can access the information. It should include the ability to long detection failures and collect and store traffic volumes. • The Century Drive project should include roundabout signage to guide visitors to Mt. Bachelor and a connection between Mt. Bachelor Operation Center and the Century Drive ATR to provide real time volume info (how busy will the mountain be) • The mountain pass information system should be connected to in-vehicle systems and TripCheck. The system should also include information on Criterion Pass (to I-84) • The US 97 Bend Parkway and Bend to Redmond corridor projects should be higher priority • There should be a project to install CCTV (PTZ) and data collection stations at roundabouts in Bend (test at Simpson/Colorado) • The advanced rail warning system is high priority at several locations • The TMC upgrade project should be moved to the 0-5 year plan – the existing facility cannot support additional activities and there is no room for expansion at the current site • Add a parking management system for the downtown parking structure. • For Incident Management, consider plans increasing the Deschutes County public works responders after hours • The Deschutes County Fairgrounds and Expo Center special event management project should include predetermined detour routes, public transit coordination within 5 miles of events, and future integration to Sisters event management • The TOCS upgrade should include traffic signal status • There are two existing ATR locations on the Bend Parkway (north of Reed Market Road and south of Powers Road) – these do not have communication connections • The Redmond Parkway project is building 2” conduit on Maple Avenue between US 97 and the Parkway • The Sunriver interchange anti-icing system will cost about \$750,000, including RWIS • Conduit/fiber installation on Cooley Road between US 97 and Deschutes Market Road should be included in the | <p>DKS will incorporate comments into a revised deployment plan and communications plan</p> |

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| <p>communications plan</p> <ul style="list-style-type: none"> • During communications infrastructure design, leasing/sharing infrastructure should be included • Underground fiber installation cost estimates should use \$20-\$30/lf | |
| <p>The following comments were collected from the Emergency Management and Information Management Poster Session:</p> <ul style="list-style-type: none"> • There should be an inter-agency group developed to implement traffic adaptive emergency response technology (Desch. Co. 911, Police, Fire) – integration needs to happen soon • The Ambulance-Hospital information system should consider video phone based technologies to reduce costs and allow earlier implementation – hospital personal should provide input as to what data would be most useful to them • There is an existing group (911 E-Board) that meets regularly for first responder/911 issues. Our steering committee should make contact and attend a meeting. • The Neff Road route between St. Charles and the Bend Airport is critical for patient transport (as well as serving a fire station) – there should be a project to improve/maintain this route • The integration of transportation mgmt systems and emergency mgmt systems should include an evaluation of co-locating 911 and ODOT dispatch • The common radio system (or link between systems) should be a 0-5 year project • A common EOC/TOC/911/etc. center should be considered • Traffic signal preemption by vehicle ID should be a near term project • Roundabout preemption should be a near term project • The regional data management system should include a near term phase to establish guidelines/format so that agencies can connect to/build the system over time (some traffic data is currently available and web based interfaces are being developed by the City of Bend) • There should be a goal to adopt common information management tools/software for future development | <p>Todd Sprague will follow up with St. Charles staff to determine what data is needed with the Ambulance-Hospital Information System Project.</p> <p>DKS will incorporate comments into a revised deployment plan</p> |
| <p>The following comments were collected from the Construction and Maintenance Management and Public Transportation Management Poster Session:</p> <ul style="list-style-type: none"> • There automated maintenance logging system should include sign location (linked to City GIS database), road-kill logging, pothole logging, and new roadway access location logging (to monitor non-permitted access) • The on-line construction coordination system should be a 0-5 year plan to support the OTIA projects. • The on-line construction/maintenance/special event coordination system should include a connection to the TOC/EOC/911 • The winter maintenance vehicle tracking should not be limited | <p>DKS will incorporate comments into a revised deployment plan</p> |

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| <p>to winter – summer monitoring will be needed for fires and construction information</p> <ul style="list-style-type: none"> • Weather detectors (temperature) should be installed on all public vehicles so they can be probes and cover a large portion of the roadway system • There needs to be coordination with, or transition from, using ODOT maintenance staff as emergency responders as this plan identifies full time incident responders. ODOT maintenance crew leaders are currently on-call responders | |
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| KEYNOTE SPEAKER | ACTION ITEMS |
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| <p>Cyrus Minoofar, from the Alameda County Congestion Management Agency, gave a presentation on the “Taking a Multi-Agency Approach to Transportation Management”. His presentation covered the history of developing corridor ITS plans in Alameda County, including key issues for coordination between multiple local agencies (e.g. written agreements).</p> | |

| NEXT STEPS | ACTION ITEMS |
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| <p>The feedback provided from the workshop will be used to develop a final Deployment Plan, which is the last chapter of the Deschutes County ITS Plan.</p> <p>A final key stakeholder meeting will be held in February to present an executive summary and discuss ongoing ITS implementation, maintenance, and local agency integration.</p> | |