

CHAPTER THREE ALTERNATIVES

An EA is required to consider a range of alternatives to the Proposed Action to aid in the evaluation of environmental impacts. The range of alternatives must always include both the no action alternative, which represents conditions in the future should the Proposed Action not take place and the Proposed Action, the airport sponsor's solution to the problem that prompted the need for an environmental review.

The CEQ regulations implementing NEPA state that alternatives are "the heart of the environmental document."¹ While several alternatives to a proposed action may be considered in initial planning efforts, only the alternatives that provide "reasonable" solutions to the problem stated in the purpose and need statement need to be selected for rigorous and objective analysis in NEPA documents.² According to FAA guidance, it is acceptable to limit the range of alternatives to just the no action alternative and the proposed action alternative when there are no unresolved conflicts concerning alternative uses of available resources. This section describes the alternatives that were considered and screened, and provides the evaluation of the no action and Proposed Action alternatives for the Airport.

3.1 ALTERNATIVE SCREENING AND SELECTION PROCESS

Prior to the initiation of this EA, the SLCD, in conjunction with project stakeholders (including the FAA, UTA, UDOT, and the Transportation Security Administration (TSA)), conducted an independent analysis specifically to screen and select alternatives for the preferred alignment of the on-Airport component of the Airport TRAX Line. The study considered a range of possible alignments and included an evaluation of each alternative relative to a set of criteria that defined reasonable alternative alignments for the on-Airport component.³ The reasonable preferred alignment alternatives selected as a result of this analysis are the subject of the environmental review in this EA.

¹ 40 CFR Part 1502.14 (July 1, 2008).

² CEQ, 48 Fed. Reg. 342630, *Guidance Regarding NEPA Regulations* (July 28, 1983).

³ The criteria defining what constitutes a reasonable, prudent, feasible, and practicable alternative for the on-Airport component of the Airport TRAX Line are described in Section 3.1.4, *Alignment Evaluation Criteria Defining Reasonable Alternatives*.

3.1.1 Alignment Alternatives Selection Report - 2008

The *Salt Lake City International Airport LRT Alignment Selection Initial Alternatives Analysis Report* (SLCDA 2008 LRT Alignment Draft Report)⁴ was completed in June 2008. The report detailed the screening and selection process that identified reasonable alternatives for the on-Airport component of the Airport TRAX Line that is the subject of environmental review in this EA. The preferred alignment alternatives selected as a result of the 2008 report had to meet the requirements for prudence, feasibility, and practicability from the technical, economical, and common sense perspective. The evaluation process was conducted in the context of a series of meetings of the Salt Lake City Airport Light Rail Technical Working Group (TWG). Members of the TWG included:

- SLCDA;
- FAA;
- Delta Airlines, representing all airlines at the Airport;
- TSA;
- UDOT;
- UTA, including consultants to UTA for transit and environmental analysis, and issues relevant to construction management; and
- City of Salt Lake Departments (other than the SLCDA), including consultants to SLCDA specializing in transit and automated people movers (APM).

A Policy Committee was established for the study to provide overall policy guidance to the TWG. The Policy Committee consisted of representatives of:

- Salt Lake City Mayor's office;
- Salt Lake City Council;
- SLCDA; and
- UTA.

3.1.2 Purpose of the Alignment Report

The Policy Committee reviewed the progress and recommendations of the TWG and directed the TWG to develop and analyze alternatives for the alignment of the on-Airport component of the Airport TRAX Line. The role and responsibility of the TWG was to meet the purpose of the alignment study, which was to:

- Examine the feasibility of multiple preliminary alignment options;
- Determine if there are fatal flaws with specific alignment options or families of alignment options;
- Identify stakeholder priorities; and

⁴ SLCDA, 2008 LRT Alignment Draft Report, Section 1.0 *Introduction* and Section 1.6 *Alignment Evaluation* (June 2008).

- Identify issues that will guide the subsequent, more detailed planning process.

