



# Zion Canyon Transportation System Technical Analysis



NOVEMBER 2008

EXECUTIVE SUMMARY

## Zion Canyon Transportation System Background Information and Introduction

Since its implementation in 2000, the Zion Canyon shuttle system at Zion National Park has been a great success. The park shuttle carries visitors from the visitor center plaza to the Temple of Sinawava trailhead in the Zion Canyon portion of the park, operating seasonally, from Easter to the end of November (weekends only in November). The system also includes a connecting town loop in Springdale that takes visitors to the visitor center for transfer to the park shuttle. This has resulted in a strong connection between the town and the park. The fleet consists of 30 buses, and maintenance of the buses is conducted in a facility within the park.

National Park Service representatives from throughout the country frequently reference the system as an excellent model for expanding visitor access and enhancing visitor experience. Visitors and Springdale community members who ride the shuttle are very supportive of the system and frequently comment on the experience as positive and enjoyable. A recent survey found that 95 to 98 percent of visitors like the system, and the shuttle has carried increasing numbers of

passengers since service began. In 2007, Zion Canyon shuttle ridership was just under three million. Even with this increase in visitation and visitor access, implementation of the system has reduced resource impacts in the canyon overall.



*Zion Canyon shuttle on a typical summer day*

### It's Time for a Check Up

Although the shuttle program has been a great success, the time has come to reevaluate the system and, if necessary, make adjustments to improve its operational and financial efficiency. In 2007, the park received funding from the Alternative Transportation in the Parks and Public Lands Program (ATPPL) program and the US Department of Transportation's Volpe National Transportation Systems center to evaluate the Zion Canyon transportation system and make recommendations to improve the system and supporting facilities.

As a result, the technical analysis process began with a scoping meeting in early 2008. Field observations and data collection efforts were completed over the course of the spring and summer. Subsequent analysis was completed in late summer and fall, and the resulting recommendations are currently being compiled into a draft report that will be available for public review by early December 2008. (Please check the Zion National Park website, where the draft report will be posted or contact Zion NP representatives to obtain a copy – see page 8 for contact information.)

Involvement of the public and stakeholders has been a key component of the analysis. Initial workshops with stakeholders and the general public were held in May 2008. Additional workshop sessions with stakeholders and the public will be held on November 19, 2008 to present the draft findings and recommendations of the analysis and obtain further input and comments prior to completion of the draft report.

### Purpose of the Technical Analysis:

The overarching purpose and intended outcome of this analysis and implementation of recommendations is **to improve the long term viability of the Zion Canyon transportation system.**

## Technical Analysis Focus

The technical analysis has involved a comprehensive look at several elements related to the Zion Canyon transportation system. The analysis started with a review of relevant background studies and information. Then additional data and information was collected in the park and Springdale, including comments and input from stakeholder and public workshops. The technical analysis has focused on the following areas:

- Financial analysis and related service planning scenarios
- Shuttle vehicle replacement/rehabilitation options
- Review of existing parking capacity and efficiency in Springdale and development of recommendations for parking
- Recommendations for enhancing visitor wayfinding and communications, including strategies for Intelligent Transportation Systems (ITS), as well as additional signing and information distribution
- Recommendations for improving pedestrian and bicycle connectivity, mobility, and safety in Zion Canyon and Springdale
- Assessment of existing Springdale streetscape conditions and related maintenance needs
- Recommendations to address traffic congestion problems at the entrance to Zion National Park and the north end of Springdale
- Evaluation of regional transportation system planning opportunities for connectivity with the Zion Canyon transportation system
- Identification of partnership and stewardship needs, as well as funding opportunities for long-term financial sustainability of the Zion Canyon transportation system



Zion Canyon transportation system stakeholder workshop session, May 2008

## Financial Analysis and Related Service Planning Scenarios

**Operations and Maintenance Challenges Ahead** – Financial analysis has identified the potential for increasing challenges in the ongoing operation and maintenance of the shuttle system in the coming years. As the charts on the next page indicate, the projected cost of operating the system is expected to eventually exceed the amount of revenue available in the coming years. As Scenario A below indicates, if revenue were capped at the 2008 level, costs would exceed revenue by 2012. As a result, the park will need to either cut back on the level of service provided or find additional funding to support operations and maintenance.

