

PROJECT SELECTION AND PHASING

The objectives of the project selection and phasing portion of the 2030 RTP development process were to refine the selected ‘transportation system concept’ to a list of defined projects and to place each selected project in one of four phases, or “time horizons”, within the RTP. The selected transportation system concept and how it was evaluated is discussed at length in Chapter 5 of this document. The potential projects were derived from this transportation system concept, from other transportation system concepts evaluated in Chapter 5 and from suggestions made by state and local jurisdictions. A potential project is considered ‘selected’ when its individual characteristics such as length, width, and general alignment are defined.

A project is considered “phased” when its construction start is placed into one of the three funded 2030 RTP time horizons, or it is placed into the unfunded list of projects. The three phases of the 2030 RTP are as follows: Phase 1 is between the years 2007 to 2015; Phase 2 is between the years 2016 and 2025; and Phase 3 is from 2026 to 2030. The criteria and methodology used by WFRC for project selection and phasing differed by mode. For this reason highway and transit criteria and methodology will be discussed separately. Non-motorized facilities were not refined, ranked, or phased because no constrained funding source is identified for these projects.

HIGHWAY PROJECT SELECTION AND PHASING

6.1

Potential highway projects were first evaluated utilizing the WFRC Congestion Management Process (CMP). The CMP is designed to determine if the need for an individual project can more simply be resolved or delayed by incorporating TSM and TDM projects into the 2030 RTP, rather than resorting to constructing additional lanes. Potential highway projects which demonstrated the need for additional lanes in the CMP were then refined and defined (selected) for the 2030 RTP based on a combination of the following.



- individual project measures
- CMP findings
- locally developed criteria
- UDOT developed project criteria

Locally developed and UDOT developed criteria were also used to rank and phase the refined and defined (selected) projects. Section 6.1 will discuss each of the four evaluations (Local, and UDOT) applied to the potential highway projects.

Individual Project Measures

The individual project measures considered in defining the highway project characteristics are as follows:

- projected traffic volume to highway capacity ratios
- the extent to which the project promotes the use of interconnected streets
- any known regionally significant relocations or community impacts
- any serious known hazmat or natural disaster exposures
- any other known critical natural or cultural impacts
- access to regionally significant priority growth areas

The individual measures primarily helped to refine highway project width, length, functional class, general alignment, and interchange location.

Congestion Management Process (CMP)

The CMP applied a level of service approach to defining potential highway projects as TDM / TSM or capacity projects based upon Regional Transportation Demand Model projections. However, it allowed exceptions to this approach based upon a projects potential role in completing the transportation network; the presence of high concentrations of truck traffic; or eliminating traffic 'bottlenecks'. The level of service approach identified highway needs based upon an LOS threshold of "E". The concentration of trucks is an important exception to the volume / capacity (v/c) approach to LOS because the size and operating characteristics of commercial trucks can produce congestion in locations where a v/c ratio would not otherwise show congestion. Bottleneck locations, places where highway lanes are abruptly dropped from highways, are important because they cause congestion and, potentially, safety issues not identified in a v/c ratio. The Congestion Management Process identified the projects in the following tables, Table 6-1 through Table 6-4, as additional capacity needed to meet future.

TABLE 6-1

CMP CAPACITY RECOMMENDATIONS BY PHASE AND AREA

| IMPROVEMENT | STREET | FROM | TO |
|--------------------------------------|----------------------------|-----------------|----------------------|
| Phase I (2015) – Ogden - Layton Area | | | |
| Widen | 1800 N | 2000 W | I-15 |
| Widen | 1900 W (SR-126) | 5600 S | Riverdale Rd. |
| Widen | 40th St. | Adams Ave. | Gramercy Ave. |
| New | 700 S (Layton) | Angel St. | I-15 |
| Widen / New | 700 S / 200 S (Clearfield) | 2000 W | Main / State |
| Widen | I-15 | US-89 | I-84 |
| Widen | Main St. (Kaysville) | I-15 / Fort Ln. | 200 N |
| Widen | Riverdale Rd. | SR-126 | Washington Blvd. |
| Widen | SR-108 (2000 W) | Davis Co. line | Syracuse Rd.(SR-108) |
| Widen | SR-108 (3500 W) | Midland Dr. | Davis Co. line |
| Widen | SR-108 (Midland Dr.) | Hinckley Dr. | 3500 W |
| Widen | SR-108 (Syracuse Rd) | 1000 W | 2000 W |
| Phase I (2015) - Salt Lake Area | | | |
| Widen | 10400 S / 10600 S | Redwood Rd. | Bangerter Hwy. |
| Widen | 10600 S | 1300 E | Highland Dr. |