3.1.3 Stakeholder Priorities

The study's stakeholders, SLCDCA, FAA, UTA, and TSA, were an integral part of the evaluation process to screen and select the preferred alignment alternatives. The stakeholders would be expected to ultimately approve, fund, use, and benefit from the final project. The stakeholders emphasized their own priorities, including:

- SLCDCA: Minimize interference with airport operations and other ground transit modes.
- FAA: Maintain the safety of aircraft and areas of public assembly in the vicinity of the airport, especially with respect to the runway protection zones (RPZs) and the One Engine Inoperative (OEI) surfaces.
- UTA: Maximize ridership and operational flexibility with convenient, visible station location, and minimize capital and operations and maintenance (O&M) costs.
- Salt Lake City: Allow for future westward rail connection to the Mountain View Corridor.⁵
- TSA: Accommodate possible additional security measures in high-threat alert periods as well as locate the rail station as far from aircraft as reasonably possible.

3.1.4 Alignment Evaluation Criteria Defining Reasonable Alternatives

Various alignments for the on-Airport component of the Airport TRAX Line were investigated in the SLCDCA 2008 LRT Alignment Draft Report. The TWG reviewed 24 initial alignments for the on-Airport component of the Airport TRAX Line and each one was evaluated relative to how well the alignment succeeded in achieving criteria goals and serving the transportation needs of the Airport.⁶ The key criteria for selecting developed by TWG are:

1. Maximize ridership and passenger convenience – As passengers perceive greater convenience, the potential ridership will be higher. Rail stations should be located close to or adjacent to both the existing and future terminals to minimize walking distances. Transfers should be avoided.
2. Maximize future expansion flexibility – The initial station and tracks should accommodate additional construction to the future terminal, if both cannot be served at a single location, and eventual Airport expansion to the west.

⁵ The Mountain View Corridor is a highway and transit corridor in west Salt Lake County and northwest Utah County. The Mountain View Corridor's balanced transportation solution includes roadways, transit, and a trail system.

⁶ SLCDCA, 2008 LRT Alignment Draft Report, Section 1.2 *Alignment Evaluation Criteria* (June 2008).

3. Minimize costs – Initial capital, future capital, and O&M costs should be minimized. Capital costs are sensitive to design decisions such as an elevated, tunnel, or at-grade alignment. O&M costs are influenced by lighting, pumps, and fans in underground alignments, longer alignments, and multiple mode systems.
4. Minimize impacts to Airport operations and environmental resources – Track and rail station construction should not interfere with airport operations. Alignments should minimize utility relocations. Negative impacts to sources of airport revenue, such as rental car facilities or parking spaces, should be limited, if not avoided. As most passengers at the Airport will still arrive via bus or car, proposed light-rail alignments should be designed to minimize interference with the flow of vehicle traffic. Alignments through wetlands and the golf course could introduce significant environmental considerations and thus should be avoided or mitigated.
5. Maximize safety and security – FAA requirements, including height limits near runways and limits on the types of occupancies in runway protection zones (RPZs) must be considered. TSA security measures, including the inspection of trains and location of stations and track near aircraft and the terminal buildings, must also be considered. The light rail must not endanger vehicles or pedestrians at the at-grade crossings or along at-grade tracks.
6. Facilitate light-rail operations – Rail station and track design must maximize operational flexibility. A high-security incident or emergency at the airport should not substantially affect other TRAX system operations. The on-Airport alignment should enhance, if possible, an extension to the west, but in any case, not preclude it.

3.1.5 Alternatives Not Selected for Further Analysis

For each of the 24 initial on-Airport alignments, the TWG made an overall determination whether to recommend an alternative, or family of alternatives for further analysis, or eliminate the alternative from consideration. The 24 initial alignments were grouped into four families of alternatives by the TWG and are shown in **Exhibit 3-1, General Plan of Alignment Families**.

The four families of alignments are labeled in Exhibit 3-1 as A, B, C, and D. Families A, B, and C were removed from further consideration because the alternatives did not sufficiently meet all the criteria for reasonable alternatives given in Section 3.1.4, *Alignment Evaluation Criteria Defining Reasonable Alternatives*.

- Alignments in the “A” family extend from the Surplus Canal, northwest, then north, then east around the large passenger parking lot to a proposed station platform near the planned future terminal building and future parking garage. These alternatives would have walkways connecting the station and the west-side terminals. Further, this alignment may require the train to enter the Airport on the east side and depart on the west side, requiring twice the length of track. These alignments would not meet the first criteria to maximize passenger convenience or the third criteria to minimize cost.

