

Memorandum

Date: January 25, 2012
To: Project Team
From: Darci Rudzinski and Shayna Rehberg
Re: OR 66 Green Springs Interchange Area Management Plan (IAMP)
Technical Memorandum #1: Review of Adopted Plans (Task 2.1)

I. Introduction

Oregon's Administrative Rule governing access management (OAR 734-051) instructs that an Interchange Area Management Plan (IAMP) is required for new interchanges and should be developed for significant modifications to existing interchanges. An IAMP is being prepared for the Green Springs Highway (OR 66) interchange on The Dalles-California Highway (US 97) in anticipation of needed improvements to accommodate long-term regional and local traffic demand. Consistent with the OAR 734-051, one of the project objectives is to ensure that the plan is consistent with local and state transportation policies and standards. To meet this objective, this memorandum provides an overview of documents that regulate and effect land use and transportation planning in the vicinity of the Green Springs Interchange. Specifically, this review highlights the relationships between adopted regulations and potential implementation and management strategies that may be recommended in the IAMP. Understanding these relationships will also help identify any amendments that may need to be made to local policies and ordinances in order to be consistent with the recommendations of the IAMP.

The documents listed in Table 1 have been reviewed for policies and regulations applicable to land use and transportation planning in the vicinity of the Green Springs interchange and this IAMP. This table presents planning and regulatory elements that have bearing on IAMP development and indicates which of these elements are found in each document and consequently how each document influences the planning process.

It should be noted that Klamath County does not currently have capital improvement program (CIP) projects programmed in the interchange vicinity. In addition, Klamath County does not have a transportation system development charge (SDC) ordinance.

Table 1. Planning Elements in IAMP Development

	Transportation Policy	Transportation Design Standards	Transportation Improvement Project List	Land Use
State Documents Reviewed				
Oregon Highway Plan (1999, last amended 2006)	✓	✓		
Oregon Freight Plan (2011)	✓			
Access Management Rule (OAR 734-051)		✓		
State Transportation Improvement Program (2010-2013)			✓	
Statewide Planning Goal 9	✓			✓
Local Documents Reviewed				
Klamath County Comprehensive Plan (2010)	✓			✓
Klamath County Rural Transportation System Plan (2010)	✓	✓	✓	
Klamath County Land Development Code		✓		✓
City of Klamath Falls Comprehensive Plan (1981)	✓			✓
Klamath Falls Urban Area Transportation System Plan (2011)	✓	✓	✓	
Klamath Falls Urban Area Economic Opportunity Analysis (2009)				✓
Klamath Falls Community Development Ordinance		✓		✓
Klamath Falls Capital Improvement Program (FY 2011-2016)			✓	
Klamath Falls Systems Development Charge (SDC)			✓	

The following list includes page numbers to easily reference each reviewed document.

State Plans and Regulations	4
Oregon Highway Plan (1999, last amended 2006)	4
Oregon Freight Plan (2011).....	11
Access Management Rule (OAR 734-051)	12
Statewide Transportation Improvement Program (2010-2013)	18
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Klamath County Comprehensive Plan (2010)	19
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Klamath County Land Development Code	24
City of Klamath Falls Comprehensive Plan (1981).....	25
Klamath Falls Urban Area Transportation System Plan (2011/in progress).....	26
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II. Plan and Policy Review

State Plans and Regulations

Oregon Highway Plan (1999, last amended 2006)

The Oregon Highway Plan (OHP), an element and modal plan of the state's comprehensive transportation plan (OTP), guides the planning, operations, and financing of ODOT's Highway Division. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, partnerships with other agencies and local governments, and the use of new techniques to improve road safety and capacity. These policies also link land use and transportation, set standards for highway performance and access management, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems.

The Oregon Transportation Commission (OTC) adopted the Highway Plan on March 18, 1999. In July 2006, ODOT published an update that includes amendments made from November 1999 through January 2006. The IAMP will need to be consistent with the OHP and the planning process will review and reference the recent changes to the OHP, where applicable. Ultimately the IAMP will be reviewed by the OTC for adoption and, if adopted, will be an amendment to the OHP as a special facility plan. The following is a summary of each OHP policy that is relevant to the Green Springs IAMP.

Policy 1A: State Highway Classification System.

The OHP classifies the state highway system into four levels of importance: Interstate, Statewide, Regional and District. ODOT uses this classification system to guide management and investment decisions regarding state highway facilities. The system guides the development of facility plans, such as the Green Springs IAMP, as well as ODOT's review of local plan and zoning amendments, highway project selection, design and development, and facility management decisions including road approach permits.

The Green Springs interchange involves state highways with Statewide, Regional, and District Levels of Importance, as described on the following page. The purpose and management objectives of each of these classifications are summarized below.

- Statewide Highways typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal.
- Regional Highways typically provide connections and links to regional centers, Statewide or Interstate Highways, or economic or activity centers of regional significance. The management objective for these facilities is to provide safe and efficient, high-speed, continuous-flow operation in rural areas and moderate to high-speed operations in urban and urbanizing areas. A secondary function is to serve land uses in the vicinity of these highways.

- District Highways are facilities of county-wide significance and function largely as county and city arterials or collectors. They provide connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic. The management objective is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements.

ODOT also classifies certain state highways as “Expressways.” Expressways are complete routes or segments of existing two-lane and multi-lane highways and planned multi-lane highways that provide for safe and efficient high speed and high volume traffic movements. Their primary function is to provide for interurban travel and connections to ports and major recreation areas with minimal interruptions. A secondary function is to provide for long distance intra-urban travel in metropolitan areas. In urban areas, speeds are moderate to high. In rural areas, speeds are high. Usually there are no pedestrian facilities, and bikeways may be separated from the roadway.

The classification of the state highways that pass through and around Klamath Falls is described below.

- The Dalles-California Highway (US 97) runs north-south through Klamath Falls, connecting the city with Bend in the north and connecting to I-5 south of the California border. Through Klamath Falls, US 97 is part of the National Highway System (NHS) and is designated with a Statewide Level of Importance.
- Oregon State Route 140 (OR 140) runs roughly northwest and southeast, skirting the southern edge of the city. Called Lake of the Woods northwest of the city, South Klamath Falls as it passes south of the city, and Klamath Falls-Lakeview to the southeast, OR 140 is also part of the NHS with a Statewide Level of Importance designation. Between its junction with OR 66 and its junction with OR 39, OR 140 is also classified as an Expressway.
- Oregon State Route 66 (OR 66), called the Green Springs Highway, runs southwest to northeast, and terminates at the junction with US 97 in the southwest corner of Klamath Falls. OR 66 is classified with District Level of Importance and is not part of the NHS, except where it briefly overlaps with OR 140, where it shares OR 140’s Statewide Level of Importance and NHS designation.

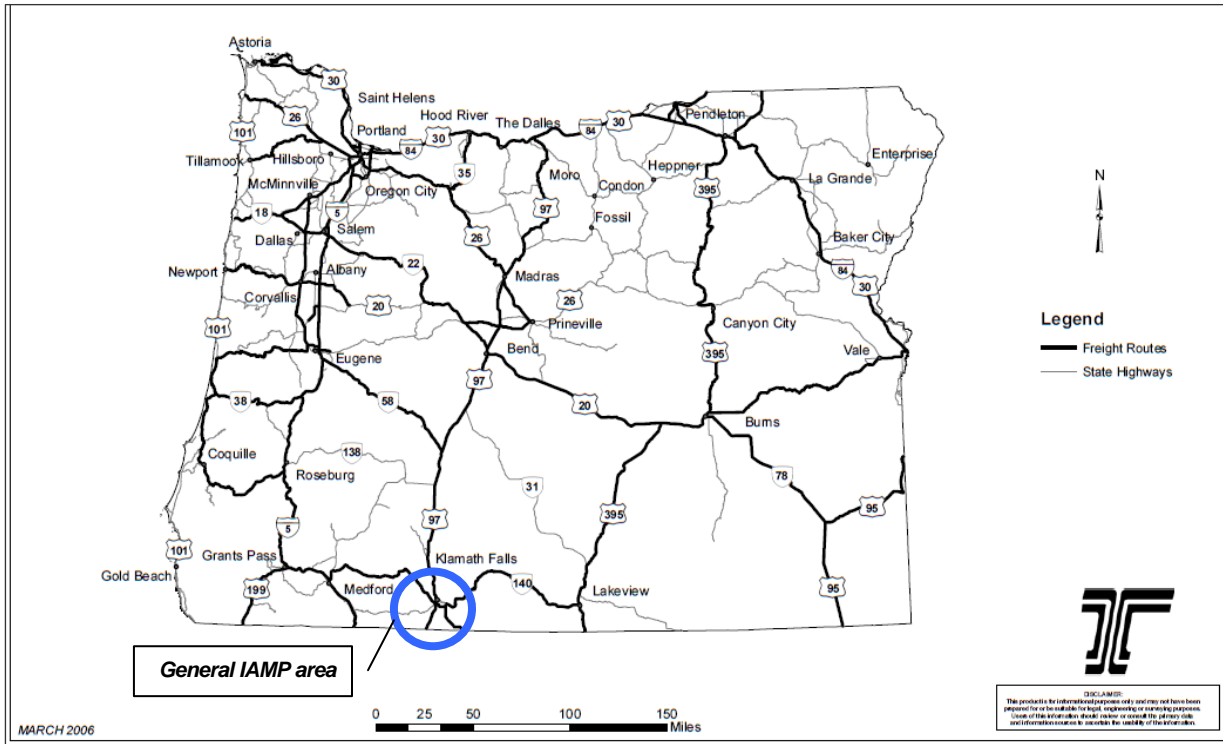
Policy 1B: Land Use and Transportation. Policy 1B applies to all state highways. It is designed to clarify how ODOT will work with local governments and others to link land use and transportation in transportation plans, facility and corridor plans, plan amendments, access permitting and project development. Policy 1B recognizes that state highways serve as the main streets of many communities and strives to maintain a balance between serving local communities (accessibility) and the through traveler (mobility). This policy recognizes the role of both the State and local governments related to the state highway system and calls for a coordinated approach to land use and transportation planning.

