

# Appendix B

## Evaluation Criteria Technical Memorandum



# Evaluation Criteria

Updated

*September 18, 2013*



## INTRODUCTION

Evaluation Criteria serve as the basis for any Alternatives Analysis. Evaluation Criteria developed for the Davis-SLC project must illustrate the following elements:

- Relationship to main elements of the Purpose & Need;
- Link to Goals & Objectives;
- Aspects indicative of the specific study corridor;
- Comparison of different types of alternatives considered; and
- Enable measurable analysis.

Evaluation criteria outlined in this technical memorandum build upon the Needs Assessment and Purpose & Need documents prepared previously. An overview of project goals and objectives is presented, followed by a summary of the corridor evaluation process, including specific qualitative and quantitative considerations that will be used to assess corridor performance at each phase of the process.



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### Goals & Objectives

Project Goals & Objectives listed below were derived from Advisory Committee discussions which occurred in April 2013 as well as from an initial review of data and trends.



#### **Improve Regional Connectivity**

- Improve transit service/options between South Davis communities and Salt Lake City (e.g., improve current bus service, provide more equitable transit service)
- Better connections to regional transit services in the downtown Salt Lake core
- Connections to FrontRunner



#### **Match Transportation Solutions to Potential Markets**

- Identify viable transportation user market segments
- Serve markets not served by current transit services
- Enhance service to existing markets
- Fill in current gaps in transit service



#### **Increase Bike and Pedestrian Mode Share**

- Implement new bike and pedestrian amenities
- Improve linkages to existing and new transit facilities
- Create bike/pedestrian friendly environments



#### **Balance East West & North South Travel Needs**

- Solutions to serve regional and local travel patterns



## DAVIS-SLC COMMUNITY CONNECTOR STUDY



### **Revitalize Corridors**

- Improve land use opportunities
- Enhance the urban environment



### **Create Jobs**

- Attract and support business activity
- Increase tax base through development/redevelopment of urban centers



### **Improve Travel through the Study Area**

- Increase mobility options
- Integrate with existing transportation facilities



### **Identify Viable Transit Solutions**

- Garner significant stakeholder support
- Create ability to obtain funding



### **Support Wasatch Choice 2040 Growth Principles**

- Enable interconnection of transportation systems
- Balance jobs and housing
- Enhance regional economy
- Enhance regional collaboration
- Strengthen sense of community
- Protect and enhance the environment



## DAVIS-SLC COMMUNITY CONNECTOR STUDY

### Corridor Evaluation Process

Corridor evaluation involves these general phases:

- Candidate Corridors
- Initial Screening
- Detailed Screening

Phase	Potential Evaluation Criteria
<b>Candidate Corridors</b>	<ul style="list-style-type: none"><li>○ High-level look at the universe of alternatives, considering project goals and potential fatal flaws</li></ul>
<b>Initial Screening (up to six corridors)</b>	<ul style="list-style-type: none"><li>○ Regional Connectivity</li><li>○ Land Use Integration</li><li>○ Traffic Level of Service</li><li>○ Safety</li><li>○ Capital Cost Ranges</li><li>○ Modal Shift</li><li>○ Ridership</li><li>○ Public Perception</li><li>○ Travel Time</li><li>○ Major Environmental Features</li></ul>
<b>Detailed Alternatives (up to three corridors)</b>	<ul style="list-style-type: none"><li>○ Capital Cost</li><li>○ O&amp;M Cost</li><li>○ Life Cycle Cost</li><li>○ Reliability</li><li>○ Sustainability</li><li>○ Potential parcel impacts</li><li>○ Potential Natural Resource Impacts</li><li>○ Historic and Archeological Resources</li><li>○ Potential Community Impacts</li><li>○ 4f properties</li><li>○ Air quality impacts (based on VMT and VHT)</li><li>○ Energy Consumption</li><li>○ Visual &amp; Aesthetic</li><li>○ Sensitive noise and vibration receptors</li><li>○ Equity &amp; Environmental Justice</li><li>○ Economic Development Potential</li></ul>

Qualitative considerations and quantitative metrics used for initial and detailed screening are intended to provide a holistic understanding of the challenges and benefits of potential corridors. Some factors may be weighed more heavily based on the level of challenge or benefit relative to other alternatives. Factors that distinguish between alternatives in a significant way provide a basis for advancing, dropping or refining corridor alternatives at each stage of the evaluation.



## DAVIS-SLC COMMUNITY CONNECTOR STUDY

### Candidate Corridors

Candidate corridor segments are first discussed with stakeholder agencies, to confirm potential segments are feasible candidates for further study and possible transit investment.