**Expanded Service Opportunities are Limited** – The public and stakeholders have suggested that the shuttle program be expanded to include more service. Requests to extend the seasonal operation of the system, expand operating hours, and provide service further down canyon have come forward. Unfortunately, given the financial challenges the park will be facing to operate and maintain the existing service, it is anticipated that expanded service in the future would not be possible unless additional financial support can be obtained from other sources (e.g. state, regional, or local community support).

**Service Cutbacks – Potential Scenarios** – People have asked what potential service cutbacks might look like if the Zion Canyon shuttle system had to reduce its operating and maintenance costs. Service cutbacks could include one or more of the following options:

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# Parking Capacity and Efficiency

**The Springdale/Zion National Park Partnership** – There has always been a synergistic relationship between Zion National Park and the town of Springdale. The millions of visitors who come to the park annually bring substantial direct and indirect economic benefits to the community. However, visitation levels also require extensive management and resources on an ongoing basis from the National Park Service, the town of Springdale, the Utah Department of Transportation, and others.

When shuttle service was initially established in 2000, there was a general understanding that park visitors would leave their cars at hotels and parking areas in Springdale and ride the town shuttle to the visitor center plaza to transfer to the park shuttle. Town representatives recognized the benefits and opportunities of visitors parking, walking, and riding the shuttle in proximity to businesses. It was also understood that leaving cars at parking areas in town would

result in less traffic congestion on the town’s limited road network. These benefits have clearly been realized and continue to occur each year.

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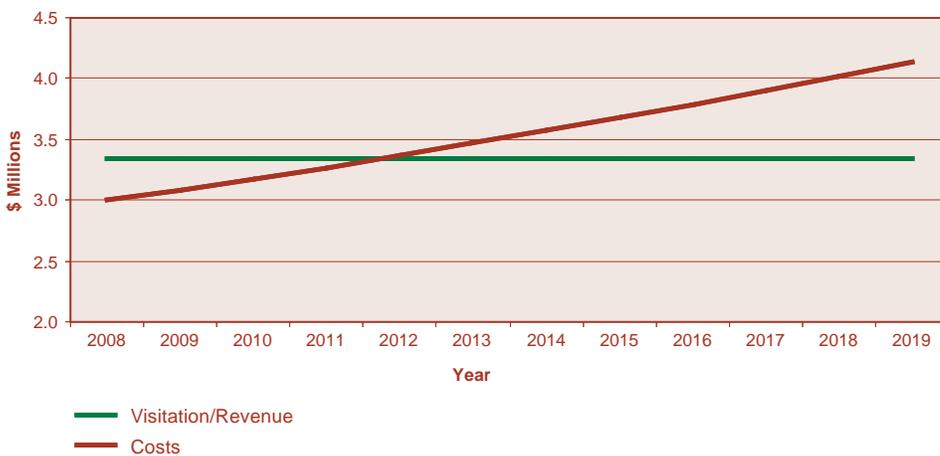
## Financial Analysis

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- Reduced hours of service during peak season (limited morning and evening service);
- Shortening the season of service – going from the current period of service (Easter through end of October and November weekends) to May through September for example;
- Increasing “headways” – extending time between shuttle service (going from 6 to 10 minute periods between shuttle pick-ups to 10 to 15 minute periods for example); and/or
- As a last resort, unless additional funding/financial support can be obtained, some areas of service may need to be significantly reduced or eliminated altogether – such as a portion of or possibly all of the Springdale route (as financial conditions worsen).

