



## MEMORANDUM

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**Date:** December 1, 2010 Project #: 11172.0  
**To:** Mark Willrett, City of Klamath Falls  
Stan Strickland, Klamath County  
**Cc:** Project Management Team, Technical Advisory Committee, Citizens Advisory Committee  
**From:** Susan Wright, PE, Marc Butorac, PE, Erin Ferguson, and Matt Kittelson  
**Project:** Klamath Falls Urban Area Transportation System Plan  
**Subject:** Technical Memorandum #2: Goals, Objectives and Evaluation Criteria

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This memorandum presents goals, objectives and a draft set of evaluation criteria for the Klamath Falls Urban Area Transportation System Plan (TSP) update. The goals and objectives will help guide the TSP update process. The evaluation criteria will be used to set policies and identify “preferred alternatives”, which will comprise the list of recommended projects and associated policy, code amendments, and funding actions in the TSP.

The goals below are based on evaluating the current Klamath Falls Urban Area TSP, the Transportation Growth Management (TGM) grant application submitted by the City of Klamath Falls, and on conversations with City, County, and ODOT staff. The specific objectives and evaluation criteria were developed based on the goals. The project objectives and evaluation criteria will serve as the means by which the TSP goals are realized. Following the goals, objectives, and evaluation criteria below is a discussion of the evaluation process to be used to evaluate policies and alternatives as well as an evaluation matrix to be used later to assess alternatives.

## Goals

### TRANSPORTATION SYSTEM PLAN GOALS

The existing Klamath Falls Urban Area TSP was adopted in 1998. Since that time, the City of Klamath Falls and surrounding areas have grown in size, reaching 2015 population estimates by 2010, and, as such, are out-growing the projects and improvements identified in the 1998 TSP. Several goals were established to help guide the development of the Klamath Falls Urban Area TSP update. These goals are:

1. Ensure a safe and efficient transportation system for all users.
2. Provide access to the transportation system for all users, including low income and minority populations.
3. Integrate adequate bicycle and pedestrian pathways, sidewalks, and bicycle lanes through the community, particularly to connect residential areas with schools and activity centers.
4. Improve the local circulation system to reduce the community's reliance on State Highways to travel to local destinations.
5. Build and maintain the transportation system to facilitate economic development in the region.
6. Improve system performance by balancing mobility and access, particularly along main travel routes.
7. Minimize the impacts of transportation system development on the natural and built environment.

An underlying goal of the TSP update process is to satisfy the requirements of the Transportation Planning Rule (TPR) (OAR 660-012) for a TSP update. This includes compliance with Title VI (civil rights) requirements and collaborating with plan area residents and transportation users through the City and County Planning Commissions, City Council, County Board of Commissioners, public open houses, key participant workshops, and the public website. It also includes ensuring compliance with the TSP content requirements of the TPR and consistency with the Oregon Transportation Plan (OTP), Oregon Highway Plan (OHP), adopted local, regional and state plans, and ODOT's TSP guidelines.

## Objectives and Evaluation Criteria

Based on the goals for the TSP update, objectives and evaluation criteria were developed for the purpose of further defining the intent of each goal and the metrics available to assess the progress towards each goal.

The goals and the corresponding objectives and evaluation criteria are below.

**Goal #1:** Ensure a safe and efficient transportation system for all users

### Objectives

- 1A. Coordinate with existing safe routes to school (SRTS) plans and identify potential engineering components for future SRTS plans for local schools.
- 1B. Strategically plan for safety and operational improvements for bicyclists and pedestrians.

- 1C. Incorporate the Highway Safety Manual (HSM) into development review and capital project evaluation processes.
- 1D. Reduce the number of fatal and serious crashes in the plan area by 50% in the next 20 years.
- 1E. Reduce the frequency of bicycle and pedestrian related crashes in the plan area by 50% in the next 20 years.
- 1F. Meet applicable City, County, or State operational performance measures.