Policy 1C: State Highway Freight System. The primary purpose of the State Highway Freight System is to facilitate efficient and reliable interstate, intrastate, and regional truck movement through a designated freight system. This freight system, made up of the Interstate Highways and certain Statewide, Regional and District Highways, the majority of which are on the National Highway System, includes routes that carry significant tonnage of freight by truck and serve as the primary

interstate and intrastate highway freight connection to ports, intermodal terminals, and urban areas. Highways included in this designation have higher highway mobility standards than other Statewide Highways.

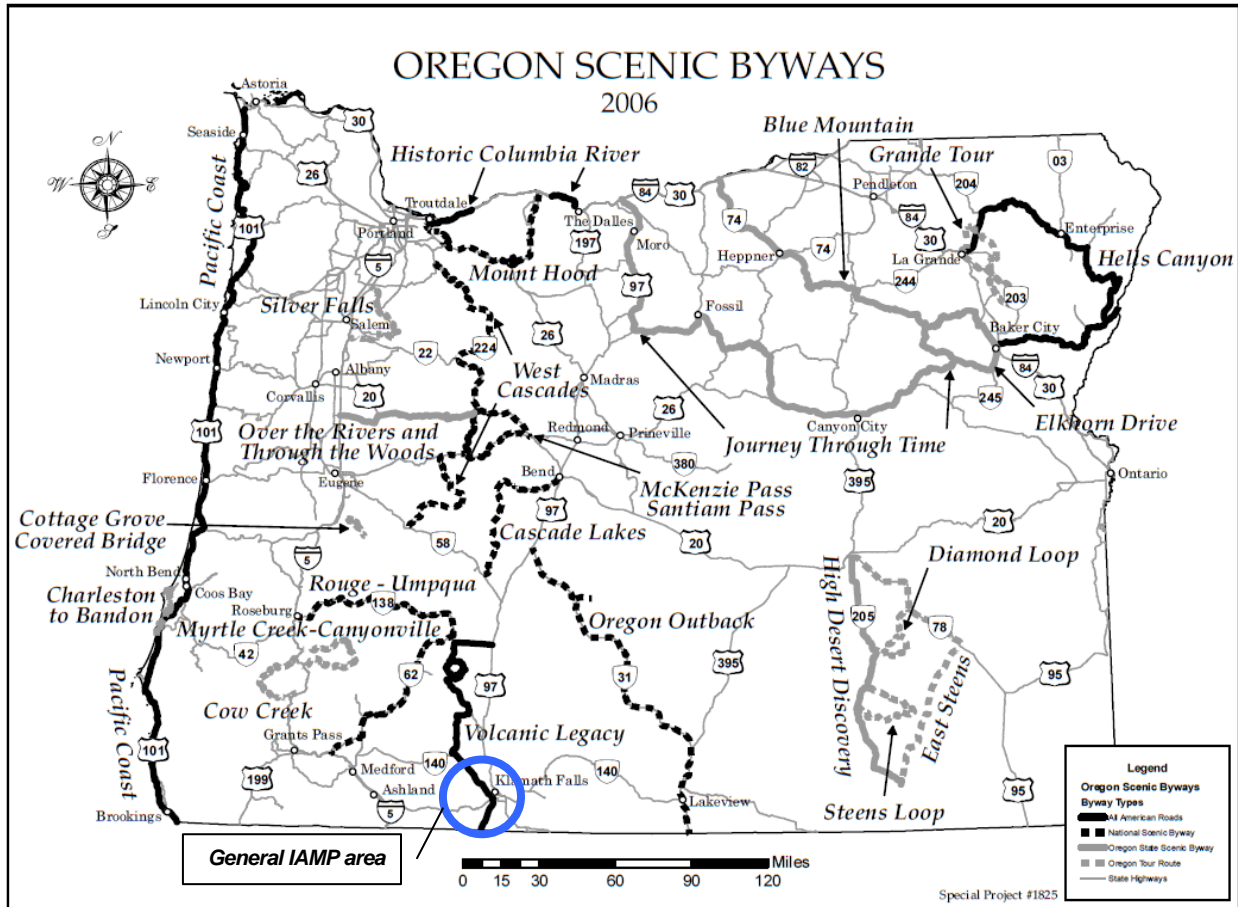
As shown in Figure 1, US 97 and OR 140 in Klamath Falls are classified as Freight Routes.

Figure 1. State Highway Freight System



Policy 1D: Scenic Byways. The Oregon Transportation Commission has designated Scenic Byways throughout the state on federal, state, and local roads which have exceptional scenic value. As shown in Figure 2, the Lake of the Woods highway (OR 140) and the small segment of OR 66 that connects OR 140 to US 97 are part of the “Volcanic Legacy” Scenic Byway, which is designated by the federal government as an “All American Road.” For designated Scenic Byways, ODOT will consider aesthetic and design elements along with safety and performance considerations in managing and maintaining the roadway and will develop guidelines for aesthetic and design elements within the public right-of-way.

Figure 2. Oregon Scenic Byways



Policy 1F: Highway Mobility Standards Access Management Policy. Policy 1F sets mobility standards for ensuring a reliable and acceptable level of mobility on the highway system. The standards are used to assess system needs as part of long range, comprehensive planning transportation planning projects (such as this IAMP), during development review, and to demonstrate compliance with the Transportation Planning Rule (TPR).

Policy 1F has been revised and proposed amendments are currently available for public review. The Oregon Transportation Commission (OTC) is expected to adopt an updated Policy 1F on December 21, 2011. The draft Policy 1F standardizes a policy framework for considering measures other than volume-to-capacity (v/c) ratios. Background and actions in the draft policy language provide additional flexibility in developing and applying alternate mobility standards and generally address concerns on limitations of peak hour v/c ratio measures through new or amended policies that provide the opportunity to better balance multimodal transportation, land use, and economic development considerations. In addition, OHP Table 6 has been amended and the v/c ratios are referred to as “targets.” The targets in Table 6, Volume to Capacity Ratios for Peak Hour Operating Conditions, have all been modified to allow for a greater level of congestion in certain circumstances and locations. By defining targeted levels of highway system mobility, the policy provides direction for identifying (vehicular) highway system deficiencies, but does not prescribe what actions should be taken to address the deficiencies. With respect to plan amendments, the Highway Mobility Policy

continues to establish ODOT's mobility targets for state highways as the standards for determining compliance and compliance with the TPR (OAR 660-012-0060).

The IAMP will be developed according to the revised Policy 1F. The project team will work together to interpret the "targets" to be established for this interchange.

Policy 1G: Major Improvements. This policy requires maintaining performance and improving safety by improving efficiency and management on the existing roadway network before adding capacity. The state's highest priority is to preserve the functionality of the existing highway system. Tools that could be employed to improve the function of the existing interchange include access management, transportation demand management, improved traffic operations, and changes to local land use designations or development restrictions. After existing system preservation, the second priority is to make minor improvements to existing highway facilities such as adding ramp signals or making improvements to the local street network to minimize local trips on the state facility. The third priority is to make major roadway, or in this case, interchange, improvements. As part of this IAMP process, ODOT will work with the City of Klamath Falls and Klamath County to determine how future improvements at the interchange can implement this policy.

Policy 2B: Off-System Improvements. This policy recognizes that the state may provide financial assistance to local jurisdictions to make improvements to local transportation systems if the improvements would provide a cost-effective means of improving the operations of the state highway system. As part of this IAMP process, ODOT will work with the City and County to identify improvements to the local road system that support the planned land use designations in the vicinity of the interchanges and that will help preserve capacity and ensure the long-term efficient and effective operation of the interchanges.

Policy 2E: Intelligent Transportation Systems (ITS). This policy seeks to improve the safety and efficiency of transportation facilities, and to generally maximize operations in a cost-effective way. The policy requires coordination with the Oregon Intelligent Transportation Systems Strategic Plan.

Policy 2F: Traffic Safety. This policy emphasizes the state's efforts to improve safety of all users of the highway system. Action 2F.4 addresses the development and implementation of the Safety Management System to target resources to sites with the most significant safety issues. No intersection sites were identified as above the critical rate within the IAMP area. OR 140 west of the interchange was identified as a segment with a high rate of crashes.

The access management spacing standards established in the OHP are implemented by access management rules in OAR 734, Division 51. The rules have been updated given the passage of Senate Bill 264 in the 2011 Oregon Legislature. Pertinent to this project, there are new standards for unsignalized approaches to statewide roadways, effective January 2012. These standards are presented later in the memorandum as part of the review of OAR 734, Division 51.

Traffic signal spacing standards supersede access management spacing standards for approaches. If new signalized intersections on US 97 or OR 140 are included in IAMP recommendations, the desired minimum spacing between signalized intersections is ½ mile (2,640 feet) (OAR 734-020-470). The OR 140/OR 66 intersection is currently the only signalized intersection within the IAMP area.

Policy 3B: Medians. This policy establishes the state's criteria for the placement of medians, which can be used as part of access management plans or strategies to mitigate impacts on intersections and interchanges. It includes Action 3B.3 which requires the consideration of non-traversable

medians for modernization of all urban, multi-lane Statewide (NHS) Highways as well as all urban, multi-lane Regional Highways where posted speeds are 45 mph or greater. The criteria for consideration include:

- Forecasted average daily traffic greater than 28,000 vehicles per day during the 20-year planning period;
- A higher-than-average accident rate;
- Pedestrian crossing safety issues; and
- Topographic and alignment issues resulting in inadequate left-turn sight distances.