| IMPROVEMENT | STREET | FROM | TO |
|---------------------------------------|----------------------------|------------------|--------------------|
| Widen | 11400 S | Redwood Rd. | State St. |
| Widen | 12600 S | Bangerter Hwy | 8000 W |
| Widen | 13400 S | MVC | Bangerter Hwy. |
| Widen | 3500 S | 2700 W | MVC |
| Widen | 4500 S | I-15 | State St. |
| Widen | 4700 S | 2700 W | 4000 W |
| Widen | 5600 W | 4400 S | 7000 S |
| Widen | 5600 W | I-80 | SR-201 |
| Widen | 700 E | Carnation Dr. | 12300 S |
| Widen | 7000 S | Bangerter Hwy. | State St. |
| Widen | 9000 S | SR-111 | I-15 |
| Widen | Foothill Dr. | 2300 E | I-80 |
| Widen | I-15 | 600 N, SLC | I-215 |
| Widen | I-80 | State St. | 1300 E |
| New | MVC | SR-201 | Utah Co. |
| Widen | Redwood Rd | 12600 S | Utah Co. line |
| Widen | SR-201 | 3200 W | MVC |
| Widen | State St. | 6200 S | 9000 S |
| Phase II (2025) – Ogden - Layton Area | | | |
| Widen | 1200 S | I-15 | North Legacy Pkwy. |
| Widen | 1800 N | 5000 W | 2000 W |
| Widen | 24th St. | I-15 | Wall Ave. |
| New | 700 S / 200 S (Clearfield) | Legacy Pkwy | 2000 W |
| Widen | 400 / 450 E | 2700 N | 3100 N |
| Widen | 5500 / 5600 S | 1900 W | 5900 W |
| New | 700 S (Layton) | Legacy Pkwy | Angel St |
| Widen | Harrison Blvd | 24th St. | US-89 |
| Widen | I-15 | I-215 | 500 S (Bountiful) |
| New | North Legacy Pkwy. | I-15 / US-89 | 5500 S (Weber Co.) |
| Widen | US-89 | I-84 | Harrison Blvd. |
| Phase II (2025) - Salt Lake Area | | | |
| Widen | 10600 S / 10400 S | I-15 | Redwood Rd. |
| Widen | 11400 S | MVC | Redwood Rd. |
| Widen | 11800 S | 8000 W / SR-111 | MVC |
| Widen | 12600 S / 12300 S | 700 E | 700 W |
| Widen | 3500 S | MVC | 8400 W |
| Widen | 4500 S | Redwood Rd. | I-15 |
| Widen | 5400 S | I-15 | MVC |
| Widen | 5600 W | New Bingham Hwy. | Old Bingham Hwy. |
| Widen | 6200 S | 5600 W | SR-111 |
| Widen | 7800 S | Bangerter Hwy. | SR-111 |
| Widen | 8400 W | SR-201 | 3500 S |
| Widen | 9400 S | Highland Dr. | 2300 E |
| Widen | Highland Dr | Sego Lily | I-15 |

| IMPROVEMENT | STREET | FROM | TO |
|---|----------------------|---------------------------|---------------------------|
| Widen | I-15 | 12300 S | Utah Co. line |
| Widen | SR-111 | 5400 S | 11800 S |
| Widen | Wasatch Blvd. | 7000 S | No. Little Cottonwood Rd. |
| Phase III (2030) – Ogden - Layton Area | | | |
| Widen | 4000 S | 1900 W (SR-126) | North Legacy Pkwy. |
| Widen | I-15 | 2700 N | Box Elder Co. line |
| Widen | I-15 | US-89 | 500 S (Bountiful) |
| Widen | Redwood Rd. | 500 S | 2600 S |
| Widen | Syracuse Rd.(SR-108) | I-15 | Main St. (Clearfield) |
| Widen | US-89 | I-15 | I-84 |
| Phase III (2030) - Salt Lake Area | | | |
| Widen | 13400 S | 6400 W | MVC |
| Widen | 2000 E | Fort Union Blvd. | 9400 S |
| Widen | 4500 S | I-215 (east) | 900 E |
| Widen | 5400 S | MVC | SR-111 |
| Widen | 900 E | Van Winkle Exp. | Fort Union Blvd. |
| Widen | I-80 | 1300 E | Parley's Canyon |
| New | MVC | I-80 | SR-201 |
| Widen | New Bingham Hwy. | 5600 W | SR-111 |
| Widen | Redwood Rd. | 9000 S | 12600 S |
| Widen | SR-201 | MVC | 8400 W |
| Widen | Wasatch Blvd. | No. Little Cottonwood Rd. | Little Cottonwood Rd. |

A complete network is an important congestion management consideration since the Wasatch Front highway network is primarily a grid system. Gaps in that grid can lead to unbalanced traffic flows as the area grows. Filling in those transportation gaps, or “completing the network,” is a valid strategy in the CMP even if modeled traffic volumes do not meet the LOS criteria for new facilities. The Congestion Management Process recommended “Complete The Network” projects are listed in Table 6-2.