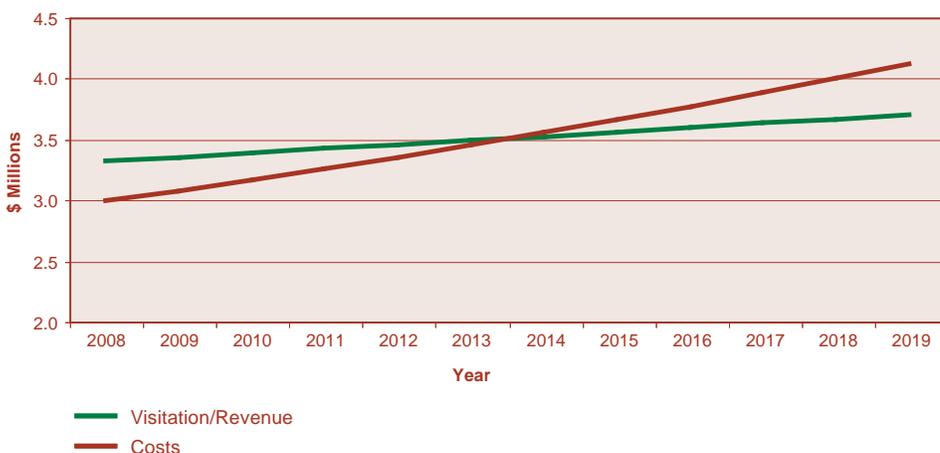
### Scenario A

*Assumes service Easter through November (weekends only in November), three percent annual inflation in costs; annual revenue capped at \$3,335,000*



### Scenario B

*Assumes service easter through November (weekends only in November), Three percent annual inflation in costs; one percent increase in visitation/ revenue from 2008 level*



**Shuttle Vehicle Replacement** – The shuttle system fleet has an expected operating life of ten to twelve years, and the shuttle system is nearing its tenth year of operation. The park is looking at a range of options that include either rehabilitating the existing fleet or replacing the fleet with new vehicles. The estimated cost of these options ranges between \$6,000,000 and \$12,000,000. This is in addition to annual operating and maintenance costs for the shuttle system. The park will be seeking funding through federal transportation grants and other sources to support the vehicle rehabilitation/replacement program.

## Parking Survey Results

The Springdale Parking Task Force surveyed the usage of all existing private and public off-street parking areas in the town on April 7, May 22, May 26 (the Saturday of Memorial Day weekend), July 3, and July 25, 2007. Parking areas were checked at 10:00 am, 1:00 pm, 4:00 pm and 7:00 pm. This survey showed that even during one of the busiest times of the year (Memorial Day weekend), Springdale parking areas still had plenty of capacity:

10:00 am	Parking areas were 48.1 % full
1:00 pm	Parking areas were 49.6 % full
4:00 pm	Parking areas were 61.5 % full
7:00 pm	Parking areas were 63.5 % full

On the other days surveyed, parking utilization ranged from 24 to 47 percent depending on the time of the survey. This survey did not account for the large amount of on-street parking available on Zion Park Boulevard and Lion Boulevard. During field observations August 6-9, 2008, it appeared that the on-street parking on Zion Park Boulevard was less than 20 percent utilized. On Lion Boulevard less than 50 percent of available parking was utilized during the peak period of visitation.

Parking capacity is available, but visitors are not always using it. Many visitors who approach the gate for entry into the park are turned around and directed to nearby parking areas, such as Lion Boulevard. Many of these visitors have stated they were unaware of where they should park to ride the shuttle.

**Finding the Right Solutions:** A variety of solutions can be pursued to improve parking efficiency and help people understand where to park. Given the cost challenges Zion National Park will be facing in coming years related to shuttle system operation and maintenance and shuttle vehicle replacement, it is recommended that lower cost solutions to address parking problems be pursued as a first step. If these do not improve parking efficiency, then higher cost solutions such as expansion of parking inside the park or outside the park in Springdale may be necessary.