SB 264, effective January 2012, has amended approach permit and median regulatory language to say that ODOT: “may not impose nontraversable medians as a mitigation measure for approach permit applications unless the department first establishes that no other mitigation measures are effective or available under the circumstances.”¹ The Senate bill also allows for reducing spacing standards by half for approaches on statewide, regional, and district highways that have a raised or depressed nontraversable medians.

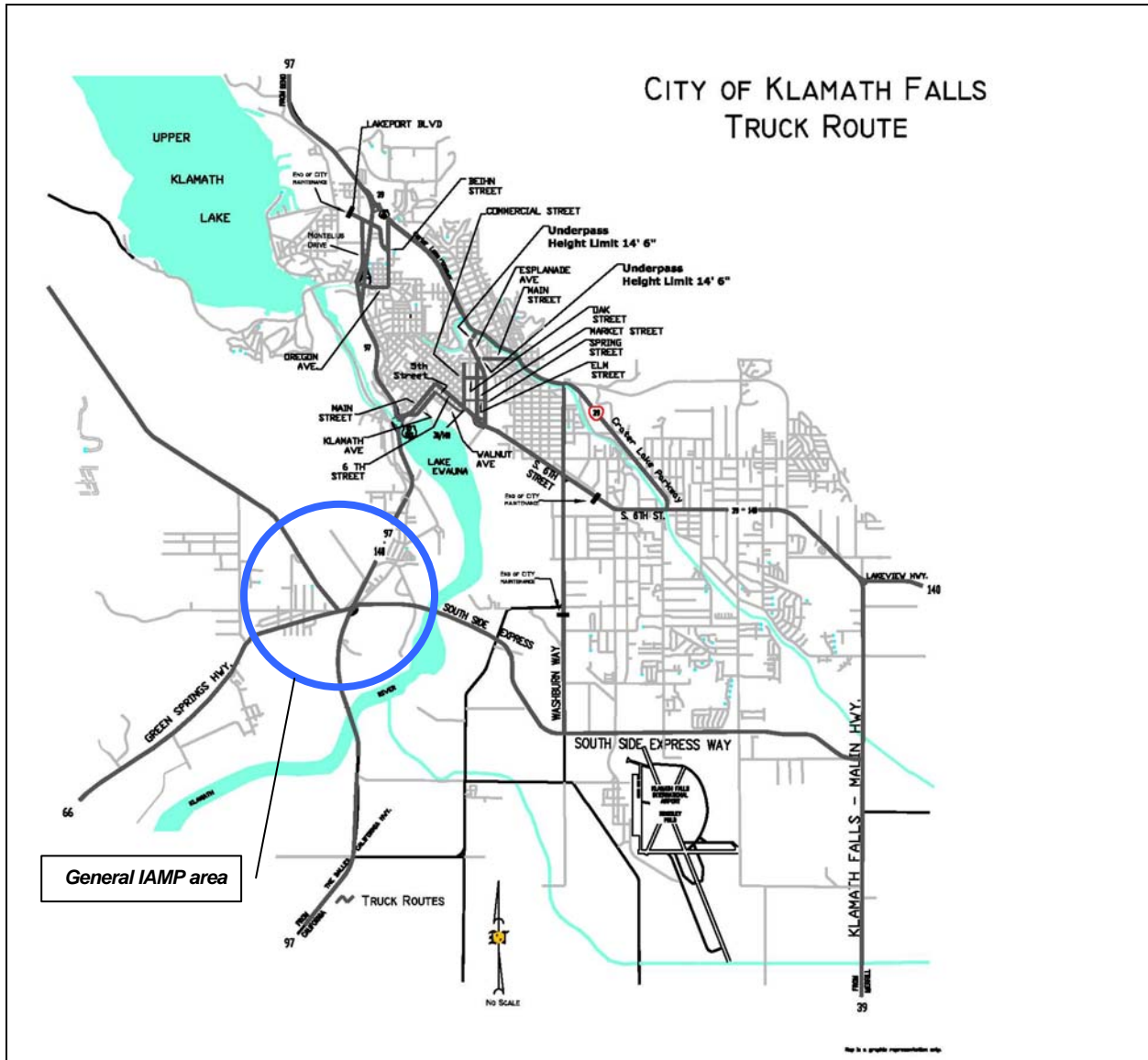
Policy 3C: Interchange Access Management Areas. This policy addresses management of grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. Action items include developing interchange area management plans to protect the function of existing interchanges, provide safe and efficient operations between connecting roadways, and minimize the need for major improvements. Consistent with this policy, the Green Springs IAMP planning process will include developing and analyzing alternatives for optimizing the function and capacity of the existing interchange prior to selecting a package of improvements that will comprise the preferred alternative.

The local jurisdiction’s role in access management is stated in Policy 3C as follows: “necessary supporting improvements, such as road networks, channelization, medians and access control in the interchange management area must be identified in the local comprehensive plan and committed with an identified funding source, or must be in place (Action 3C.2).” An outcome of this planning process will be local adoption of the recommendations in the IAMP, which will include an access management plan, identified funding, and, potentially, local street network improvements necessary to implement the preferred interchange design.

Policy 3D: Deviations. This policy provides the foundation for requests for state highway approach permits that require deviation(s) from access management standards. Such a request would be necessary if proposed interchange improvements cannot meet adopted State standards. Procedures for requesting deviations are included in OAR 734-051. Action 3D.5 identifies conditions to consider in evaluating requests for deviations: queuing that increases delays and unsafe operations, pedestrian and bicycle circulation, traffic controls, local road system requirements, improving connectivity to adjacent properties or local road system, potential use of channelization, or potential use of nontraversable medians.

¹ ORS 374.312(10)

Figure 3. City of Klamath Falls Designated Truck Routes



Policy 4A: Efficiency of Freight Movement. This policy emphasizes the need to maintain and improve the efficiency of freight movement on the state highway system. US 97 and OR 140 are designated State Highway Freight Routes. Action 4A.8 under this policy recognizes that local truck routes are important linkages in the movement of freight throughout the state and that truck routes can serve to detour trucks off the state highway system. This action obligates ODOT to coordinate with local jurisdictions when designating, managing and constructing a project on a local freight route. The local truck routes are shown in Figure 3.²

² This figure was developed by the Community Development Department in consultation from Public Works and the City Attorney, but has not been formally adopted.

Policy 4B: Alternative Passenger Modes. This policy encourages the development of alternative passenger services and systems as part of broader corridor strategies and promotes the development of alternative passenger transportation services located off the highway system to help preserve the performance and function of the state highway system. Basin Transit provides public transportation service in the interchange area (the Stewart Lennox route) and the Green Springs IAMP scope establishes the objective of improving safety, access, and mobility for pedestrians and bicyclists in the interchange area.

Oregon Freight Plan (2011)

The Oregon Transportation Commission adopted the Oregon Freight Plan (OFP) in June 2011. A modal plan of the Oregon Transportation Plan the OFP implements the State's goals, and policies related to freight. Its purpose statement is: "to improve freight connections to local, Native American, state, regional, national and global markets in order to increase trade-related jobs and income for workers and businesses." The objectives of the plan include prioritizing and facilitating investments in freight facilities (including rail, marine, air, and pipeline infrastructure) and adopting strategies to maintain and improve the freight transportation system.

The plan defines a strategic freight network by using the Oregon Statewide Integrated Model (SWIM) and SWIM2 models to identify regional commodity production and consumption for eight freight-dependent industries and corridors used to transport commodities for each industry.³ The corridors that carry the largest value and tonnage of freight for each industry are designated as strategic corridors for those industries; US 97 is designated as a strategic corridor in the state. The US 97 corridor ranges between one and three percent for industry output flows by percent of value for the eight industries and between one and 15 percent for industry output flows by percent of total ton-miles for the eight industries. The corridor is the only major north-south freight route east of the Cascades and, though distant, can act as a parallel route and relief highway to I-5 in case of incidents on the freeway according to the OFP. A Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) rail corridor runs parallel to the highway and serves as the major rail line that connects Oregon and California.

Policy and strategic direction is provided in Section 8.3, Issues and Strategies, of the OFP. The following strategies and actions relate most closely to the planning processes involved in developing the Green Springs IAMP. The recommendations included in the IAMP should be consistent with these strategies; the IAMP findings may ultimately support associated implementation (action) items in the OFP.

Strategy 1.2: *Strive to support freight access to the Strategic Freight System. This includes proactively protecting and preserving corridors designated as strategic.*

Action 1.2.1. *Preserve freight facilities included as part of the Strategic Freight System from changes that would significantly reduce the ability of these facilities to operate as efficient components of the freight system unless alternate facilities are identified or a safety-related need arises.*

³ The corridors focus on the major state highways in the corridor but include all non-highway transportation modes such as rail, marine, air, and pipelines.