TABLE 6-2**CMP RECOMMENDATIONS TO “COMPLETE THE NETWORK”**

| IMPROVEMENT | STREET | FROM | TO |
|----------------------------|-------------------|-------------------------|--------------------|
| Ogden - Layton Area | | | |
| New | 1100 W | Skyline Dr. | 4000 N |
| New | 1100 W | Pleasant View Dr. | US-89 |
| New | 200 N (Kaysville) | I-15 | North Legacy Pkwy. |
| New | 2700 W (Layton) | Hill Field Extension | North Legacy Pkwy. |
| Widen | 500 S (Bountiful) | I-15 | Redwood Rd. |
| New | 5600 S Connection | I-15 | South Weber Dr. |
| Widen | Adams Ave. | Washington Terr. Limits | US-89 |
| New | Antelope Dr. | 2500 E | US-89 |
| New | Bountiful Blvd. | Eaglewood | Beck St. |
| Widen | Fort Ln. | Main St. | Gordon Ave. |



| IMPROVEMENT | STREET | FROM | TO |
|-----------------------|----------------------|-------------------|------------------------|
| Widen | Gordon Ave. | Fairfield Rd. | US-89 |
| New | Hill Field Extension | 2200 W | 3200 W |
| New | Hinckley Dr. | 1900 W (SR-126) | Midland Dr. (SR-108) |
| New | Monroe Blvd. | 1300 N | 2700 N |
| New | North Legacy Pkwy. | 1200 S | I-15 |
| New | North Legacy Pkwy. | Davis Co. line | 1200 S |
| Widen | Parrish Ln. | I-15 | 1250 W |
| New | Skyline Dr. | Ogden City limits | Eastwood Blvd. |
| New | Skyline Dr. (North) | 2600 N | US-89 |
| New | Wall Ave. | 2700 N | US-89 |
| Salt Lake Area | | | |
| New | 10400 S / 10800 S | Bangerter Hwy. | SR-111 |
| New | 14400 S / 15000 S | 3600 W | 5600 W |
| New | 3100 S | 1400 W | 3500 S |
| New | 3200 W | California Ave. | 1820 S |
| New | 4800 W | SR-201 | Parkway Blvd. (2700 S) |
| New | 4800 W | 9000 S | 11800 S |
| New | 5600 W | 7000 S | New Bingham Hwy. |
| New | 5600 W | 11800 S | 14400 S |
| New | 6400 W | 12600 S | 13400 S |
| New | 8000 W | 11800 S | 13400 S |
| Widen | 900 W / Fine St. | 3300 S | 700 W |
| New | Bingham Jct. Blvd. | 7000 S | 8400 S |
| New | Gladiola | 500 S | California Ave. |
| New | Porter Rockwell Rd. | I-15 | MVC |

Other projects in the CMP have been identified on the basis of providing additional capacity in certain locations that experience a high concentration of truck traffic. Because of the size and operation characteristics of commercial trucks, traffic congestion can occur at much lower volumes when high percentages of trucks are involved. Table 6-3 identifies projects from the CMP deemed necessary to accommodate higher truck volumes, even though the actual vehicle volume may be lower on these facilities than the threshold necessary to justify additional capacity for traffic in general.

TABLE 6-3**CMP RECOMMENDATIONS FOR TRUCKS**

| IMPROVEMENT | STREET | FROM | TO |
|----------------------------|---------------------|------------------------|--------|
| Ogden - Layton Area | | | |
| Widen | Pioneer Rd. (400 N) | I-15 | 1200 W |
| Salt Lake Area | | | |
| Widen | 4800 W | California Ave. | SR-201 |
| Widen | 4800 W | Parkway Blvd. (2700 W) | 3500 S |
| Widen | California Ave. | I-215 | MVC |



Finally, in some instances, the travel demand model does not adequately reflect the effects of the bottlenecks or queuing because of lane drops. Table 6-4 lists the various highway projects that are recommended in the Congestion Management Process to mitigate congestion in these instances.