## Parking Recommendations

### Lower Cost Solutions as a First Step:

- Intensify visitor wayfinding and communication efforts (see below).
- Formalize parking use agreements with property owners and confirm exact locations and quantities available for visitor parking.
- More heavily promote the shuttle system and park and ride opportunities through local businesses, hotels, and community venues.
- Continue the Springdale Parking Task Force efforts.
- Initiate a community-based “parking ambassadors” volunteer program.
- Monitor effectiveness of these actions and if necessary, proceed with more extensive improvements, such as development of a new parking area either inside or outside the park.

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## Parking Capacity

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**Issues and Problems Related to Parking and Traffic Congestion** – In spite of the ongoing benefits of the park and ride relationship between Springdale and Zion National Park, traffic congestion in town has been increasing, particularly near the park entrance at the north end of town. Questions about the level of parking available in town have been raised, and some hotels and businesses previously supportive of visitors parking at their establishments to ride the shuttle have recently put up “no parking” signs. These issues have raised the need for a careful evaluation of parking capacity and problems related to parking so that effective solutions can be identified and implemented.

**Is There Enough Parking in Springdale for Zion Canyon Shuttle Riders?** – This technical analysis has confirmed that **YES**, there is ample parking capacity in Springdale to serve park visitors. However, many of these areas are “invisible” or unknown to visitors coming into town – particularly first time visitors. Many visitors are confused about how and where to park and ride the shuttle and how to make the connection to the park shuttle. Visitors often drive right up to the gate, without realizing they should leave their cars in town. Another issue is that property owner agreements for providing parking are not formalized and should be in order to ensure ongoing certainty and reliability of parking areas for visitors.

# Parking Recommendations

(Continued from page 4)

## Higher Cost Solutions/ Potential New Parking Areas:

If it is ultimately determined that more parking is needed to serve visitor demand, there are potential locations both inside and outside the park that could be further evaluated. The following important considerations factor into the evaluation of potential new parking improvements.

### Inside the Park:

- No land acquisition would be required (less costs).
- The NPS would be responsible for maintenance of the parking area.
- With any new parking and access improvements, it must be demonstrated that there would be minimal effects to park resources and that a full range of alternatives have been considered in compliance with the National Environmental Policy Act (NEPA).
- Adding parking inside the park may reduce interactions with town businesses and may reduce the

amount of service needed for the town shuttle route.

### Outside the Park:

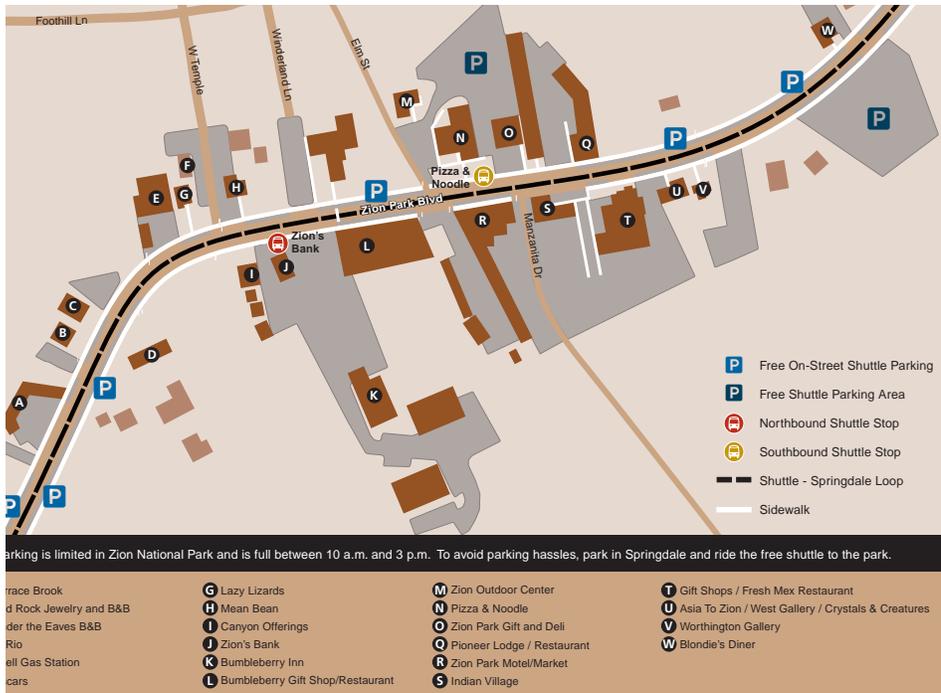
- Land acquisition through a willing seller agreement would be required (higher costs).
- Either the town or another entity would need to be responsible for maintenance of the parking area unless a cooperative agreement with the NPS is established.
- NEPA compliance may still be required given the purpose of the parking as relates to park shuttle access and/or funding sources.
- The potential for impacts to adjacent properties (visual, noise, etc.) would need to be carefully considered.
- Candidate locations should not require changes to shuttle route (should be within easy walking distance from a town shuttle stop).