### Criteria

- 1C1. Project includes pedestrian and bicycle improvements located within existing or potential SRTS plan areas.
- 1C2. Influence of proposed project on developing new SRTS plans and/or enhancing existing SRTS plans.
- 1C3. Number of conflict points between all modes of travel including crossing points for pedestrians and bicyclists along major arterials.
- 1C4. Miles of designated facilities (on-street and off-street) for bicyclists and pedestrians provided.
- 1C5. Intersection visibility and sight distances available to motorists, pedestrians, and bicyclists at intersections and key decision points.
- 1C6. Estimated number of fatal and serious injury crashes.
- 1C7. Estimated number of bicycle and pedestrian related crashes.
- 1C8. Percent of facilities meeting applicable operational performance measure.

**Goal #2:** Provide access to the transportation system for all users, including low income and minority populations

### Objectives

- 2A. Provide transportation mode choices to all users of the transportation system.
- 2B. Consider impacts to low income or minority populations when assessing the impacts of transportation infrastructure projects.

### Criteria

- 2C1. Impact of transportation projects on low income and minority populations
- 2C2. ADA Compliance.
- 2C3. Viability of non-auto travel.

2C4. Incorporation of safe, convenient, and comfortable multimodal facilities.

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

**Objectives**

- 3A. Provide safe and convenient connections between travel modes.
- 3B. Identify ways to improve street connectivity to provide additional travel routes for bicyclists, pedestrians, and autos.
- 3C. Prioritize projects that improve pedestrian and bicycle system connectivity in areas near schools.
- 3D. Provide signing and pavement markings to identify bicycle and pedestrian networks through the City and to help bicycle and pedestrians reach their destinations via the network.

**Criteria**

- 3C1. Potential impact on bicycle and pedestrian volumes.
- 3C2. Impact on connectivity of bicycle and pedestrian systems.
- 3C3. Average trip length for bicyclists from residential areas to activity centers via the bicycle/pedestrian networks.
- 3C4. Average trip length for pedestrians from residential areas to activity centers via the bicycle/pedestrian networks
- 3C5. Incorporation of wayfinding signs and pavement markings for pedestrians and bicyclists.
- 3C6. Number of uncontrolled crossing conflict points between vehicles and pedestrians/bicyclists on the bicyclist/pedestrian network.

**Goal #4:** Improve the local circulation system to reduce the community's reliance on State Highways to travel to local destinations.

**Objectives**

- 4A. Provide alternative routes to the state highways.
- 4B. Provide adequate capacity on alternative routes to state highways.
- 4C. Develop local circulation plan identifying valuable new local circulation routes and connections.

- 4D. Sign local routes for local destinations.

### Criteria

- 4C1. Average trip length.
- 4C2. Percent of capacity on regional facilities used for reaching local destinations.
- 4C3. Volume-to-capacity (V/C) ratios on parallel routes to highways.

**Goal #5:** Build and maintain the transportation system to facilitate economic development in the region.

### Objectives

- 5A. Improve the movement of goods and delivery of services throughout the region using a variety of travel modes.
- 5B. Ensure adequate capacity for future travel demand and multiple modes on collector and arterial streets and on the local highways to enable economic development in the community.
- 5C. Identify lower cost alternatives or provide funding mechanisms for transportation improvements necessary for development to occur.
- 5D. Program transportation improvements to facilitate the development of desired land uses.
- 5E. Provide adequate capacity at rail crossings to meet demand.
- 5F. Review transportation and land-use code and regulations and identify changes to attract and facilitate desired development.

### Criteria

- 5C1. Roadway geometry accommodates freight movement where it is needed.
- 5C2. Traffic operations performance on designated freight routes.
- 5C3. Potential increased attraction to desired businesses and developers.

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

## Objectives

- 6A. Develop an access management plan that reflects desired character and operations of roadways and is feasible in terms of adoption and enforcement.
- 6B. Incorporate the HSM analysis into corridor planning, operations and design activities to help improve safety.
- 6C. Incorporate multimodal level-of-service (MMLOS) analysis from the Highway Capacity Manual (HCM) 2010 to improve mobility for multiple modes.