TABLE 6-4**CMP RECOMMENDATIONS FOR BOTTLENECKS OR QUEUING**

| IMPROVEMENT | STREET | FROM | TO |
|----------------|---------------|------------------|-----------|
| Salt Lake Area | | | |
| Widen | SR-201 | SR-202 | I-80 |
| Widen | 4100 S | MVC | 7200 W |
| Widen | 4700 S | 4000 W | 6400 W |
| Widen | 900 E / 700 E | Fort Union Blvd. | 9400 S |
| Widen | Highland Dr. | 9400 S | Sego Lily |

The Local Scoring Method

The local scoring method used data from cost per delay per day (need), traffic volumes, volume per capacity, and growth principle factors to provide a score. Each factor was worth 25 points for a total of 100 points. Two separate scores were calculated for the local scoring method. The first was based on the 2015 transportation need compared to the 2012 Transportation Improvement Program network. This score helped place projects into the first phase of the plan. The second score was based on the 2025 transportation need compared to the initially selected Phase I projects (2015). This helped place projects into the second and third phase of the plan. Descriptions of the data used to provide local scores are provided below.

2015 Cost per Delay per Day (Need)

2015 cost per need data was calculated by dividing the 2006 project cost per mile by the amount of delay (total vehicle hours per day) the project will generate. The delay was calculated using the transportation model which ran the 2015 employment and population projections on the 2012 transportation network. The sum of the link values for each project was used to calculate the delay for each project. Delay is calculated by taking the inverse of the PM peak speed from the model output and subtracting the inverse of the free flow speed, multiplied by the length of the project, multiplied by the PM peak period traffic volume.

2025 Cost per Delay per Day (Need)

2025 cost per need data used the same methodology as the 2015 cost per need, but used the 2025 employment and population projections on the Phase I (2015) transportation network. Scores for 2015 and 2025 cost per need were then assigned to each project based on the same data. 2015 and 2025 cost per need scores ranged between 1 and 25, where a score of 25 had the best cost per delay ratio. Appendix L provides the scoring for the cost per delay ratio.

2030 Average Annual Daily Traffic (AADT)

The 2030 AADT for each project was used for both the first and second local scoring method scores. The project volumes are from the transportation model using the 2030 employment and population projections run on the 2005 network. This 2030 model output is primarily adjusted by the difference between UDOT's reported 2005 volumes and the 2005 model output. These traffic volumes can be found on the WFRC website. Appendix L provides project scores based on the 2030 AADT. For example a project with a volume between



44,000 and 55,000 would receive a score of 12.5 points, while any project with over 99,000 AADT would receive a maximum score of 25.

2015 Traffic on 2012 Network (V/C)

The 2015 volume per capacity was projected using the 2015 employment and population projections and the 2012 TIP transportation network. The transportation model calculated the v/c and the highest value of the project section was used, while taking into account excessive centroid and intersection loading.

2025 Traffic on 2015 Network (V/C)

2025 v/c data used the same methodology as the 2015 v/c, but used the 2025 employment and population projections on the Phase 1 (2015) transportation network. Scores for the 2015 and 2025 v/c were based on the data provided above. A maximum score of 25 was given to any project with a v/c ratio over 1.2. Appendix L provides the project scores received based on their 2015 v/c and 2025 v/c.

Growth Principles

Growth principles from the 2040 Wasatch Choices report were used to help in the project scoring and phasing. Four growth principles related to roadways were used, these included, choke point alternative, the degree the highway project includes transit, the extent that the right-of-way (ROW) is preserved, and if the project improves access to activity centers, mixed-use centers, and infill areas. Each of these four growth principles were given a maximum of 25 points towards the growth principles score, but then divided by four to provide a maximum of 25 points for the local scoring method.

Choke Point Alternative

Choke points were identified throughout the WFRC region and can be found on Map 5-1 in Chapter 5, Evaluation of Alternatives. A score of 25 was given if the project was a choke point alternative, while a score of zero was given if it was not.

Degree Project Includes Transit

The degree in which the highway project included transit was defined by the mode of future transit planned with in the same corridor as the highway project. Scores ranged between 25 points for LRT or exclusive BRT to zero for no transit. Appendix L provides the scoring methodology for this growth principle.

Extent Right-Of-Way Preserved

The extent in which ROW has been preserved for a project is calculated by taking the difference between the build out 2030 ROW and the 2006 ROW. Scores for this factor ranged between 25 points for no ROW needed to zero points for all ROW needed. This needed ROW amount received a score and can be found in Appendix L.



Improves Access to Activity Centers, Mixed-Use Centers and Infill Areas

The growth principles that suggest that projects improve access to activity centers, mixed-use centers, and infill areas. Improved access to these land uses also helps region utilize existing facilities and lessen the need for new projects on the outskirts of the urbanized area. The WFRC staff identified 55 regionally significant activity centers, 14 mixed-use centers and five infill areas that are listed in Table 5-4 on Page 100. Infill areas include: the area around 2000 West in Clinton, Farmington Station in Farmington, UDOT property north of 6200 South, Bingham Junction area in Midvale, and the Sandy gravel pit area. A project could receive 15 points for improving access to an activity center, 5 points for improving access to a mix-used center, and / or 5 points for improving access to an infill area.