Under either scenario (inside or outside the park) there are a variety of funding sources available, but given current federal economic conditions, some funding sources may be limited.

# Visitor Wayfinding and Communications Recommendations

The following are recommendations for improving and intensifying visitor wayfinding and communications. If successfully implemented, the park and town should see more people using parking areas in town and riding the town shuttle to get to the park.

- Expand information about park and ride and shuttle service on key partner websites (Zion NP, town of Springdale, Washington County, UDOT, etc.)
- Update the highway advisory radio broadcast message to provide more specific information about where to park and access the shuttle.
- Create a stronger sense of entry to the Zion National Park experience in Springdale. (See example, page 6.)
- Provide "real time" variable message signs at key locations to direct visitors to parking. (See examples, page 6.)
- Carefully and thoughtfully enhance signing to help visitors find parking and shuttle locations.
- Better identify shuttle stops (See example, page 6.)
- Provide information to visitors via Closed Caption TV, as well as public service announcements via TV and radio.
- Provide more detailed maps about where to park in Springdale. (See example this page.)
- Implement a new marketing campaign that encourages visitors to park and ride the shuttle and Zion National Park as a car free tourism experience. The campaign could include marketing and advertising activities, as well as development of brochures and other media outreach.
- Provide a visitor outreach kit to local businesses and hotels with brochures and maps that can be distributed to visitors.



Example of a more detailed parking map for Springdale



*A stronger sense of entry to the Zion National Park experience in Springdale*



*Real time variable message sign in advance of Lion Boulevard*



*Improved shuttle stop signing*

## Pedestrian and Bicycle Connectivity, Mobility, and Safety

It is anticipated that increased pedestrian and bicycle mobility within Springdale and in the Zion Canyon portion of the park would help to expand options for visitor access and relieve pressure on the shuttle system during peak periods. The technical analysis identified missing gaps in the sidewalk system in Springdale, as well as locations for new pedestrian crosswalks and signing. Inside the park, potential areas for extending the Pa' Rus Trail are being evaluated.



*Visual simulation showing creation of a shared pathway along the shoulder in Zion Canyon as an extension of the Pa' Rus Trail*



*Visual simulation of the extension of the Pa' Rus Trail further up Zion Canyon*

## Park Road and Springdale Streetscape Conditions

The technical analysis included evaluation of existing conditions related to the park road and Springdale streetscape, including conditions at shuttle stops. For the most part, shelters, furnishings, and shuttle stop features remain in excellent condition both inside and outside the park. However, there are areas of the Springdale streetscape that will require some maintenance in the near term. These include the following:

- Several pavement pads at bus stops need to be replaced.
- The ditch structure is in need of repair in several locations.
- Some utility boxes and conduits are in need of repair.
- There is a general need for sidewalk repair and maintenance, as well as landscape maintenance along the corridor.
- Several segments of sidewalk need to be replaced.

Given the costs that Zion National Park will incur related to ongoing operations and maintenance of the shuttle system, as well as vehicle replacement, it will be important to actively pursue a variety of funding and partnership opportunities to implement these needed maintenance improvements. Funding sources, such as the federal transportation enhancement and congestion management programs should be pursued.



