

Appendix A – Alternatives Evaluation Matrix

The project purpose and need set forth the basis for the evaluation process. The alternatives were developed to meet the project purpose and need, satisfy design criteria and guidelines, and minimizing environmental impacts, while accounting for agency and public input.

Engineering factors that were considered in scoring the criteria for the alternatives study process include:

- Route Length
- Roadway Geometrics
- System Interchange Configuration and Number of Levels
- Drainage Implementation
- Number of Structures Required
- Number of Service Interchanges and Their Locations
- Out-of-Direction Travel
- HOV Connections
- Connectivity to Local Street Network
- Constructability
- Construction Cost
- Right-of-Way
- Potential Business and Residential Displacements
- Utility Crossings and Conflicts

Environmental factors that were considered in scoring the criteria for the alternatives study process include:

- Land Use Impacts
- Consistency with Local Land Use Plan
- Threatened, Endangered, or Sensitive Species
- Community Cohesion
- Visual Impacts
- Archaeological Resources
- Built Environment (Historic Buildings and Structures)
- Prime and Unique Farmland
- Water Quality
- Noise Impacts
- Hazardous Materials

A matrix comparing major differentiating criteria of the six alternatives developed in the L/DCR was presented to the study team (table below) scoring potential severity of impacts or favorability with 1 being a low impact or more favorable and 5 being a high impact or less

favorable based on preliminary engineering and environmental assessment. Alternative 2C South (2CS) emerged as the Preferred Alternative in the L/DCR as it is consistent with local and regional planning, maintains local access along Cotton Lane south of Elwood Street, minimizes impacts to 4(f) resources and minimizes conflicts with the Buckeye Canal system and APS Palo Verde reclaimed water line. Discussion of how the ratings were developed follow the table below.

Criteria	2CN	2CS	3N	3S	5N	5S
Air Quality/Noise Impacts	3	3	3	3	4	4
Visual Impacts	4	3	5	5	4	4
Archaeological Resource Impacts	3	1	5	3	5	1
Section 4(f) Impacts	3	1	5	5	5	3
Local Access	2	2	4	4	4	4
Traffic Operations	3	3	3	3	2	2
Construction Cost*	3	3	4	3	4	4
Right of Way	3	4	3	2	3	4
Utilities – Canal/APS reclaimed water line	4	2	4	3	4	2
Utilities - Power Lines	3	4	3	5	3	4
Public Input	3	3	3	3	3	3
Planning Consistency	1	1	5	5	2	2
TOTALS	35	30	47	44	43	37

1 = Low Impact or More Favorable, 5 = High Impact or Less Favorable

* Major utility costs are addressed under the Utilities criterion

Source: Location and Design Concept Report, State Route (SR) 303L, SR30 to I-10, Arizona Department of Transportation, 2018.

Air Quality/Noise Impacts

Air quality and noise impacts are a function of traffic volumes. Air quality is also affected by congestion. For Alternatives 2C and 3, traffic volumes were very similar while Alternative 5 volumes were over 10% higher. Congestion at intersections was also greater for alternative 5. Based upon the increased traffic volumes and congestion, Alternative 5 scored higher for Air Quality and Noise impacts.

Visual Impacts

Visual impacts are evaluated based upon the built environment and setting integrity. The area between Van Buren Street and MC85 has experienced rapid growth over the past 15 years. The elevated-to-at-grade SR303L is considered to have greater impacts to residential land uses than to commercial and industrial uses. All three alternatives were scored equally through this segment. South of MC85 the Study Area is mainly agricultural with farmsteads. Section 4(f) resources in this area are adversely affected by the three alternatives that align SR30 farther north, i.e. the Buckeye Canal Farmstead Historic District and the Buckeye Canal Upper Zanjero House. Alternatives 3S and 5S move the SR30 alignment further away from the Upper Zanjero House but are still close to the Buckeye Canal Farmstead. Alternative 3S and 3N places their 5-level stacked interchanges very close to both of these resources increasing its visual impacts. Alternative 2CS is farthest away from these sensitive resources.

Archaeological Resource Impacts

Detailed archaeological analysis was undertaken for all six Build Alternatives to determine their likelihood to adversely affect archaeological resources. Known archaeological sites were weighted in the scoring based on their eligibility for listing on the National Register of Historic Places, as well as their relative significance; i.e., impacts to a habitation site were ranked higher (more severe) than impacts to an artifact scatter. Alternative 2CS and 5S were determined to have the least impacts to the resources while Alternative 3N and 5N had the most.