The local criteria evaluation helped to refine projects and resulted in one of the set of rankings which were used to place the refined projects into 2030 RTP phases. Projects were ranked by category. The categories were based upon project type, facility ownership, and county. Table 6-5 shows the top scoring highway projects by county and facility description. The top scoring highway projects identified after running the selected first phase projects with the 2025 demand using the local scoring method in each category are as follows.

TABLE 6-5

TOP SCORING HIGHWAY PROJECTS BY CATEGORY

| COUNTY | FACILITY DESCRIPTION |
|---|---|
| UDOT Ownership / Widening | |
| Weber County | Harrison Boulevard from 24 th Street to US-89 |
| Davis County | State Route-89 from I-15 in Farmington to I-84 |
| Salt Lake County | I-15 from 10600 South to the Utah County Line |
| UDOT Ownership / New Construction | |
| Weber County | North Legacy Parkway from Davis County Line to 1200 South |
| Davis County | North Legacy Parkway from I-15 / US-89 to Weber County Line |
| Salt Lake County | Mountain View Corridor from Porter Rockwell Road to Utah County |
| UDOT Interchanges | |
| Weber County | I-15 at Riverdale Road |
| Davis County | I-15 at Hill Field Road |
| Salt Lake County | I-15 at 14600 South |
| Local Ownership / Widening | |
| Weber County | 40 th Street from Adams Avenue to Gramercy Avenue |
| Davis County | 200 North Kaysville from I-15 to North Legacy Parkway |
| Salt Lake County | 7000 South from Redwood Road to Bangerter Highway |
| Local Ownership / New Construction | |
| Weber County | Wall Avenue from 2700 North to US-89 |
| Davis County | 700 South / 900 South (Layton) from I-15 to 2700 West (Layton) |
| Salt Lake County | 11400 South from 4800 West to 11800 South |

The UDOT Scoring Method

UDOT developed a scoring method to rank Phase I State owned projects against each other throughout the State. These rankings would then be used by the Transportation Commission as guidance for project funding. Average annual daily traffic (AADT), Truck AADT, v/c, functional classification, growth rate, and the safety index were used to score projects. The WFRC scored state and local projects with this method and used parallel facilities or modeled data of local roads if data was not available for the roadway. A total of 100 points was available for this methodology.

2005 AADT

The 2005 AADT comes primarily from UDOT's *Traffic on Utah Highways 2005*, and is the maximum volume within the project section. Where the UDOT data was not available, the WFRC modeled data was used. In the case of new construction projects, the maximum volume is from a parallel facility. In the case of interchange projects, the maximum volume from the cross street was used, and data was taken from approximately 1/2 mile from either side of the interchange. Appendix L provides the score given to the project 2005 AADT. A maximum of 20 points was available for this factor.

2005 Truck AADT

The 2005 Truck AADT comes primarily from UDOT's *Traffic on Utah Highways 2005*, where a percentage of truck volume is reported on a segment of roadway. This truck percentage was referenced to the total volume and then the maximum volume within the project section was used. Where UDOT data was not available, the WFRC modeled data was used. In the case of new construction projects, the maximum volume from a parallel facility was used. In the case of interchange projects, the maximum volume from the cross street was used, and data was taken from approximately 1/2 mile from either side of the interchange. Appendix L provides the score given to the project 2005 Truck AADT. A maximum of 10 points was available for this factor.

2005 Volume / Capacity

The 2005 v/c comes from the WFRC model and is usually the highest value for the project section, taking into account excessive centroid and intersection loading. In the case of new construction projects, the maximum volume is from a parallel facility. In the case of interchange projects, the maximum v/c from the cross street was used, and data was taken from approximately 1/2 mile from either side of the interchange. Appendix L provides the score given to the project 2005 v/c. A maximum of 25 points was available for this factor.

2030 Functional Classification

Highway functional classification came from the current WFRC Functional Classification Map. The Map is included in the RTP as Map 8.4. This map was developed with the UDOT's assistance. The functional classifications were assigned a number that correlates to the UDOT functional classification. Appendix L provides the score given to the project 2005 functional classification. A maximum of 5 points was available for this factor.

Growth Rate

The growth rate measure uses the maximum 2015 Annual Weekday Daily Traffic (AWDT) and the maximum 2005 AADT for a segment of highway. The 2015 traffic volumes are estimated by assuming that half of the growth anticipated by the WFRC 2030 forecasts on the website would occur by 2015. This methodology makes the assumption that traffic is more likely to grow slightly faster between now and 2015 than between 2015 and 2030. The base for the model projects is UDOT's 2005 traffic volumes information. A maximum of 15 points is available for this factor. The growth rate percentage is calculated by dividing the



2015 volume by the 2005 volume, the quotient is increased to the power of $1/10^{\text{th}}$, and then subtracted by one from this total.