Strategy 2.2: *Develop a process for identifying, measuring and monitoring system constraints and deficiencies.*

Action 2.2.1. *Develop and use performance measures/factors to identify corridor performance constraints, system deficiencies and affected industries. Apply the criteria to identify system constraints on an ongoing basis. Base performance measures on research conducted by ODOT and reported in "Freight Performance Measures: Approach Analysis."*

Strategy 2.3: *Identify and rank freight bottlenecks, corridor constraints or chokepoints, in particular those located on the strategic system. Update the ranked list periodically.*

Action 2.3.1. *Create a set of freight planning guidelines to use for developing transportation system plans. Recommend the adoption of ranking and prioritization procedures for evaluating freight system performance as part of TSPs. In the guidelines, recommend that the TSPs detail how plans will eliminate or significantly reduce bottlenecks and constraints.*

Strategy 2.4: *Coordinate freight improvements and system management plans on corridors comprising the Strategic Freight System with the intent to improve supply chain performance.*

Action 2.4.1. *Define freight improvement projects specifically as those projects that support goods movement efficiency, using quantitative criteria*

Strategy 7.1: *Work to better integrate freight into the land use planning process and to protect the existing supply of industrial (freight-dependent) land uses and freight terminals.*

Action 7.1.1. *Support better integration of freight into the regional and local land use planning processes. Encourage local governments to integrate industrial land use planning into comprehensive plans and all other plans and actions relating to land use controls.*

Access Management Rule (OAR 734-051)

Oregon Administrative Rule 734-051 defines the State's role in managing access to highway facilities in order to maintain functional use and safety and to preserve public investment. The Rule includes spacing standards for varying types of state roadways and criteria for granting right of access and approach locations onto state highway facilities. OAR 734-051 is in the process of being amended given the passage of Senate Bill 264 in the 2011 Oregon Legislature. A temporary version of OAR 734-051 has been adopted and is in effect until the OTC considers approval of final amendments to the rule at its meeting on January 25, 2012.

SB 264 strives to allow more consideration for economic development when developing and implementing access management rules. The new laws will result in substantial changes in rules about how ODOT manages highway approach road permitting. Among the several changes, the new laws will change how ODOT deals with approach road spacing, highway improvements requirements with development, and traffic impact analyses requirements for approach road permits. The law's provisions take effect on January 1, 2012.

New spacing standards are established in temporary OAR 734-051 for unsignalized at-grade approaches to statewide highways, expressways, and district highways and in urban and rural areas where average daily traffic (ADT) is either less than or equal to 5,000 motor vehicles.⁴ These standards are presented in Tables 2, 3, and 4 below. (See the discussion of state highway classifications under OHP Policy 1A on pp. 4-5 of this memorandum.)

Table 2. Spacing Standards for Highways, ADT < or = 5,000 (OR 270)

Posted Speed (mph)	Spacing (feet)			
	Regional and District Highways, Rural and Urban (feet)	Statewide Highways, Rural Areas (feet)	Statewide Highways, Urban Areas (feet)	Highways, Unincorporated Communities, Rural Areas (feet)
55 and higher	650	1,320	1,320	1,320
50	425	1,100	1,100	1,100
40-45	360	990	360	750
30-35	250	770	250	425
25 and lower	150	550	150	350

Table 3. Spacing Standards for Statewide Highways, ADT > 5,000 (US 97, OR 140, OR 66)

Posted Speed (mph)	Spacing (feet)			
	Expressway, Rural Area	Expressway, Urban Area	Rural Area	Urban Area
55 and higher	5,280	2,640	1,320	1,320
50	5,280	2,640	1,100	1,100
40-45	5,280	2,640	990	800

⁴ Tables 3, 4, and 6 in 734-051-4020(8), Standards and Criteria for Approval of Private Approaches, Approach Spacing Tables

Posted Speed (mph)	Spacing (feet)			
	30-35	-	-	770
25 and lower	-	-	550	350

Table 4. Spacing Standards for District Highways, ADT > 5,000 (OR 66)

Posted Speed (mph)	Spacing (feet)			
	Expressway, Rural Area	Expressway, Urban Area	Rural Area	Urban Area
55 and higher	5,280	2,640	700	700
50	5,280	2,640	550	550
40-45	5,280	2,640	500	500
30-35	-	-	400	350
25 and lower	-	-	400	250

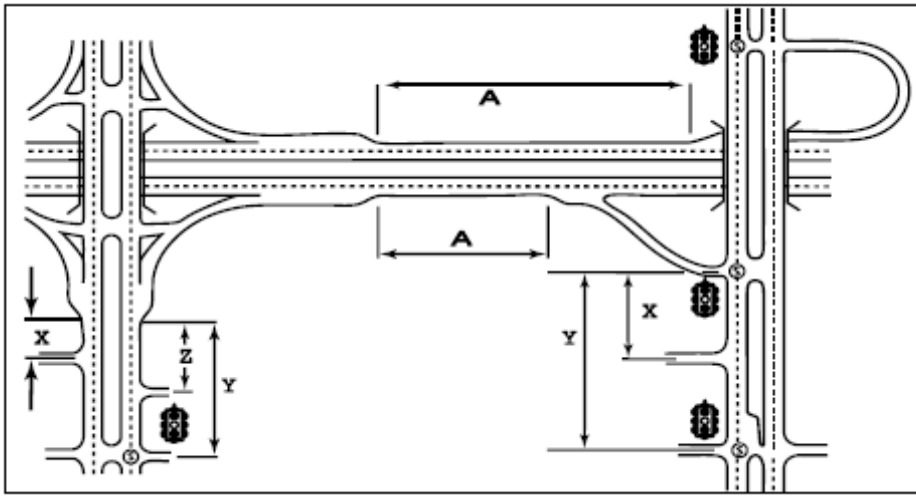
Temporary OAR 734-051-4020 (Table 5 and Figure 4) presents minimum spacing standards for the distance between the start and end of adjacent interchanges and the distances between interchange elements and approach roads.⁵

Table 5. Minimum Spacing Standards Applicable to Freeway Interchanges with Multi-Lane Crossroads

Type of Area	Spacing Dimensions (feet)			
	A	X	Y	Z
Fully Developed Urban	5,280	750	1,320	990
Urban	5,280	1,320	1,320	1,320
Rural	10,560	1,320	1,320	1,320

⁵ Table 8 and Figure 2 in 734-051-4020(8), Standards and Criteria for Approval of Private Approaches, Approach Spacing Tables

Figure 4. Diagram of Spacing Standards for Table 2



Notes:

- 1) If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.
- 2) No four-legged intersections may be placed between ramp terminals and the first major intersection.
- 3) No application will be accepted where an approach is in a restricted area as defined in OAR 734-051-3010(2).

Notes for Table 5 and Figure 4:

- A = Distance between the start and end of tapers of adjacent interchanges.
X = Distance to first approach on the right, right in/right out only.
Y = Distance to first intersections where left turns are allowed.
Z = Distance between the last right in/right out approach road and the start of the taper for the on-ramp.

However, SB 264 also includes the important following provision regarding spacing standards in IAMP management areas:

Special transportation areas, access management plans, corridor plans, interchange area management plans or interchange management areas, as designated by the Oregon transportation Commission, may have spacing standards that take precedence over the spacing standards...

Interchange improvements that are proposed in the IAMP will need to meet or improve, “by moving in the direction of the access management spacing standards” by means of an access management strategy, plan, or mitigation proposal.⁶ Section -7010 of temporary 734-051 identifies when, how and why ODOT will develop access management plans and interchange area management plans for particular sections of a highway. The Rule states that:

(1) General Provisions. The department encourages the development of access management plans and interchange area management plans to maintain and

⁶ Temporary OAR 734-051-1070(2), (3), and (4)

improve highway performance and safety by improving system efficiency and management before adding capacity. Where adopted, access management plans and interchange area management plans:

- (a) Must be used to evaluate development proposals; and*
- (b) May be used to determine mitigation for development proposals.*
- (c) Must be used in developing highway projects.*

(2) Oregon Transportation Commission Adoption. Access management plans and interchange area management plans must be adopted by the commission as a transportation facility plan consistent with the provisions of OAR 731-015-0065. Prior to adoption by the commission, the department will work with local governments on any amendments to local comprehensive plans and transportation system plans and local land use and subdivision codes to ensure the proposed access management plan and interchange area management plan is consistent with the local plan and codes.

(3) Prioritization of Access Management Plans. The priority for developing access management plans should be placed on facilities with high traffic volumes or facilities that provide important statewide or regional connectivity where:

- (a) Existing developments do not meet spacing standards;*
- (b) Existing development patterns, land ownership patterns, and land use plans are likely to result in a need for deviations; or*
- (c) An access management plan would preserve or enhance the safe and efficient operation of a state highway or interchange.*

(4) Preparers of Access Management Plans. An access management plan may be developed:

- (a) By the department;*
- (b) By local jurisdictions; or*
- (c) By consultants.*

(5) Access Management Plan Criteria. An access management plan must comply with all of the following criteria, unless the plan documents why a criterion is not applicable:

- (a) Include sufficient area to address highway operation and safety issues and development of adjoining properties including local access and circulation.*
- (b) Describe the roadway network, right of way, access control, and land parcels in the analysis area.*
- (c) Be developed in coordination with local governments and property owners in the affected area.*

(d) Be consistent with any applicable interchange area management plan, corridor plan, or other facility plan adopted by the commission.

(e) Include polices, provisions and standards from local jurisdiction comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the access management plan.

(f) Contain short, medium, and long-range actions to improve operations and safety and preserve the functional integrity of the highway system.

(g) Consider whether improvements to local street networks are feasible.

(h) Promote safe and efficient operation of the state highway consistent with the highway classification and the highway segment designation.

(i) Consider the use of the adjoining property consistent with the comprehensive plan designation and zoning of the area.

(j) Provide a comprehensive, area-wide solution for local access and circulation that minimizes use of the state highway for local access and circulation.