Section 4(f) Impacts

The Build Alternatives' effects on historic resources were ranked, not only physical impacts but other, lasting consequences of building near a protected resource; e.g., visual and audio intrusion on the property.

Local Access

Maintaining local access and establishing access control is an important factor in the L/DCR analysis. Local access between Van Buren Street to Lower Buckeye Road is the same for Alternatives 2C, 3 and 5. South of Lower Buckeye Road Alternatives 3 and 5 continue parallel to existing Cotton Lane after the frontage roads to and from the north merge back to existing Cotton Lane. This creates an access issue to properties on the west side of Cotton Lane. The ramps and/or freeway would need to remain elevated to provide access crossing via bridge or large box structure. For this reason, Alternative 2C was scored more favorable than Alternatives 3 and 5.

Traffic Operations

Traffic volumes and operations for Alternatives 2C and 3 were very similar while Alternative 5 volumes were over 10% higher. Based upon Alternative 5's ability to attract higher volumes while maintaining adequate levels of service, Alternative 5 was scored as more favorable than Alternatives 2C and 3.

Construction Costs

In analyzing construction costs, the relocations/protections of major utilities were not included, instead they were identified as their own criterion. Construction costs include earthwork, paving, drainage features, bridges/structures, signing, marking, signals landscaping, walls and other roadway appurtenances. The differences in construction costs for all alternatives were in a range of 5%. Alternatives 3N, 5N and 5S costs were at the higher range due to a greater overall square footage of bridge structures.

Right of Way

Differences in right of way costs for all alternatives were in a range of 36%. Alternative 3N was the lowest cost while Alternative 2CS and 5S were the highest. All estimates included the cost for acquiring portions of property owned by the City of Goodyear south of Lower Buckeye Road.

Canal/APS Reclaimed Water Line

All canal crossings are to be grade separated to allow for maintenance; however, APS requires the reclaimed water line that lies within the canal right of way to be encased when within the proposed freeway right of way. The ratings are based on the length of encasement necessary. Work to encase the pipe is limited to the time when the water line is shut down for other planned, yearly maintenance periods. Generally only 500-feet of encasement can be accomplished in a shutdown. The southern alignment alternatives have approximately 1400 feet of potential impacts, one half to one quarter the potential impact as the northern alternatives.

SRP/APS/WAPA Power Lines

This criterion evaluates the potential impacts to major transmission lines, 230kV and above. As the impact to the APS 230KV line crossing Cotton Lane between Lower Buckeye Road and Elwood Street is the same for all alternatives it is excluded from the ranking evaluation. The evaluation considers the length of required adjustment, number of poles/towers impacted and need for new powerline easement. The northern alignment alternatives have limited impact to the powerlines except for the crossing near Perryville Road and any southern extension of the SR303 south of SR30. The southern alignment alternatives impact the power lines at SR30 and cotton Lane and SR303/SR30 interchange area. impacting approximately two to four sets of additional poles/towers. Alternative 3S requires more vertical and horizontal adjustments..

Public Input

Public meetings were held to gather input from the public and other interested parties. Public input and questions for this project have centered around noise walls, elevation of the proposed facility, timing for construction, and which direction the SR303L will go south of Lower Buckeye Road. Residents from the area southwest of Lower Buckeye Road and Cotton Lane preferred Alternative 3 while residents to the south preferred alternative 2C or 5. Agency input was also received from local municipalities, the county, as well as state agencies. Their input and questions included project timing, impacts to utilities and developments, access considerations, and which direction SR303L will go south of Lower Buckeye Road. All agencies have expressed a preference for Alternative 2C.

Planning Consistency

Several long-range planning efforts have been completed that include the SR303L and SR30. Maricopa Association of Governments (MAG) completed two studies, *Interstate 10 – Hassayampa Valley Roadway Framework Study* and *Interstate 8 and Interstate 10 Hidden Valley Transportation Framework Study*. Also, the City of Goodyear's planning documents identify

corridors for the SR303L and SR30. Alternative 2C is consistent with these studies. Alternative 5 is mostly consistent except for the directional ramps that will connect the north leg of SR303L to the east leg of SR30 which continue down Cotton Lane to the SR30. Alternative 3 is not consistent with local or regional planning.