2001-2003 Safety Index

To determine the safety index score for each segment, the crash rate score and the severity score must be calculated first. The crash rate (crashes per million vehicle miles traveled) is equal to the number of crashes multiplied by 1 million and divided by the AADT multiplied by 365 and multiplied by the length of the segment (crash rate = $(\text{crashes} \times 1,000,000) / (\text{AADT} \times 365 \times \text{length})$). All crash rates per segment are then sorted from lowest to highest and divided equally into three groups based on the crash rate, and given a score of one, two, or three. The severity score is based on the number of high severity crashes per segment, sorted and divided the same way crash scores are, and given a score between one and three. A high severity crash is a class 4 or 5, with a class 4 having broken bones and bleeding and a class 5 being a fatal accident. The severity score is weighted three times higher than the crash rate score when the safety index is calculated. The Safety Index is then calculated by adding the crash score to three times the severity score minus two. This calculation gives a score between two and ten, with segments with no crashes given a score of one. The Wasatch Front Urban Area Safety Index, Map 3-4, currently includes only state roads, due to inconsistency in accidents location reporting between state routes and local roads. Local roads will be included in the future. Appendix L provides the score given to the project's safety index.

The UDOT scoring method produced results that were ranked for each project category. Project categories were grouped based upon project type and by county. Only UDOT owned facilities were fully scored. The top scoring highway projects, determined after running the initial selected first phase projects with the 2025 demand, using the UDOT scoring method in each category, are shown in Table 6-6.

TABLE 6-6
FIRST PHASE TOP SCORING HIGHWAY PROJECTS BY CATEGORY

| COUNTY | FACILITY DESCRIPTION |
|--|---|
| UDOT Ownership / Widening | |
| Weber County | Harrison Boulevard from 24 th Street to US-89 |
| Davis County | I-15 from US-89 in Farmington to Weber County |
| Salt Lake County | I-80 from State Street to 1300 East |
| UDOT Ownership / New Construction | |
| Weber County | North Legacy Parkway from Davis County Line to 1200 South |
| Davis County | North Legacy Parkway from I-15 / US-89 to Weber County Line |
| Salt Lake County | Mountain View Corridor from SR-201 to 6200 South |
| UDOT Interchanges | |
| Weber County | I-15 at Riverdale Road |
| Davis County | I-15 at Hill Field Road |
| Salt Lake County | SR-201 at I-215 (with Auxiliary Lanes) |

Ultimately, the 2030 RTP did not rank projects but only placed them in phases. In establishing a phase, or “time horizon”, for highway projects the WFRC weighed the results of the CMP, the local criteria results, and the UDOT criteria results and other project specific factors to derive an understanding of the relative value of each project in each phase. Financial constraints were then applied to the projects in order to place the highway projects into the three funded phases or the unfunded phase. The other factors taken into account while phasing projects included: connectivity, local and regional support and input, and UDOT support and input. Each of these three scoring methods will be discussed independently. The full list of CMP, local criteria, and UDOT criteria evaluated highways is in Appendix M. Table 8-3 in Chapter 8 lists all highway projects by phase.

TRANSIT PROJECT SELECTION AND PHASING

6.2

In the project selection process, individual projects were evaluated to define individual characteristics such as length, general alignment, stations, and technology. Once a project was defined it was considered “selected”. Many of the key criteria in the Project Definition Process were evaluated quantitatively; however, other criteria were assessed subjectively or qualitatively. For



example: the length of a transit line. The extent of major investments on a proposed transit line was based on a mile-by-mile count of boardings per mile. Substantial project lengths with 500 or more boards per mile were deemed in need of major investments such as BRT II, Streetcar, or Light-rail. Project lengths not achieving 500 or more boards per mile but connecting a major activity center or major transit line are identified as moderate investments and typically include park and ride served bus, enhanced bus (BRT I), or express enhanced bus. A brief description of the transit types can be found in Chapter 8, Section 8.4.

Considerations influencing the general alignment of a transit line include identified transit needs, conflicts with general traffic, community impacts, exposures to potential natural disasters, impacts to natural areas, the locations of regionally significant growth areas and transit stations. Examples of these considerations are evident in several projects. For example the South Temple line was initially suggested by Salt Lake City to be on 3rd Avenue. The narrowness of 3rd Avenue, its residential nature, its proximity to a grade school, and its reliance upon on-street parking indicated a need to shift this project to a nearby wider street.