(6) Interchange Area Management Plans. Except as provided in section 8 of this rule, an interchange area management plan is required for new interchanges and should be developed for significant modifications to existing interchanges. The department encourages the development of an interchange area management plan to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways:

(a) The department and local governmental agencies develop interchange area management plans to protect the function of interchanges by maximizing the capacity of the interchanges for safe movement from the mainline facility, to provide safe and efficient operations between connecting roadways, and to minimize the need for major improvements of existing interchanges;

(b) The department will work with local governments to prioritize the development of interchange area management plans to maximize the operational life and preserve and improve safety of existing interchanges not scheduled for significant improvements; and

(c) Priority should be placed on those facilities on the interstate highway system with cross roads carrying high volumes or providing important statewide or regional connectivity.

(7) Interchange Area Management Plan Criteria. An interchange area management plan must comply with the following criteria, unless the plan documents why compliance with a criterion is not applicable:

(a) Be developed no later than the time an interchange is designed or is being redesigned.

(b) Identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt policies, provisions, and development standards to capture those opportunities.

(c) Include short, medium, and long-range actions to improve operations and safety within the designated study area.

(d) Consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches.

(e) Provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically twenty (20) years.

(f) Consider existing and proposed uses of all the property within the designated study area consistent with its comprehensive plan designations and zoning.

(g) Be consistent with any applicable access management plan, corridor plan or other facility plan adopted by the commission.

(h) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the interchange area management plan.

Statewide Transportation Improvement Program (2010-2013)

The State Transportation Improvement Program (STIP) is the programming and funding document for transportation projects and programs statewide. The projects and programs undergo a selection process managed by ODOT Regions or ODOT central offices. The document covers a period of four years and is updated every two years. The development of the Green Springs IAMP is included in the adopted STIP (2010-2013) and is funded for FY 2010 and 2011(see Table 6). No other projects in the vicinity of the interchange are listed. A draft STIP for 2012 through 2015 is under development and has not been adopted at this time.

Table 6. Green Springs IAMP STIP Projects

Section	Route	Highway Name	Total Cost	Description	Year (FFY)
OR66:GREEN SPRINGS INTERCHANGE AREA MANAGEMENT PLAN*	OR-66	GREEN SPRINGS	\$425,000	PLANNING PROJECT	2010

Source: <http://highway.odot.state.or.us/cf/STIPsrch/index.cfm>

* Projects within the Klamath Falls Urban Growth Boundary (UGB).

Statewide Planning Goal 9

The intent of Goal 9, Economic Development, is to “provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon’s citizens.” Local comprehensive plans must support this goal and should include an assessment of the jurisdiction’s existing economic conditions and comparative advantages and policies that both generally and specifically address economic development and development opportunities. Local jurisdictions must provide an adequate supply of sites with characteristics suitable for a variety of employment and economic development and limit development around identified industrial sites to that which is compatible with uses allowed on the sites. The goal suggests implementation measures such as tax incentives and disincentives, preferential assessments, land use regulations, capital improvement planning and programming, and fee or partial fee acquisition.

Ultimately, findings prepared for adoption of the IAMP should demonstrate how the preferred alternative for future interchange area improvements supports this goal and the City’s economic development goals. The City has designated land southwest and northeast of the interchange for commercial and industrial uses. Transportation analysis performed for the IAMP will rely on existing land use designations (i.e. planned land uses).⁷ Any future proposals for intensification of land uses in the area that may require re-zoning will depend on the transportation and land use implementation measures adopted as part of the IAMP, and will need to comply in particular with Goal 12 and the Transportation Planning Rule (TPR) so that employment development in the area can occur in a way that protects the capacity and safe function of the interchange and any future state transportation investments. An overview of an economic opportunity analysis performed for the Klamath Falls Urban Area in 2009 is presented later in this memorandum.

County and City Plans and Regulations

Klamath County Comprehensive Plan (2010)

The Klamath County Comprehensive Plan was originally adopted in 1984 and last updated in January 2010. The Comprehensive Plan includes general transportation policies in the Goal 12 chapter; more detailed transportation policies are included in the Klamath County Rural Transportation System Plan, reviewed separately in this memorandum. Relevant policies from the Comprehensive Plan are listed below by Goal.

⁷ Land use assumptions will be documented in Technical Memorandum #3.

Goal 10 – Housing:

11. POLICY: The County will encourage the use of planned unit development (PUDs) and other forms of clustered housing that introduce innovative and cost-effective approaches to siting, block layout, design and landscaping.

Goal 9 – County Economy:

1. POLICY: The County shall work with local governments to coordinate and compile appropriate industrial and commercial site availability in order to develop a common regional economic development strategy.

13. POLICY: The County shall maintain a sufficient amount of industrial land in large parcels in order to encourage economic diversity and development in the community.

Goal 11 – Public Facilities:

1. POLICY: In order to achieve the requirements of State-wide Planning Goal 11, the County shall, in cooperation with the City of Klamath Falls, prepare and adopt a public facilities plan describing the water, sewer, transportation, and other urban facilities and services which are to support land uses within the Klamath Falls UGB.

2. POLICY: The County may encourage the development of a public facility or service in an urbanizable area only when there is provision for the coordinated development of all other urban facilities and services appropriate to the area.

Goal 12 – Transportation:

5. POLICY: The width and spacing of driveways along arterials shall be restricted. Where necessary, turning lanes cut out of abutting property or the construction of parallel frontage roads shall be required, if adequately proven to be necessary by the governing body or agency.

Implementation: The Land Development Code establishes development standards regulating ingress and egress of land uses abutting major arterials.

6. POLICY: Higher density residential development should when feasible, be located within walking distance (1,000 feet to one quarter mile) of major arterials.

Implementation: The land use plan should locate, when feasible, higher density residential development near major arterials, and the Land Development Code shall require pedestrian walkway along future streets.

7. POLICY: The County shall encourage local governments to improve the convenience and safety of pedestrian and bicycle transportation.

11. POLICY: A safe, convenient and economic transportation system, adequate to serve anticipated growth, shall be developed that will minimize adverse social, economic and environmental impacts and costs of the transportation systems.

Goal 14 – Urbanization:

3. POLICY: During partitioning or subdividing of urban land, the County shall encourage parcels of adequate dimension so as to maximize the utility of land resources and enable the logical and efficient extension of services to such parcels.

Implementation: The land use plan designates residential densities that follow a hierarchy of high to low densities from central to outer areas.

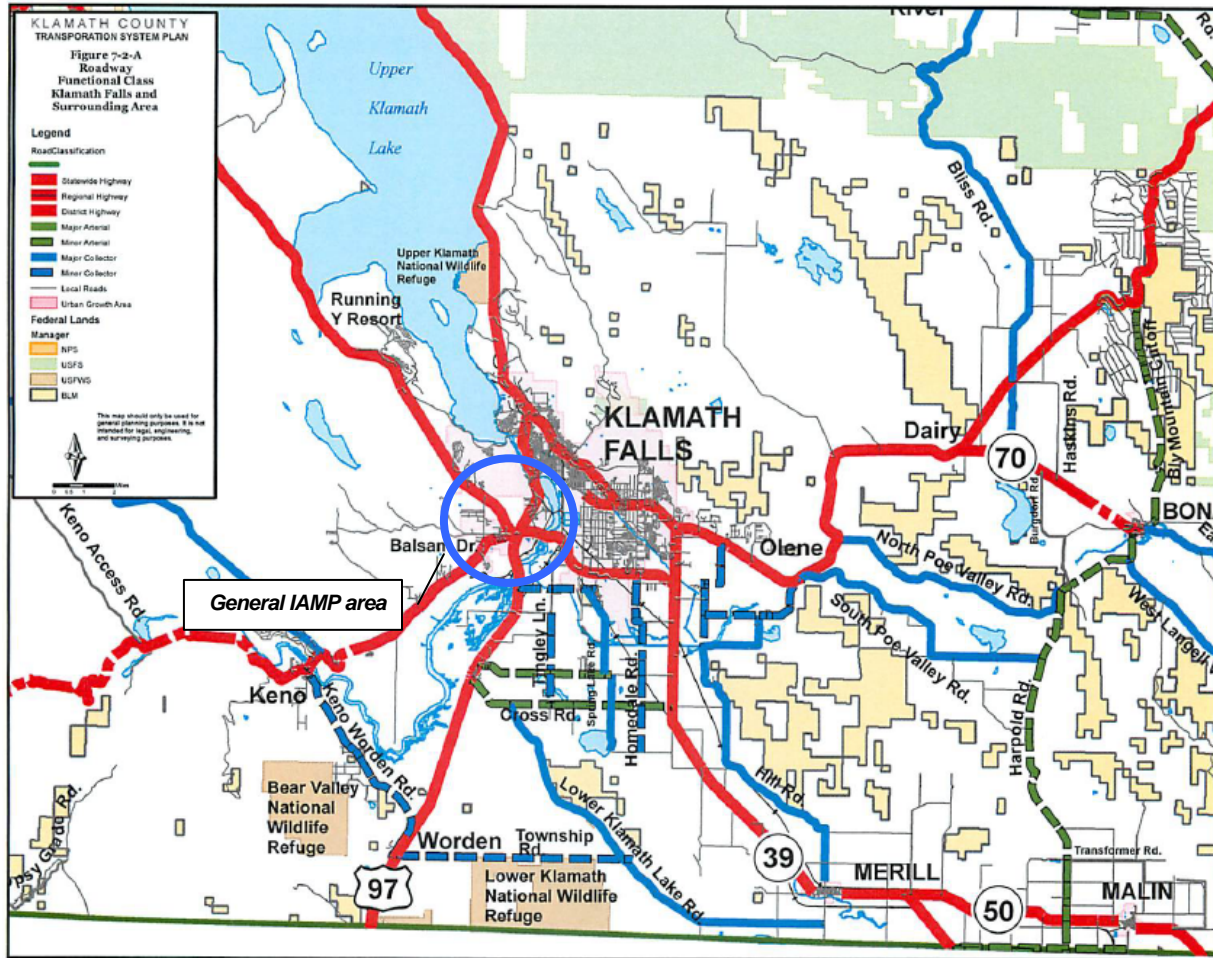
IAMP goals and policies will need to be found consistent with relevant County goals and policies. In cases where the existing County goals and policies are not consistent with recommended implementation measures, additions or amendments to the Comprehensive Plan may be prepared and proposed.