*Vehicles queuing at the Zion National Park entrance station*

## Traffic Congestion at the South Gate to Zion NP

At certain times of the day on peak visitation days, visitors get caught in a traffic queue at the south gate to Zion National Park. Sometimes this queue can stretch for as much as a half mile to Lion Blvd. The queue tends to lengthen when the parking area at the visitor center inside the park closes. Many of the visitors in the queue are seeking to ride the shuttle and don't understand that they should have parked in town. This queue of idling vehicles:

- Causes driver frustration and degrades visitor experience at the entrance to the park
- Contributes to unnecessary emissions of Green House Gases (GHG)
- Impacts the operation of the Springdale shuttle (buses must navigate the queue to reach the transfer station at the visitor center plaza)

Parking management in the vicinity of the entrance requires significant Zion National Park staff resources and puts staff in the roadway directing traffic. Turning automobiles around at the gate increases the potential for accidents and conflicts with other vehicles, pedestrians, and bicyclists. The

entrance area becomes filled with parked cars on both sides of the road, which negatively affects the visual experience of entering the park. Visitors who have parked in this vicinity are then directed downhill to the visitor center plaza, but the route of access is not clearly intuitive, nor accessible.

Recommendations to address these problems include:

- Catch visitors further downstream and direct them to other parking areas in town through additional signing (see wayfinding and communications recommendations).

- Improve the visibility of the shuttle and heavily promote shuttle park and ride.
- Develop parking direction cards with multi-lingual instructions about where to park and catch the shuttle in Springdale.
- Create a "bus only" lane so that shuttle buses can bypass the automobile queue.
- If necessary in the future, provide additional parking in the park or in town to accommodate visitor needs.

## Regional Transportation Planning Opportunities

Various agencies and interests, including the National Park Service, town of Springdale, UDOT, Dixie Metropolitan Planning Organization, Washington County, and others should continue to work together to develop a strong vision for transportation in the region. Over the long term, the demand for more car-free travel experiences may drive the need to better connect the Zion Canyon transportation system with the outside world via private and public transportation programs. For example, the airport in St. George will be undergoing major expansion, and as such, more visitors may be seeking opportunities to fly into St. George and travel via shuttle to and from Springdale. In addition to improving transportation options for visitors, the region may identify needs to expand transportation options for citizens and workers over the long term – improving public transportation service between Springdale and down canyon communities.

# A Call for Partnership and Stewardship of the Zion Canyon Transportation System

Ongoing operation of the Zion Canyon transportation system will require significant resources. While Zion National Park will continue to have the primary responsibility for annual operations and maintenance of the shuttle system, the park will be faced with some tough decisions in the future. Service cutbacks may be needed in the coming years unless supplemental funding resources can be found. The park will seek federal funding to replace the shuttle fleet; however funding sources are becoming increasingly limited and competitive. The

Springdale streetscape and shuttle facilities will require ongoing maintenance and repairs. Wayfinding and communications efforts will require near term funding, while development of new parking areas, pathways, and other improvements will require additional funding over the long term.

## *How will all these needs be met?*

The Zion Canyon transportation system has been a huge success and a nationwide model for environmental sustainability and

enhanced visitor access at national parks. Representatives from Zion National Park, Springdale, UDOT, and other agencies and organizations have been coordinating on a regular basis, but the time has come for these partners to jointly define opportunities for additional funding and resources to support the system. Ongoing partnership and stewardship responsibilities should be more clearly defined, and all parties should be working together to actively plan for the successful future of the transportation system.



## Zion National Park Mission

- Provide educational and recreational opportunities for visitors.
- Foster an appreciation of Zion National Park and its resources.
- Maintain natural resources at healthy and viable levels and manage cultural and physical resources to ensure long term integrity.
- Manage facilities to maximize safety, cost efficiency, and long term sustainability.
- Foster mutually supportive partnerships.

For more information, questions, or comments, please contact:

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