Another example of the considerations in the Project Definition Process is the 3900 South / 4700 South transit line. Several lines showed promise in this part of the valley. The Needs Assessment documented in Chapter Three, indicates a strong east and west travel pattern across the valley in this general area. The 3900 South TRAX Station was deemed the most accessible to an east-west transit project and the 3900 South I-15 overpass had the fewest conflicts with general traffic. Activity centers in this portion of the Salt Lake Valley were St. Marks Hospital, the new IHC hospital in Murray, Sorenson Research Park, the Redwood Road campus of Salt Lake Community College and

the Valley Fair Mall. Several model runs were assessed and a major investment corridor was identified between Highland Drive just east of St. Marks Hospital and the Redwood Road campus of SLCC. (This corridor crosses I-15 and the Sandy TRAX line at 3900 South.) Once the corridor was identified as a good candidate for BRT II service, the corridor was extended both east and west with enhanced bus type investments.

Criteria and considerations used to define the needed technology for a specific alignment includes annualized costs per 2030 passenger mile of less than two dollars and travel time within 20 minutes or less than 1.5 times the auto travel time to a regional Central Business District. Examples of corridors using these criteria are the 3900 South / 4700 South and the Mountain View Corridors. Anticipated boardings per mile on the 3900 South / 4700 South line meet the threshold of 500 or more boardings per mile between Salt Lake Community College Redwood Campus and Highland Drive and make the proposed line initially eligible for Light-rail, Streetcar, or BRT II level service. However, the cost per passenger mile in 2030, exceeded the two dollar range if built as a Light-rail or streetcar. It was then that the project was proposed for BRT II service.

The Mountain View Corridor transit service, although partially funded, is an example of using the travel time or the relative travel time of the transit service as a guide to the type of transit recommended by the 2030 RTP. Projected ridership showed the corridor as not meeting the 500 boards per mile standard required for a line investment larger than that of an enhanced bus or corridor preservation. However, transit service was still desirable. Because of the long distances between much of this corridor and downtown Salt Lake City, and the relatively high speeds available to cars in this corridor, the initial recommendation was for a freeway based enhanced bus with relatively large station spacing. This would meet the objective of reaching downtown within 20 minutes or in less than 1.5 times the auto travel time. However, due to the interest in potentially increasing land use densities in the corridor above those assumed by the travel demand model it was decided to also include corridor preservation on 5600 West as a placeholder until land use decisions are solidified.

The project phasing process evaluated the need for projects in light of the regional funding scenario to see if and when they could be built. Projects making it to this process were ranked exclusively upon quantitative and qualitative need scores as shown in Table 6-7.

TABLE 6-7**TRANSIT PROJECT NEEDS SCORES WITH WEIGHTING**

| POINTS | EVALUATION CRITERIA |
|-----------|--|
| 45 points | New Alignment boardings. |
| 15 points | Total employment within one-quarter mile of new alignment stations. |
| 5 points | Total households within one-quarter mile of new alignment stations. |
| 5 points | Total households with fewer than two cars within ¼ mile of new alignment stations. |
| 6 points | Regionally significant transit activity centers and mixed-use centers within one-half mile of the alignment. |
| 6 points | Does the project provide an alternative in a regional geographic choke point? |
| 6 points | Does the project run in a Constrained Critical Corridor? |
| 3 points | Has the project gone through any individual study? |
| 3 points | Is the project on the city plans? |
| 6 points | To what extent has the ROW been preserved? |



The cost per need score was then used to rank the projects. Those projects with the lowest cost per 'need point' were ranked the highest. Generally speaking, projects were assigned to a phase of the 2030 RTP or possibly left unfunded based upon ranking. The following section describes how the need scores were derived and assessed.

New alignment boardings

Nearly half (45%) of the potential 'need' score was based upon the number of passenger boardings a modeled project and its underlying bus service would receive on the proposed new line segment. For example, if the existing University Line were to be evaluated, it would receive a score for its projected boardings only on the segment of track east of Gallivan Plaza TRAX Station starting with the Library TRAX Station and ending with the University Medical Center TRAX Station. The boardings on Bus Route 14, because it also travels much of this same path, would also be allocated to the University TRAX Line. The assignment of points was based upon the highest ridership project segment receiving the full 45 points and all other project segments would get points proportional to their new segment boardings.

Employment, households, and households with fewer than two cars within one-quarter mile of new alignment stations

The demographic characteristics of the areas within one-quarter mile of new alignment stations are important to the potential ridership upon a given line. A one-quarter mile radius is considered the distance that most people consider an easy walk. Fifteen percent of the possible 'need' score was based upon the employment within ¼ mile of new alignment stations because it is at the end of the transit trip in which people are required to walk.

Six percent of the possible 'need' score was based upon the households within one-quarter mile of new alignment stations because it is at this end of the transit trip at which people frequently have the option of driving. Another six percent of the possible "need" score was based upon the households with fewer than two automobiles within one-quarter mile of new alignment stations. In all three of these measures the project with the best demographics was given the full number of points. All other project segments received points proportional to their new segment demographics within one-quarter mile.