The study area was divided into three subareas: South, Central, and North.

- The South area focuses on connections into downtown Salt Lake City activity centers and regional transit facilities.
- The Central area highlights neighborhood connectivity and travel through the center of the study area.
- The North area provides opportunities for connections from North Salt Lake to Bountiful, as well as to the Woods Cross FrontRunner station.

Candidate corridor segments were identified within each subarea, taking into consideration characteristics and economic and community development opportunities within each subarea. This approach allows the most flexibility, so that advancing a corridor segment in one part of the study area does not predestine the selection of an entire corridor at this early stage in the planning process.

East/West and North/South Corridors were identified separately for candidate corridor discussions, as shown on the attached maps. This was done to adequately address both directional needs, as stated in the Study's Purpose and Need. Information gathered during candidate corridor discussions will guide the project team as they combine East/West and North/South segments to form a short list of up to six Initial Screening alignments.

Candidate corridor considerations offer a high-level fatal flaw analysis for the project, and included the following factors:

- ✓ **Regional Connectivity** – Does the candidate corridor improve or facilitate transit service/options between South Davis communities and Salt Lake City (e.g., improve current bus service, provide more equitable transit service); better connections to regional transit services in the downtown Salt Lake core; connections to FrontRunner rail service.
- ✓ **Ability to Serve Markets** – Does the candidate corridor serve markets not served by current transit services? Does it enhance service to existing markets? Does this candidate corridor serve the ridership potential in the Study Area?
- ✓ **Transit System Gaps** – Does the candidate corridor fill in current gaps in transit service?
- ✓ **Bike and Pedestrian Accommodation** – Does the candidate corridor make possible the implementation of new bike and pedestrian amenities? Does it improve linkages to existing and new transit facilities? Is this route part of the UCATS Top 25 Projects?



## DAVIS-SLC COMMUNITY CONNECTOR STUDY

- ✓ **Revitalization** – Does the candidate corridor support local and regional land use goals or enhances the use of transit-supported land use, planning, and design strategies.
- ✓ **East West Travel Needs** – Does the candidate corridor primarily provide east/west connectivity in the South Davis area?
- ✓ **North South Travel Needs** – Does the candidate corridor primarily provide north/south connectivity in the South Davis area?

Data and information considered as candidate corridors were identified include:

- **Regional Connectivity:** WFRC 2040 Regional Transportation Plan Transit Project Type
- **Ability to Service Markets:** WFRC 2040 Forecasts for Population/Employment Density 2040; Employment Density 2040; Auto Ownership 2040
- **Transit System Gaps:** UTA Davis-SLC Connector Study Area with Transit Routes
- **Bike and Ped Accommodations:** UCATS website; WFRC maps at; North Salt Lake City Plan/Transportation Chapter; Salt Lake City Bicycle and Pedestrian Master Plan; Woods Cross General Plan/Transportation Element; Bountiful General Plan/2009 Transportation Master Plan.
- **Revitalization:** City Land Use Plans from jurisdictional interviews; Davis County Economic Development Plan; CDA and RDA districts

### Initial Screening

Based on candidate corridor discussions, up to six corridor alignments will be selected for initial screening. The following initial screening criteria were established after considering prior needs assessment findings and project goals and objectives.

Metric or Criteria	Significance	Source
<i>Quantitative Metrics</i>		
% of households and employment served by transit	Magnitude of jobs and employment served	2040 WFRC demographic data overlay with buffered alternatives
Connection to major activity centers	Provide service to a majority of desired nodes (existing and future)	20-minute accessibility to identified activity centers calculated using WFRC transit access script (number of jobs and households accessible within 20 minute in-vehicle and transfer time)
Connection to regional Transit Services	Link to/from expanding regional system	Connection opportunities at corridor limits based on UTA existing and future system maps
# of transit dependent populations served within the study area	Service to transit dependents weighed heavily in federal new/small starts processes	Assessment of GIS Census based data for 2007 and WFRC transit access script output
Ridership potential	System utilization is a major project justification	Transit load and linked trips from regional travel demand model runs