**Insert Exhibit 3-1
General Plan of Alignment Families**

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Further, the alignments would negatively impact rental car operations disrupting a revenue source, and the alignments would not serve the existing terminals. Therefore, alignments of the type in the "A" family were eliminated from further analysis.

- Alignments of the type in the "B" family extend from the Surplus Canal north to a proposed station within the future parking garage. The tracks would either have to be elevated or tunneled underground so that parking positions would not be lost in the large economy passenger parking area. The TWG considered these alternatives to be prohibitively expensive. The proposed station is positioned between the existing and planned future terminal not effectively or conveniently serving either terminal position. The alternative also precludes a future rail extension to the west. Further, these alignments would not meet the first criteria to maximize passenger convenience or the third criteria to minimize cost. Therefore, alignments of the type in the "B" family were eliminated from further analysis.
- Alignments of the type in the "C" family extend from the Surplus Canal, northeast, then north to a proposed station east of the future parking garage and situated between the existing terminal and the future terminal. The TWG considered these alternatives as inaccessible and inconvenient for passengers. Further, these alignments would not serve the existing terminals in the short-term and would require walkways to the future terminals that would not minimize costs. Therefore, alignments of the type in the "C" family were eliminated from further analysis.
- Some of the alternatives in the A, B, and C families of alternatives would require passengers to transfer between modes, meaning transferring from an APM or a shuttle, to the LRT. This inconvenience would decrease ridership. Therefore, alternatives that require transfer between modes were eliminated from further analysis.

The TWG concluded that the preferred alignment would be in the "D" family of alternatives. These alignments would place an interim station platform for access to the existing Terminal 1, and would eventually allow for an extension to the new future station platform located in or adjacent to the planned new terminal, or the new parking garage. These alignments would allow access to the future terminal areas as envisioned in the SLCDA 2006 ALP Update.

The TWG resolved that the best possible alignment would be one mostly at-grade along North Terminal Drive and crossing the intersection of 3700 West and 380 North, and one that would serve an interim station platform at Terminal 1, and could be reconfigured in the future to serve the planned new terminal. Based on subsequent rounds of TWG meetings and review by all stakeholders, including the FAA, a final set of alignments were developed. Refer to Exhibit 3-1, which shows the future options of connecting the LRT to the planned future terminal or the planned future parking garage.

3.2 RANGE OF ALTERNATIVES

The SLCDA 2008 LRT Alignment Draft Report identified two alternatives for further analysis of environmental consequences of the on-Airport component of the Airport TRAX Line, the no action alternative and the Proposed Action alternative.

3.2.1 Alternative 1: No Action

As required under NEPA, a no action alternative must be assessed.⁷ Under the no action alternative, the transportation system at the Airport would remain as it is today, with no improvements. The no action alternative represents the condition of the West-East Corridor in 2015 if no further major investment were made to improve or complete the W-E TRAX.

3.2.2 Alternative 2: Proposed Action

The TWG and the Policy Committee, responsible for the recommendations provided in the SLCDA 2008 LRT Alignment Draft Report, reached a consensus that recommended a preferred alignment to the stakeholders. The alignment included an interim station platform located just south of Terminal 1 to serve existing terminals. The alignment allows for an eventual extension and service to the planned new terminal. Therefore, the final station platform will be located either in the planned new parking garage, the existing ground transportation center (GTC), or the road area between them. Capital costs would be minimized as the Proposed Action does not include tunneling or extensive sections of elevated track. Further, this design does not result in high O&M costs associated with special lighting, fans, and pumps (required for underground tracks), and does not require excessive passenger mode transfers. This alignment does not interfere with Airport operations, or Airport revenue such as disruption to rental car operations or loss of parking positions. This alignment meets the security requirements of TSA by providing for a pocket track for inspection of rail cars. The alignment would not affect other TRAX system operations were a high-security incident or emergency to take place at the Airport. In light of this preferred alignment, what follows is an overall description of the Proposed Action.