## Criteria

- 6C1. Number of access points for motorists based on street classification and desired street character.
- 6C2. Estimated number of future crashes along the corridor.
- 6C3. Estimated MMLOS performance along the corridor.
- 6C4. Access provided for freight, bicyclists, and pedestrians.

**Goal #7:** Minimize the impacts of transportation system development on the natural and built environment.

## Objectives

- 7A. Reduce vehicle miles traveled (VMT) to reduce emissions.
- 7B. Increase the non-auto mode split to reduce emissions.
- 7C. Update City design standards to reduce water run-off and street maintenance costs.
- 7D. Use technology to improve efficiency and safety of the transportation system.
- 7E. Assess the ability of the transportation system to handle proposed changes to, or development of, adjacent land uses.
- 7F. Promote transportation demand management strategies (carpooling, flexible work hours, telecommuting, etc.) to reduce VMT on the transportation system.
- 7G. Base planned future improvements on available funding.

## Criteria

- 7C1. City-wide VMT and vehicle hours traveled (VHT).
- 7C2. Prevailing (i.e., 85<sup>th</sup> percentile) corridor travel speed on major thoroughfares compared to the desired operating speeds given roadway function, class, and desired character.

- 7C3. Travel mode split.
- 7C4. Effectiveness of City design standards to limit the environmental impact of the transportation system.
- 7C5. Vehicle occupancy along commuting corridors during the peak periods.
- 7C6. Installation of ITS devices.
- 7C7. Compatibility of transportation system and adjacent land use.
- 7C8. Compatibility of planned future improvements and available funding.

## Evaluation Process

A qualitative process using the criteria above will be used to evaluate the policies and alternatives developed through the TSP update. The rating method used to evaluate the alternatives is described below.

- Most Desirable: The concept addresses the criterion and/or makes substantial improvements in the criteria category. (+2)
- Moderately Desirable: The concept partially addresses the criterion and/or makes some improvements in the criteria category. (+1)
- No Effect: The criterion does not apply to the concept or the concept has no influence on the criteria. (0)
- Least Desirable: The concept does not support the intent of and/or negatively impacts the criteria category. (-1)

At this level of screening, the criteria will not be weighted; the ratings will be used to inform discussions about the benefits and tradeoffs of each alternative.

Table 1 presents the evaluation matrix that will be used to qualitatively evaluate the policies and alternatives developed through the TSP update.

**Table 1 Evaluation Matrix**

Criteria Reference Number	Evaluation Criteria	Evaluation Measures
<b>Goal 1: Ensure a safe and efficient transportation system for all users</b>		
1C1	Project includes pedestrian and bicycle improvements located within existing or potential SRTS plan areas.	Does the proposed project include pedestrian and bicycle improvements located within a SRTS plan area?  Measured as providing no, moderate or significant enhancements for student travel.
1C2	Influence of proposed project on developing new SRTS plans and/or enhancing existing SRTS plans.	To what extent does the alternative facilitate new SRTS plans being developed?  Measured by the potential for students to walk or ride a bike to school due to the proposed project.
1C3	Number of conflict points between all modes of travel including crossing points for pedestrians and bicyclists along major arterials.	To what extent does the alternative increase safety by reducing vehicle to vehicle, vehicle to pedestrian/bicycle, or pedestrian/bicycle to pedestrian/bicycle conflict points?  Measured as relative impact between alternatives in regards to the number of conflict between modes and speed differential.
1C4	Miles of designated facilities (on-street and off-street) for bicyclists and pedestrians provided.	To what extent does the alternative increase the number of miles of pedestrian and bicycle facilities?  Measured by potential expansions of the pedestrian and bicycle systems.
1C5	Intersection visibility and sight distances available to motorists, pedestrians, and bicyclists at intersections and key decision points.	To what extent does the alternative improve sight distance for all system users, allowing each adequate time to identify and react to conflicts?  Measured as relative impact between alternatives for providing adequate sight distance based on desired operating speeds.
1C6	Estimated number of fatal or serious injury crashes.	To what extent does the alternative reduce the estimated frequency of fatal and serious injury crashes?  Whenever possible, measured using procedures in the HSM for estimating and predicting crash frequency.
1C7	Estimated number of bicycle and pedestrian related crashes.	To what extent does the alternative reduce the estimated frequency of pedestrian and bicycle related crashes?  Whenever possible, measured using procedures in the HSM for estimating and predicting crash frequency.
1C8	Percent of facilities meeting applicable operational performance measure.	To what extent are operational performance measures met for the alternative?  Measured by the percent of facilities where operational performance measures are met.
<b>Goal 2: Provide access to the transportation system for all users, including low income and minority populations</b>		
2C1	Impact of transportation project on low income and minority populations.	To what extent does the alternative affect low income and minority populations?  Measured as relative ability of each alternative to spread the impacts of the transportation system evenly between all users.
2C2	ADA Compliance.	To what extent does the alternative provide opportunities to upgrade pedestrian facilities to ADA standards?  Measured by percent of pedestrian facilities meeting ADA standards.