## DAVIS-SLC COMMUNITY CONNECTOR STUDY

Metric or Criteria	Significance	Source
<i>Qualitative Considerations</i>		
Potential access to transit for bicyclists and pedestrians	Need to serve alternative modes and feed transit system	Visual assessment of identified activity centers using GIS
Support of Wasatch Choices 2040 objectives	Principal element of regional planning within and outside the study area	Project team judgment of whether the corridor is consistent with high-level objectives
Revitalization opportunities	Key opportunity identified in the project goals. Can create jobs and offset costs.	Project team identification of potential revitalization opportunities
Markets served	Key opportunity identified in the project goals. Serving markets will enhance ridership, economic opportunities, and project justification.	Comparison of alternative to specific markets identified in the Purpose and Need document for the project
Potential expansion to area of influence	Identified as a consideration within the overall project and study area definition. The study area also serves as a major link to northern communities for which transit services should not be precluded	Team identification of expandability and capacity
Economic development opportunities	Ability to promote economic development	Based on project assessment
Capital Cost (order of magnitude)	Preliminary costs will be developed to compare options relative to each other	Based on similar project types and cost factors using information from the Regional Transportation Plan and UTA's network study
Environmental Fatal Flaws	Avoid major factors that are highly infeasible to mitigate	Utah Planning and Environmental Linkages (uPEL) tool, field review

Following review and discussion of initial screening findings with the project stakeholder advisory committee, up to three corridors will be developed and advanced to the detailed screening stage.

### Detailed Screening

The detailed screening stage offers an in-depth look at technical performance and the relative tradeoffs and advantages of up to three potential mode/alignment combinations. Proposed performance metrics and qualitative considerations for detailed screening are shown below.

Metric or Criteria	Significance	Source
<i>Quantitative Metrics</i>		
<b>Costs, Funding, Revenue</b>		
Capital cost	Major factor in project approval and implementation	Developed for this project based on line item estimates derived from definition of alternatives
O&M cost	Major factor in project approval and implementation	Developed for this project based on line item estimates derived from definition of alternatives
Life Cycle Cost	Major factor in project approval and implementation. Takes into account type of facilities and lifespan before replacement	Developed for this project based on line item estimates derived from definition of alternatives and using FTA factors for project elements



## DAVIS-SLC COMMUNITY CONNECTOR STUDY

Metric or Criteria	Significance	Source
Projected economic development return	Direct and indirect returns can justify some costs	Based on project-specific economic model
<i>Qualitative Considerations</i>		
Reasonable fiscal capacity of operating authority	Capacity of transit or other operator will be required eventually	Assessment of commitment and potential opportunities, including willingness of County for transit taxes
Comparison to federal funding trends	Federal funding may be a recommendation from this process	Based on a review of current/impending federal policy and programs
<b>Engineering Constraints</b>		
<i>Qualitative Considerations</i>		
Physical constraints	Physical barriers may lead to cost, design and implementation barriers	Based on existing conditions in the corridor
<b>Effectiveness</b>		
<i>Quantitative Considerations</i>		
Travel Time	Competitiveness with other modes	Results of travel demand forecast runs
Economic development opportunities	Ability to promote economic development	Outputs from economic model developed for project
Increased ridership within corridor	Major project justification (well utilized)	Number of linked trips served by corridor alternative from travel demand model output
Increased System Ridership	Increased use of regional transit system	Regional transit linked trips added
Reliability	Improvement in travel time predictability	Length of exclusive guide-way segments and/or traffic priority
<b>Environmental Factors</b>		
<i>Quantitative Metrics</i>		
Air quality impacts	Non-attainment is a key factor. Starting vehicles and the first few minutes of driving generate higher emissions because emissions-control equipment has not yet reached its optimal operating temperature. Transit ridership reduces private vehicle cold starts.	Vehicle cold starts avoided based on forecasted linked transit trips  (High-level emission estimates based on typical fossil fuel use parameters and systemwide VMT may also be examined)
<i>Qualitative Considerations</i>		
Potential 4f impacts	Possible federally restricted impact areas need to be identified to avoid NEPA surprises later	Developed from existing maps including uPEL
<b>Preferences</b>		
<i>Qualitative Considerations</i>		
Focus Group input	Market research based input to inform recommended strategies	Focus groups to be conducted as a project task
Public input	Input from public meeting may inform selection of publicly acceptable solutions	Public meeting to be conducted as a project task
Stakeholder input	Key to community acceptance of final recommendations	Stakeholder input solicited through project advisory and policy meetings



## DAVIS-SLC COMMUNITY CONNECTOR STUDY

Metric or Criteria	Significance	Source
Land Use		
<i>Qualitative Considerations</i>		
Land use enhancements/TOD	Improvements to land use to encourage community improvements and facilities are anticipated for the types of investments under consideration	Economic development analysis prepared for the project

Findings from Detailed Screening exercises will be shared and discussed with the project advisory and policy committees, and presented for public review and comment prior to selection of a locally preferred alternative.