The 2015 Proposed Action is the construction and operation of a two-directional electric-powered LRT that will provide high capacity and dependable transit service between the Airport Terminal 1 and the downtown Salt Lake City area. The Proposed Action, as shown in Exhibit 1-1, is the last component of the Airport TRAX Line and completes the UTA W-E TRAX Transit System.

⁷ FAA Order 5050.4B *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. April 28, 2006; Chapter 10, Section 1001, *EIS Purpose* (April 28, 2006). 40 CFR 1502.1 states the primary purpose of an EIS is to be an "action-forcing tool" to ensure Federal government programs and actions meet NEPA goals and policies. The EIS allows the agency to take a "hard look" at the environmental impacts of the no action, the proposed action, and its reasonable alternatives, if any.

The LRT would be powered using overhead electrical lines, or an overhead catenary system (OCS),⁸ that transmits electrical energy to the train cars via overhead lines at a distance from the energy supply points, which in this case would be two traction power substation.⁹ The first full build-out year for the Proposed Action would be by the year 2015 with construction occurring over a several-year period beginning in 2009 upon FAA approval. This on-Airport component of the Airport TRAX Line would require approximately 11,000 linear feet of track (approximately 5,500 feet in each direction) and would include a proposed new interim station platform that would attach to Terminal 1.

The Proposed Action is illustrated in **Exhibit 3-2, Proposed Action Alignment**. The Proposed Action alignment includes a pocket track to store extra trains. Two pocket track location options are shown on Exhibit 3-2. The pocket track might have an associated use as a train inspection area during periods of high threat alert status. Also, two traction power substations would be installed as shown in **Exhibit 3-3, Power Substations**.

A “siding” shown in Exhibit 3-3, intended for the temporary storage of LRT cars, could be implemented instead of constructing the pocket track shown in Exhibit 3-3. A siding located east of the station platform would be more convenient than the pocket track near the location of the employee lot.

The TWG considered both center and side-loading configurations for the proposed interim station platform. Additional space was allocated for wayfinding, a security building, ticket vending machines, and operations devices. The exact station configuration will be determined during the final design process, but in any case, the station will be able to accommodate four 90-foot LRT cars. An example of a possible configuration is a 25-foot wide center loading platform, as shown in **Exhibit 3-4, Proposed Interim Station Platform**.

The Proposed Action is the only alternative that fully satisfies the purpose and needs of the Airport as described in Chapter Two, *Purpose and Need*. Operation of the LRT would reduce the need for additional parking at the Airport by providing an alternative mode of transportation that does not require parking. Further, ridership on the LRT removes automobiles from the roadways and at the Airport terminal curb fronts thus reducing traffic congestion. Finally, passengers, employees, and vendors accessing the Airport would be provided an efficient, economical, and timely alternative means of transportation between the three largest generators of traffic in the region. Operation of the LRT would complete the W-E TRAX transportation link as recommended in the WFRC 2008 LRTP Update.¹⁰ Availability of the complete W-E TRAX Line would continue to encourage a change in travel

⁸ SLCDA, 2008 LRT Alignment Draft Report, Section 5.0, *Final Alignment and Station Alternatives* (June 2008).

⁹ A traction power substation rectifies primary power provided by the local utility companies to deliver direct current (DC) power to the light rail vehicles. Reference Pham, K.D. and Thomas, R.S., *Traction Power Supply for the Portland Interstate MAX Light Rail Extension*, Transportation Research Board Circular E-C058 (p. 669-677): 9th National Light Rail Transit Conference (November 2003).

¹⁰ WFRC, *Wasatch Front Regional Transportation Plan: 2007-2030 Technical Report 46* (May 2007 amended October 23, 2008).

habits begun by the operation of the University TRAX Line in 2002. Finally, the completed Airport TRAX Line compliments the N-S TRAX Line envisioned in the long-range transit analysis.

The Proposed Action, as described in Section 3.2.2, clearly satisfies the criteria listed in Section 3.1.4, *Alignment Evaluation Criteria Defining Reasonable Alternatives*.

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Proposed Action Alignment**

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**Insert Exhibit 3-3
*Power Substations***

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Proposed Interim Station Platform-Possible Configuration

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