Klamath County Rural Transportation System Plan (2010)

The Klamath County Rural Transportation System Plan (“County TSP”) provides for transportation development in the rural areas of the County. The planning area for the Klamath County TSP is generally outside the Klamath Falls UGB. Overall, the TSP includes transportation issues related to state and county facilities, and not urban facilities, and while land to the northwest of the interchange is outside of city limits and under County jurisdiction, it is within the UGB and considered urban.

Chapter 7 includes sections addressing roads, transit, bicycle and pedestrian facilities. The Roadway Element includes a map of roadway functional classification around Klamath Falls, Figure 5 below, and a description of each classification.

Figure 5. Klamath County Roadway Functional Classification Map



The purpose and management objectives of each of these classifications are summarized below.

- Rural Principal Arterials (State Highways) serve as the primary gateways in and out of the Klamath County area. These highways are critical to the county because they generally serve the highest traffic volumes and longest trips between major attractors. Access control is critical on these facilities to ensure that they operate safely and efficiently.
- The Rural Minor Arterial System, in conjunction with the rural principal arterial system, links cities, larger towns, and other traffic generators that are capable of attracting travel over longer distances; provides routes for interstate and inter-county travel; runs within a reasonable distance of all developed areas of the state; and provide for relatively high travel speeds and minimum interference to through movement.
- Rural Collector routes generally serve intra-county rather than statewide travel with predominant travel distances shorter than on arterial routes and more moderate speeds.
 - Major Collector Roads serve county seats not on arterial routes, larger towns not directly served by the higher systems, and other traffic generators of equivalent intra-

county importance; link these places with nearby larger towns or cities, or with routes of higher classifications; and serve the more important intra-county travel corridors.

- Minor Collector Roads accumulate traffic from local roads and bring all developed areas within reasonable distances of collector roads; provide service to smaller communities; and link locally important traffic generators with their rural hinterland.
- The rural local road system primarily provides access to land adjacent to the collector network and serves travel over relatively short distances. The local road system constitutes all rural roads not classified as principal arterials, minor arterials, or collector roads.

Table 7-1 of the TSP (Table 7 below) summarizes the design standards that are found in the *Klamath County Department of Public Works Standard Drawing*, which is Appendix “A” to the Land Development Code. Proposed improvements to local roadways under County jurisdiction that are recommended as part of the preferred alternative for the Green Springs interchange will need to be designed to these standards.

Table 7. Recommended Design Standards for Klamath County Road Department

Roadway Design Standards	
Vehicle Lane Widths: (minimum widths)	Truck Route = 12 feet Arterial = 12 feet Collector = 12 feet Local = 10-11 feet Turn Lane = 10-14 feet
On-Street Parking:	Not Applicable
Bicycle Lanes: (minimum widths)	Arterials = 4' paved shoulder Collectors = 4' paved shoulder Curb & Gutter Streets = 5' Standard Bike Lane = 6'
Sidewalks:	Shoulder or separated pathway
Landscape Strips:	Optional
Medians:	Optional
Neighborhood Traffic Management / Traffic Calming:	None
Turn Lanes:	When warranted
Maximum Grade:	Arterials = 6 % Collectors = 6 % Local Streets = 10 %

In Klamath County, rural roadways generally do not require separate bicycle or pedestrian facilities. Bicyclists and pedestrian are generally accommodated on the shared roadway or on a shoulder, depending on traffic volumes. Bike lanes or shared roadway facilities may be provided on arterials and collectors in areas where forecasted traffic volumes and bicycle use warrant their consideration. In areas with high bicycle and/or pedestrian activity, the standards suggest a pathway, preferably located on both sides of the roadway, separated from the roadway by at least five feet of greenbelt or a drainage ditch.

The Roadway Element also addresses access management, acknowledging ODOT’s standards for state roadways, and lists proposed access management guidelines by roadway functional classification for county roads in Table 7-5, reproduced in Table 8. These access management

guidelines are generally not intended to eliminate existing intersections or driveways; they are intended to be applied as new development occurs.

Table 8. Klamath County Access Management Standards by Functional Classification

Functional Class	System Spacing	Minimum Spacing	Corner Clearance
Rural Major Arterial	1 mile	1,000	1,000
Rural Minor Arterial	1 mile	500	600
Rural Major Collector	¼ mile	250	100
Rural Minor Collector	¼ mile	250	50
Rural Local Street	200-400 feet	75	25

The project list included in Chapter 7 for roadways and freight includes several projects in the vicinity of Klamath Falls urban area. Projects within the Interchange Management Study Area (Technical Memorandum #2: IAMP Goals, Objectives, and Evaluation Criteria) include the following:

- 140-4. (High priority) Ridge Water Drive-OR 66/OR 140 Jct.: {Mileposts 65.25-68.76} Widen highway to four lanes with median and median barrier, guardrail, signs.
- 140-5. (High priority) Orindale Interchange: {Milepost 67.22} Construct an Interchange to connecting Orindale Road and new developments, access management, frontage roads.
- 66-1. (Medium priority) OR 66/OR140/US 97 at Green Spring Interchange: {Milepost 58.99} Interchange improvement - add south bound on and off loop ramps to eliminate left turns.
- 66-2. (Low priority) Orindale Road – OR 66/OR 140/US 97 Jct.: {Mileposts 57.81-58.99} Construct four lanes highway with continuous left turn refuge, curbs and sidewalks, drainage, and access management.

The Green Spring interchange is also identified as projects for further consideration but are beyond the planning horizon of the TSP.

Interchange at Highways 97/140/66: The current configuration of this interchange is inefficient and substandard; however, it will also be very costly to upgrade to a grade-separated, free-flowing highway interchange. Options for funding this project should be explored and studied in the years to come and this project should be prioritized in future updates of this Plan. (The Access Management Plan for this project is in the 2008-2011 STIP).

Klamath County Land Development Code

The Land Development Code (LDC) regulates all land development within Klamath County that is not within an incorporated city, including land within the Klamath Falls Urban Growth Boundary (UGB) that is not inside city limits. Requirements pertaining specifically to the Klamath Falls Urban Area are located throughout the LDC. An assessment of LDC compliance with the requirements of the Transportation Planning Rule, as code requirements relate to the Urban Area, is found in Section II, Table 2 of this memorandum.

Chapter 10 includes general provisions about the use of the code. Chapter 20 establishes uniform procedures for reviewing permit applications and for making decisions on matters pertaining to the use and development of lands within Klamath County; Chapter 30 prescribes procedures for public hearings, public notice and appeal of decisions reached as a result of the review procedures described in Chapter 20. Chapter 40 provides standards and criteria for development permit and change of land use applications. Chapter 50 establishes land use zones to implement the goals and policies of the Comprehensive Plan, defines the purpose of each zone, and specifies the types of land uses appropriate for each zone.

Chapter 60 and 70 establish site development standards including those that pertain to transportation. Chapter 60 includes planning standards, such as Lot Size and Shape (Article 61); Building Heights and Setbacks (Article 62); and Parking (Article 68). Chapter 70 has public works standards addressing vehicular access and circulation and other infrastructure requirements. Section 71.050, Improvements in the Klamath Falls Urban Area, establishes required right-of-way improvements for the Urban Area.

Implementation measures for the Green Springs IAMP located on land or facilities under County jurisdiction will be developed in compliance with the transportation and zoning standards established in the Klamath County Land Development Code. Where the existing regulations are not consistent with recommended implementation measures or need to be otherwise augmented in order to most effectively implement the IAMP, an outcome of this planning process will be proposed amendments to the code.

City of Klamath Falls Comprehensive Plan (1981)

The IAMP is intended to be adopted as a refinement to the City of Klamath Falls Transportation Systems Plan and, as such, will also be an element of the City's Comprehensive Plan. The City of Klamath Falls Comprehensive Plan was adopted in 1981 and the document itself has not been updated since that time.⁸ Most of the background documentation describing existing transportation conditions dates back to the late 1970s and is not relevant to planning the future transportation system. Despite the age of the document, the adopted Comprehensive Plan remains the City's policy basis on which to make decisions. However, because of the age of the document, the fact that the City adopted updated transportation goals in the 1998 TSP, and is in the process of reviewing an update of the TSP update that is based on more recent conditions and analysis, the goals and policies from the Comprehensive Plan Transportation Element are not included in this memorandum. The following goals and policies also have bearing on transportation planning and are from other elements of the Comprehensive Plan.

⁸ In September 2003 the City of Klamath Falls convened a stakeholder committee to participate in a Comprehensive Plan and Code Audit funded by the Transportation and Growth Management (TGM) Program. The Final Audit Report (Angelo Eaton & Associates, 2004) contains recommendations for Comprehensive Plan and Community Development Ordinance amendments that are consistent with "smart development" principles, which are also described in that Report. A Comprehensive Plan update followed the audit, resulting in a May 2005 draft document that included updated land use and transportation policies. The 2005 Draft City of Klamath Fall Comprehensive Plan was not adopted by the City.