2C3	Viability of non-auto travel.	To what degree are transportation facilities (transit service, sidewalks, bicycle lanes, separated mixed-use paths, parks) for non-auto travelers integrated into the alternative?  Measured relative to facilities and integration present in Baseline.
2C4	Incorporation of safe, convenient, and comfortable multimodal facilities.	To what degree does the alternative further multimodal transportation?  Measured by degree to which alternatives provides for robust facilities and network connectivity.
<b>Goal 3: Ensure integration of adequate bicycle and pedestrian pathways, sidewalks, and bicycle lanes through the community, particularly to connect residential areas with schools and activity centers.</b>		
3C1	Potential impact on bicycle and pedestrian volumes.	To what degree does the alternative increase pedestrian and bicyclist travel?  Measured by potential increase in pedestrian and bicyclist volume relative to Baseline.
3C2	Impact on connectivity of bicycle and pedestrian systems.	To what extent does the alternative improve the connectivity of the existing and proposed pedestrian and bicycle systems?  Measured by the extent to which each alternative increases connectivity of pedestrian and bicycle facilities.
3C3	Average trip length for bicyclists from residential areas to activity centers via the bicycle/pedestrian networks.	To what degree does the alternative provide opportunities for bicycle trips from residential areas to activity centers?  Measured by the potential increase in average bicycle trip length relative to Baseline.
3C4	Average trip length for pedestrians from residential areas to activity centers via the bicycle/pedestrian networks.	To what degree does the alternative provide opportunities for pedestrian trips from residential areas to activity centers?  Measured by the potential increase in average pedestrian trip length relative to Baseline.
3C5	Incorporation of wayfinding signs and pavement markings for pedestrian and bicyclists.	To what extent does the alternative provide for the increase in wayfinding signs for pedestrians and bicyclists?  Measured by the increase in wayfindings signs relative to Baseline.
3C6	Number of uncontrolled crossing conflict points between vehicles and pedestrians/bicyclists on the bicyclist/pedestrian network.	To what extent does the alternative reduce the number of uncontrolled crossing conflict points between vehicles, pedestrians, and bicycles?  Measured by the number of uncontrolled crossing conflict points relative to Baseline.
<b>Goal 4: Improve the local circulation system to reduce the community's reliance on State Highways to travel to local destinations.</b>		
4C1	Average trip length.	To what degree are land use types dense and well mixed such that average trip lengths for plan area residents are reduced?  Measured relative to Baseline average trip length.
4C2	Percent of capacity on regional facilities used for reaching local destinations.	To what extent does each alternative provide viable travel route options for local travelers that are not on regional facilities?  Measured by percent of capacity on regional facilities used for reaching local destinations.
4C3	Volume-to-capacity (V/C) ratios on parallel routes to highways.	To what extent do viable local road alternatives to state highways provide sufficient mobility?  Measured by relative number of facilities providing sufficient mobility compared to Baseline.