Activity centers and mixed-use centers within one-half mile of the alignment

One of the Regional Growth Principles newly adopted by the Wasatch Front Regional Council is "to integrate local land-use with the regional transportation system". For this reason, projects that support regionally significant transit activity centers and mixed-use centers are more highly regarded.

Once again WFRRC staff used the 55 activity centers and 14 mixed use centers identified for and discussed in Chapter 5 (Evaluation of System Alternatives), Section 5.3. Projects received one point for each regionally significant activity or mixed-use center within one-half mile radius of a project station. The project with the most regionally significant activity or mixed-use center within one-half mile radius of a project station was given the full six points and all other project segments received points proportional to that highest score.



Does the project provide an alternative in a regional geographic choke point?

The geography of the region includes several narrow areas which are significant barriers to smooth transportation flow during the typical commute and can become virtually impenetrable barriers when affected by major accidents and severe weather. For this reason WFRC staff elected to identify projects that provide transportation alternatives in these areas as “more needed”.

WFRC staff identified the most significant geographical choke points primarily using local knowledge. All identified areas were recorded on a map, Map 5.1, for future use. The eight identified geographic choke points are as follows: Willard Bay area, Ogden Canyon, Weber Canyon, Farmington, Beck Street area, Lake Point, Parley's Canyon, and the Point of the Mountain.

Projects received one point for each regional geographic choke point they traversed (and thus added an alternative within). The project adding the most alternatives within these choke points was given the full six points. All other project segments received ‘need’ points proportional to that highest score.

Does the project run in a Constrained Critical Corridor?

WFRC staff defined constrained critical corridors as those areas, and sometimes specific streets, where significant congestion is projected unless improvements are made and where the streets would be very difficult to widen.

Severe congestion was identified by WFRC staff by modeling projected 2030 area demographics on the existing and committed transportation system as found in the 2012 Transportation Improvement Program. Road segments of two or more miles in length that have afternoon peak period traffic volume far in excess of their theoretical traffic capacity (volume to capacity ratios greater than 1.2) were identified. Each of the roads projected to have severe congestion was evaluated via aerial and field studies for their capacity to be reasonably expanded. Areas with regionally significant roads with two or more miles of severe congestion without the reasonable prospect of widening were identified as Constrained Critical Corridors. Projects in one or more Constrained Critical Corridors received the full six points.

Has the project gone through any individual study? Is it on the city plans? Has its' right-of-way been preserved?

A project that has full community support is more likely to be successful than a project that is being ignored or even opposed by the community. Projects that have gone through the planning process have more details identified allowing the jurisdictions to properly plan for the project.

A project is likely to be less expensive when the ROW is being preserved, developers are active participants in accommodating the project, and local governments and UDOT are considering the ultimate needs for transit when infrastructure is constructed in the corridor. Proper placement of utilities alone can save as much as 20 percent of the costs of light-rail in a corridor.

A project that has full community support is more likely to have more riders because local government officials are allowing higher residential densities next to future stations, properly orienting the openings to businesses and apartment complexes, and insuring that sidewalks and bike lanes are serving the project. The project is



also less likely to have opposition the longer it has been on local master plans. As new property owners come into the area, they will know that a project is being planned and sensitive land uses can be steered away from properties adjacent to the project.

Projects received one and one-half “need” points if they had undergone a planning study and three “need” points if they have undergone a study that met the requirements for the National Environmental Policy Act. Additionally, the projects receive three points if they are on a local government master plan and there is an additional three points if their ROW have been preserved.

Need Scores And Findings

The “need” score for each of the assessed projects is found in Appendix L. With the exception of the “core projects”, proposed projects are sorted by ranking within each county or county sub-heading. Some projects were merged after the need scores were developed. The combined project need score would be the product of the per mile average of both project segments. Occasionally, a lower performing line segment was placed with the higher ranking segment of a line.



The projects were ranked by dividing the annualized project capital and operating cost by the 2025 project need score. The smaller the number the better it ranked. Capital costs were annualized, based upon UTA and Federal Transit Administration guidelines. With the exception of light-rail and commuter rail, the annual operating costs were derived from the Ogden / Weber State Transit Corridor Study. Light-rail and commuter rail operating costs were received from UTA.

As is the case with the highway projects, the 2030 RTP did not ultimately rank transit projects but only placed them in phases or construction “time frames”. In establishing a phase or “time horizon” for transit projects, WFRC generally followed project ranking simply applying the financial constraints to the construction time frame of the project and assuming each project will be constructed as soon as revenues are available. However, the WFRC also took into account connectivity, local and regional support and input, and UTA support and input. Chapter 8, Recommended Improvements, lists all transit projects by phase.