K. HOUSING ELEMENT

Housing - Policies

97. *The interrelationship of transportation, job sites, shopping sites, recreation, open space and scenery, education, and similar activities will be emphasized to provide maximum and efficient use of public facilities and service.*

U. LAND USE ELEMENT

Land Use - Policies

231. *Residential densities adjacent to major arterials will be increased.*
233. *Core area residential densities will be as high as practical for energy and transportation advantages.*
234. *Maintenance and improvement of established residential areas will be promoted.*
238. *Strip commercialism will be avoided, due to its adverse effects on traffic, energy, safety, and convenience.*

V. URBANIZATION ELEMENT

Urbanization - Policies

153. *Coordination of comprehensive planning with State and County officials will be promoted.*

Transportation goals and policies adopted as part of the IAMP will be additive to the goals and policies adopted as part of the TSP update if the TSP is adopted and replaces the Transportation Element in the Comprehensive Plan.

Klamath Falls Urban Area Transportation System Plan (2011/in progress)

The City of Klamath Falls Urban Area Transportation System Plan (TSP) serves as the management document for existing and future transportation facilities within the city and its UGB. The TSP contains an inventory of existing facilities and transportation conditions, as well as forecasted transportation demands for the area over an approximately 20-year planning horizon. Recommended designations and standards for and improvements to the transportation system are provided along with a funding plan and implementation measures. The Green Springs IAMP will serve as a refinement plan for the TSP.

The TSP is in the process of being updated; City and County adoption hearings are scheduled for early 2012. The following transportation planning goals currently being considered for adoption apply to developing the Green Springs IAMP.

Goal 1 – Ensure a safe and efficient transportation system for all users.

Goal 2 – Provide access to the transportation system for all users.

Goal 3 – Integrate adequate bicycle and pedestrian pathways, sidewalks, and bicycle lanes through the community, particularly to connect residential areas with schools and activity centers.

Goal 4 – Improve the local circulation system to reduce the community’s reliance on State Highways to travel to local destinations.

Goal 5 – Build and maintain the transportation system to facilitate economic development in the region.

Goal 6 – Improve system performance by balancing mobility and access, particularly along main travel routes.

Goal 7 – Minimize the impacts of transportation system development on the natural and built environment.

Planned Roadway projects section (p. 66, September 2011 Draft TSP): “Similarly, no improvements are shown for the intersection in the vicinity of the OR 66/US 97 interchange because of a forthcoming Interchange Area Management Plan (IAMP) for the vicinity. The IAMP will define the specific improvements that will subsequently be amended into the TSP.

Proposed improvements to local roadways that are recommended as part of the preferred alternative for the Green Springs interchange will need to be designed to these standards.

Table 9. City and County Access Spacing Standards

Functional Classification	Intersection Spacing	Minimum Driveway Access Spacing
Major arterial	¼ mile	300 feet
Collector	¼ mile	100 feet
Local street	Minimum 400 feet Maximum 600 feet	None

Implementation (code) language being recommended through the TSP update process that affects or addresses the interchange area includes proposed traffic impact studies (TISs) and access management measures. Traffic impact study requirements would be established in the City of Klamath Falls Community Development Ordinance (CDO) Section 14.051 and referenced as needed elsewhere in the code. Access measures, such as shared access and reciprocal access, are proposed in CDO Chapter 14 (Private Site and Public Facility Standards) , Section 14.050 (Access and Driveways).

Klamath Falls Urban Area Economic Opportunity Analysis (2009)

The 2009 Economic Opportunities Analysis and Long-Term Urban Land Need Assessment prepared by the firm Johnson and Gardner is referred to as the Klamath Falls Urban Area Economic

Opportunity Analysis (KFEOA). The analysis of potential urban growth scenarios is intended to assist the City in determining urban reserves needs over 20-year and 50-year planning periods. The analysis used Statewide Planning Goal 9 Economic Opportunities Analysis methodology and documentation requirements to forecast employment land demand.

The KFEOA has been adopted by the City and includes goals and policies for the Klamath Falls Urban Area (i.e., land within the Klamath Falls UGB) that will guide the City's future economic development and employment land decisions. Related to the City's goal to ensure an adequate land supply to accommodate economic growth (Goal 3, p. 70), the City will: "Consider the transportation infrastructure needs of target industry opportunities when preparing Transportation System Plan updates and corridor plans to implement the City's Goal 9 objectives (Implementation 3-5(c))."

The KFEOA presents national, regional, and local economic trend analysis and explores the area's regional competitiveness in specific industry sectors including wood products, educational and vocational training, medical services and bioscience, and emerging sectors (renewable energy and regional retail). A baseline forecast of total employment for Klamath Falls between 2008 and 2028 estimates an increase of 6,418 jobs, reflecting an average annual growth rate (AAGR) of 1.2% (Figure 16, KFEOA). Employment is estimated to grow in the retail trade sector, the education and health services sector, and, at an accelerating rate, the professional and business service sector. The wood product sector is not forecasted for significant growth, adding less than 100 new manufacturing jobs in the Klamath Falls urban area by 2028.

The KFEOA also includes alternative growth scenarios that assume a higher average annual growth rate than the baseline scenario. These scenarios assumptions result in 883 to 1,766 new jobs in emerging industry and 4,856 to 8,238 jobs in the other industry sectors more than the baseline scenario over the planning period. The 20-Year Supply/Demand Reconciliation section includes the estimates of gross demand and need for employment land by type ("site category"). In summary, the city has a surplus of commercial and retail land under the baseline scenario, but a deficit of such land, particularly retail commercial, under the high growth alternative.

The KFEOA includes a subregional commercial land analysis (Appendix G) that divides the urban area into four subregions (North, South, East, and West), the West subregion encompassing the Interchange Management Study Area (Technical Memorandum #2: IAMP Goals, Objectives, and Evaluation Criteria). The report documents that currently the majority of Klamath Falls' commercial activity occurs along its major transportation corridors on the east side of the river and that little commercial activity occurs west of the Klamath River. However, an analysis of commercial land needs on a subregional basis forecasts that only the West subregion will have a short-term deficit of commercial land with a net deficit range of 27.1 to 37.9 acres.

While the KFEOA does not include a full locational analysis indicating where land needs may be satisfied in the future, it presents findings from a Buildable Lands Inventory that identify vacant and redevelopable sites that are potential employment sites (Figures 27-29, KFEOA). A large commercial site identified in the southwest quadrant of the Green Springs interchange is considered developable over the long-term with the understanding that: "access constraints and potential reconciliation with long-term transportation plans for the aforementioned intersection makes the site short-term constrained (pp. 53-54)."

Klamath Falls Community Development Ordinance

The Community Development Ordinance (CDO) consists of Chapters 10 through 14 of the City's Code. The CDO regulates all land development within the City Limits. Chapter 10 establishes the application and hearings procedures for land use decisions within the City. Chapter 11 governs land development review and includes procedures and requirements for Design Review, Conditional Use Permits, land division, variances, and zone changes. Chapter 12 establishes the zoning in the City, including the uses permitted and the site standards for each zone. City boundary amendments and annexation procedures are governed by Chapter 13, which details procedures and provides the equivalency table of County/City land use and zoning classification to determine what zone should be applied to property upon annexation.

Site development standards are contained in Chapter 14. Chapter 14 includes requirements for access, parking, landscaping, and bicycle facilities. Ordinance provisions that implement the City's TSP are reviewed in Table 1 of this memorandum.

The following sections of the CDO contain provisions that regulate transportation facilities and improvements in the city:

- Sections 12.360-12.395 Planned Unit Development
- Section 14.010 Off-Street Parking Requirements.
- Section 14.050 Access and Driveways
- Section 14.390 Vision Clearance
- Sections 14.450-14.490 Bikeways.

A possible outcome of the IAMP planning process is the need for local development requirements related to preserving the function and capacity of the interchange and ensuring the safety of those who use the facility. The updated TSP that will soon be adopted includes proposed development code amendments that will help meet these objectives, such as proposed TIS, access management requirements, and coordination with ODOT.

Klamath Falls West Side Refinement Plan (2006)

The West Side Refinement Plan (Refinement Plan) was developed to address transportation needs for approximately 2,000 acres west of Highway 97, south of Lakeshore Drive, and north of Oregon 140/Oregon 66 (see figure on p. 2 of the Refinement Plan). The Refinement Plan addresses recent growth and planned development in the West Side, including the Southview PUD and the Castle Ridge Destination Resort. The Refinement Plan includes an assessment of the existing (2006) transportation system, provides an evaluation of the impacts of growth, and identifies a package of improvement projects that comprises the preferred alternative.

The stated objectives for the Refinement Plan include planning the transportation system to accommodate future build-out of the area (approximately the year 2025), maintaining the functional classification of Lakeshore Drive (collector), and access management for OR 140 that is consistent with state requirements (p. 4). Traffic conditions were evaluated for 2005 and 2025; level-of-service (LOS) and volume-to-capacity (v /c) ratios were generated for study area intersections to assess traffic operations (Table 2). The Refinement Plan shows that several intersections and highway interchange ramps will not meet operational standards by 2025 if no improvements or new facilities are constructed (p. 6-7).

Seventeen “packages” of transportation system alternatives to mitigate future traffic impacts were developed and analyzed for the Refinement Plan. With input from the public, these alternatives were refined, and then analyzed using ODOT modeling techniques to find a combination of improvements (the “preferred alternative”) that could be phased to meet the development demands of the area.

The modeling assumed approximately 3,827 single-family homes in the West Side. The results of the modeling confirmed that both highway and collector street improvements are needed to optimally disperse traffic throughout the transportation network. A future collector street would provide a direct connection between population centers in the West Side, would delay needed capacity improvements on OR 140, and would help moderate the cost and complexity of the future US 97/OR 140/US 66 interchange replacement project (p. 10 in the plan). The Refinement Plan evaluated six different collector street options, concluding one where the Cypress Avenue connection attracted the most trips to and from the West Side, making it the top-ranked corridor for connecting the West Side to downtown Klamath Falls. Due to possible technical engineering issues, and at the direction of the Technical Advisory Committee, the Refinement Plan recommended a second option for the collector street connection, one north of Lindley Way as an “alternate connection for connecting the West Side to Klamath Fall’s regional transportation network (p. 12 and Figure 3 of the Refinement Plan).” The recommended TSP project list is provided in Table 6 of the Refinement Plan plan, Table 10 below, and the proposed improvements are shown in Figure 2 of the Refinement Plan.