<b>Goal 5: Build and maintain the transportation system to facilitate economic development in the region</b>		
5C1	Roadway geometry accommodates freight movement where it is needed.	To what extent does the alternative accommodate the design vehicle for designated freight routes?  Measured by whether or not an alternative is able to accommodate the design vehicle.
5C2	Traffic operations performance on designated freight routes.	To what extent does the alternative provide acceptable performance along designated freight routes?  Measured by operational performance along freight routes.
5C3	Potential increased attraction to desired businesses and developers.	To what extent does the alternative eliminate roadblocks to development caused by the transportation system?  Measured by the critical transportation improvements funded relative to Baseline.
<b>Goal 6: Improve system performance by balancing mobility and access, particularly along main travel routes.</b>		
6C1	Number of access points for motorists based on street classification and desired street character.	To what degree does the alternative provide connectivity that enables the street to better reflect reasonable access spacing given its classification and desired operations?  Measured relative to existing access conditions.
6C2	Estimated number of future crashes along the corridor.	To what degree does the alternative reduce the occurrence of crashes along key roadway corridors?  Measured by the expected number of crashes along key corridors relative to Baseline.
6C3	Estimated MMLOS performance along the corridor.	To what extent does the alternative improve MMLOS performance along key corridors?  Measured by the MMLOS performance along key corridors relative to Baseline.
6C4	Access provided for freight, bicyclists, and pedestrians.	To what extent does the alternative provide access for freight, bicyclists, and pedestrians while balancing mobility?  Measured by the access and mobility balance provided for all modes of travel relative to Baseline.
<b>Goal 7: Minimize the impacts of transportation system development on the natural and built environment.</b>		
7C1	City-wide VMT and vehicle hours traveled.	To what extent does the alternative provide for alternative modes, enhanced connectivity, and improved land-use integration thereby reducing vehicle miles traveled?  Measured by potential VMT reduction relative to Baseline.
7C2	Prevailing (i.e., 85 <sup>th</sup> percentile) corridor travel speed on major thoroughfares compared to the desired operating speeds given roadway function, class, and desired character.	To what extent are prevailing corridor travel speeds consistent with desired travel speed?  Measured by the degree to which prevailing corridor travel speeds are consistent with desired travel speeds.
7C3	Travel mode split.	To what extent does the alternative reduce the reliance on auto trips?  Measured by area-wide travel mode split.
7C4	Effectiveness of City design standards to limit the environmental impact of the transportation system.	To what extent do City design standards encourage designs that reduce the environmental impact of the transportation system?  Measured relative to Baseline design standards.

7C5	Vehicle occupancy along commuting corridors during the peak periods.	To what extent does the alternative create opportunities for travelers to participate in rideshare programs and thereby increase vehicle occupancy?  Measured by potential vehicle occupancy during the peak periods.
7C6	Installation of ITS devices.	To what extent are ITS devices being utilized for system improvements?  Measured by the use of ITS devices relative to Baseline.
7C7	Compatibility of the transportation system and adjacent land use.	To what extent does the transportation system support the existing or desired land use mix in the area?  Measured by the design speed, roadway cross-section, and modal facilities available relative to adjacent land use.
7C8	Compatibility of planned future improvements and available funding.	To what extent do the planned improvements for the alternative match the expected available funding?  Measured by expected available funds for improvements compared to expected costs of planned improvements.

We look forward to discussing the draft goals, objectives and evaluation criteria presented above with you and other affected stakeholders in more detail. Members of the Project Management Team (PMT), Technical Advisory Committee (TAC), and Citizens Advisory Committee (CAC) will all have the opportunity to review, discuss, and provide comments on these draft goals, objectives and evaluation criteria. Based on these comments, we will revise the goals, objectives, and evaluation criteria to produce a final set that will be used as the Klamath Urban Area TSP update moves forward.