Table 10. Transportation Improvements Recommended for the West Side Refinement Plan Area

Roadway Improvement Projects	Cost Estimate	Priority
<i>IAMP and interchange reconstruction project</i> – single-point urban interchange (SPUI) at US 97 and Oregon 140, traffic signalization of SPUI ramps at OR 140. Closure of Balsam Drive at OR 66. Closure of Delap Pit Road at OR 140. Improve a local street connection between Balsam Drive and OR 66. Close Green Springs at existing OR 140 location. Modified access for Delap Pit Road, Balsam Drive, and Green Springs.	\$ 30 million	Short term for IAMP / Long term for project construction
<i>OR 140 widen</i> – 5 lanes with bike lanes from Pine Valley to OR 66	\$ 10 million	Short term
<i>OR 140 realignment</i> to the west at OR 66	\$ 5 million	Long term
<i>Green Springs Drive/Memorial Drive Under-Crossing</i> (right-in/right-out only access to Oregon 140)	\$ 6 million	Long term
<i>Main Street interchange improvements</i> including traffic signalization at ramps and relocation of US 97 southbound ramps to Riverside Drive, and left turn channelization on Riverside Drive.	\$ 12 million	Long term
<i>Green Springs Drive/Riverside Drive at Dover</i> – intersection reconstruction including channelization and left turn lanes. Closure of Riverside at Green Springs north of Lindley Way (Green Springs to function as main street).	\$ 2 million	Long term
<i>Pine Valley PUD – local street</i> (not gated) connection from OR 140 to Lakeshore Drive – potential future connection		
<i>Local street connection</i> between Pine Valley PUD and Southview		
<i>OR 140 at Orindale Road</i> – full interchange	\$ 8 million	Long term
<i>OR 140 at Pine Valley</i> – interchange or left turn fly-over ramps	\$ 5 million	Long term
<i>Option #1 - Cypress Connection</i> with sidewalks and multi-use path	\$ 6 million	Long term
<i>Option #2 – Collector Street</i> north of Lindley with bike lanes and sidewalks	\$ 8 million	Long term
<i>Multi-Use Path connections</i>	\$ 10 million	Long term
Intersection Improvement Projects	Cost Estimate	Priority
<i>OR 140 at Orindale Road</i> – traffic signalization (interim only)	\$ 150,000	Short term
<i>OR 66 at Orindale Road</i> – traffic signalization	\$ 150,000	Short term
<i>Orindale Road at Balsam Drive</i> – construct NB and SB left turn lanes – review traffic control (potential signalization)	\$ 250,000	Long term
<i>Nevada – Oregon Avenue at US 97 ramps</i> – traffic signalization	\$ 300,000	Short term
<i>Nevada Avenue at Montelius</i> – intersection reconstruction to a right-in/right-out only for Montelius access to Nevada Avenue	\$ 100,000	Short term
Total *	\$ 95 million	

* Total assumes Option #1 connection as part of the improvements package
 Note: Short term defined as 1 to 5 years and long term as 6 to 20 years

Development of the Green Springs IAMP will involve re-visiting these proposed improvements, and refining and incorporating the projects as needed.

Klamath Falls Capital Improvement Program (FY 2011-216)

The City of Klamath Falls Capital Street Program (CIP) manages the following three programs, each with their own dedicated funding source: the Federal Forest Receipts Program; the Oregon State Transportation Program (STP); and the Congestion Mitigation Air Quality (CMAQ) Program. The Federal Forest Receipts and the STP are currently ongoing programs where funds are awarded to the City to fund capital improvement projects. There are no specific projects proposed in FY 2011-

2012 that are located in the Interchange Management Study Area (Technical Memorandum #2: IAMP Goals, Objectives, and Evaluation Criteria). Rather, there is \$350,000 worth of guardrail replacement/repair and street chip seal projects that are generally programmed in the CIP with no specific identification of location.

Klamath Falls Systems Development Charge

The City of Klamath Falls does not have a citywide systems development charge (SDC) for transportation. However, a transportation SDC has been adopted in conjunction with Orindale/Balsam Sub-Area Master Plan, which includes area that constitutes the western portion of the Green Springs Interchange Management Study Area (Technical Memorandum #2: IAMP Goals, Objectives, and Evaluation Criteria). The SDC methodology and project list was developed and presented in a May 2007 report prepared by Kittelson and Associates, Inc. (KAI).

The development assumptions on which the trip generation and SDC methodology and project list are based estimate that build-out of generally the existing zoning would yield approximately 2,005 housing units (1,625 units in the north and 380 units in the south) and approximately 644,000 square feet of commercial land and 70 acres of industrial land could be developed. The corresponding estimated trip generation for the plan area was approximately 36,455 new trips daily with 2,270 occurring during the weekday a.m. peak hour and 3,600 occurring during the weekday p.m. peak hour. It is worth noting that the commercial property in the southwest quadrant of the interchange did not participate in the Orindale/Balsam Sub-Area study.

The following requirements were adopted for a transportation SDC (TSDC) in the plan area:

- *TSDCs are to be collected at the point in time when the water hook-up is processed for each new development.*
- *The TSDC is to be phased in, with an initial fee of half of the total SDC in 2007. This amount will increase by 10 percent of the total SDC each year for the five successive years. This results in the total SDC charged in 2012 and beyond.*
- *An annual increase in the TSDC will also be applied to account for inflation and will be tied to the City's adopted price index for construction related projects.*

The project list is provided in Table 11.

Table 11. Proposed Orindale/Balsam Sub-Area TSDC Improvements

#	Improvement	Estimated Cost	Cost Per Trip			
			Alt. A	Alt. B	Alt. C	Alt. D
Link Improvements: State Roads						
1	OR-66: 5-lane Major Arterial between Hwy 97 and Orindale	\$6,681,000	\$183		\$336	
	OR-66 right-of-way acquisition*	\$2,139,000	\$59		\$108	
	SUBTOTAL	\$8,820,000	\$242		\$444	
Link Improvements: Local Roads						
2	Orindale Road: 3-lane Major Collector between OR-140 and Balsam	\$4,487,000	\$123	\$123	\$226	\$226
	Orindale Road: 3-lane Major Collector between Balsam and OR-66	\$1,342,000	\$37	\$37	\$68	\$68
3	Emerald Street: 3-lane Minor Collector between Balsam and south end	\$530,000	\$15	\$15	\$27	\$27
	Emerald Street Extension: 3-lane Minor Collector between OR-66 and Industrial property	\$1,555,000	\$43	\$43	\$78	\$78
4	Balsam Drive: 3-lane Minor Collector between Orindale and Balsam	\$1,882,000	\$52	\$52	\$95	\$95
5	OR-140/Commercial Extension: 3-Lane Major Collector between OR-66 and new collector	\$1,968,000	\$53	\$53	\$99	\$99
6	New East-West Collector: 3-lane Minor Collector between Emerald and Commercial Collector	\$1,101,000	\$30	\$30	\$55	\$55
	SUBTOTAL	\$12,865,000	\$353	\$353	\$648	\$648
Intersection Improvements						
	Orindale / OR-140: Provide EB RT lane and NB LT lane	\$89,000	\$2	\$2	\$4	\$4
	Orindale / Balsam: Single-lane Roundabout	\$500,000	\$14	\$14	\$25	\$25
	OR-66 / Orindale Road: Signalize	\$336,000	\$9	\$9	\$17	\$17
	OR-66 / Orindale Road: Signal modifications, provide WB RT lane, second SB LT lane	\$248,000	\$7	\$7	\$13	\$13
	OR-66 / Emerald Street: Signalize, provide WB RT lane	\$399,000	\$11	\$11	\$20	\$20
	OR-66 / OR-140: Provide NB, EB, and WB RT; SB, EB, and WB second LT lanes; second SB receiving lane and taper; signal modification (70% of \$618,000)	\$433,000	\$12	\$12	\$22	\$22
	SUBTOTAL	\$2,005,000	\$55	\$55	\$101	\$101
Orindale/Balsam System Development Charge Transportation Study						
		\$81,500	\$2	\$2	\$4	\$4
Total						
	Total Cost	\$23,771,500	\$652		\$1,197	
	Total Cost (no OR-66 Link Improvements)	\$14,951,500		\$410		\$753

*Based on discussions with the City of Klamath Falls and ODOT, the cost of acquiring right-of-way was estimated using an estimate of \$15 per square foot. The cost is considered to be volatile; however, this was agreed to be a conservative order-of-magnitude estimate.

Traffic Impact Studies

Traffic studies for development proposals in the vicinity of the interchange primarily address residential and commercial development in the area. Developing the Orindale/Balsam Sub-Area Master Plan and transportation SDC (described in the previous section of this memorandum) involved traffic studies. The master plan area lies north and south of OR 66 west of OR 140 and US 97.

Similarly, the West Side Refinement Plan relied on traffic studies to select a preferred alternative and a corresponding list of recommended transportation improvements (discussed on pp. 29-31 of this memorandum). This area is located north of OR 66 between US 97 and OR 140.

One other traffic study for the interchange area is in the process of being completed. This study is for the Klamath Crossroads Commercial Development for land south of OR 66, west of US 97. The City expects that analysis to be complete by mid-February 2012.