U.S. 180 IMPLEMENTATION PLAN | 2018

PREPARED BY THE
NORTHERN ARIZONA INTERGOVERNMENTAL PUBLIC TRANSPORTATION AUTHORITY

IN PARTNERSHIP WITH THE ARIZONA DEPARTMENT OF TRANSPORTATION AND FEDERAL TRANSIT ADMINISTRATION

ADOT

Federal Transit Administration

NAIPTA

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EXECUTIVE SUMMARY

BACKGROUND

The San Francisco Peaks north of Flagstaff, Arizona attract winter visitors looking to ski, sled, and enjoy the outdoors. Access to this area for winter recreation is important not only to the residents of Flagstaff, but also to the local economy. A 2011 economic analysis by Northern Arizona University found winter recreation in the region contributed $48 million to the local economy and created more than 500 jobs generating $7.3 million in tax revenue. However, increased winter tourism in recent years has led to traffic congestion on U.S. 180, the only route to winter recreation areas including Arizona Snowbowl, Flagstaff Nordic Village, Walker Lake and Peak View parking areas, and, when open, Crowley Pit and Wing Mountain snow play areas. It also attracts recreation at informal spots including illegal parking along the corridor which further slows traffic. Holiday weekends typically see the highest amount of traffic, which can lead to congestion along the U.S. 180 corridor to downtown Flagstaff. Safety concerns due to traffic congestion on the route are also an issue, as this can potentially delay emergency response vehicles along U.S. 180. Other issues that arise from U.S. 180 traffic are illegal parking and littering along the highway. Finding ways to mitigate these impacts while also accommodating the desire for winter recreation is crucial to not only sustain economic vitality but also quality of life for Flagstaff residents.

NAIPTA's U.S. 180 Implementation Plan (Plan) was developed with the help of key stakeholders including Coconino County, the City of Flagstaff, the Arizona Department of Transportation (ADOT), the U.S. Forest Service (USFS), and a citizen representative. The group developed the scope statement identifying the plan's purpose, deliverables, success measures, and exclusions. This Plan was conducted concurrently with the ADOT U.S. 180 Corridor Master Plan, which is expected to be completed in Fall 2019.

From October 2017 to April 2018, background research was conducted on historic congestion levels, opportunities for alternate access routes, transportation demand management strategies used in similar communities, and potential for transit service along the corridor. This information was presented to the public on May 3, 2018, to gather feedback on which alternatives to pursue. From that input, NAIPTA and the stakeholders created a series of corridor management recommendations and implementation steps. Additional feedback was sought in September 2018 during a U.S. 180 Citizen's Winter Task Force meeting. Partner agencies discussed timelines, methods, funding, and management of recommended implementation strategies.

ALTERNATIVES

ALTERNATE ACCESS

One solution identified in the Flagstaff Metropolitan Planning Organization's (MPO) 2012 U.S. 180 Winter Traffic Study was alternate access and egress from the U.S. 180 corridor to Interstate 40. The stakeholders agreed to only consider using existing Forest Service roads, making minimal improvements for use by passenger cars in the winter. Paving was excluded from the scope. Several alternatives were

identified, and each route was driven with USFS, Arizona Game and Fish, and Coconino County Public Works to evaluate potential wildlife impacts, grade and roadway constraints, construction requirements, and cost estimates.

Three alternate routes were identified to potentially alleviate traffic on U.S. 180. On May 3, 2018, these alternatives were presented at an open house for public feedback. The Bader Road to A-1 Mountain Road and the S. Snow Bowl Road to A-1 Mountain Road were abandoned as possible alternatives due to negative feedback from the public, as well as well expectations for benefit-to-cost ratios. The Wing Mountain (Forest Service Road 222B to Forest Service Road 171) alternative was further considered as it was the most preferred of the routes by the general public and had fewer grade challenges and improvement needs.

A traffic model was developed for current conditions and showed, on average, drivers of 240 vehicles over a four-hour peak period would choose to use the alternate access route to reach their desired destinations, thereby saving about nine minutes on the heaviest congestion days. A core conditions model indicates that by year 2035 more than 450 vehicles per hour would choose the route. The route would create a reduction in travel times on U.S. 180 by as much as 10 percent per hour during the afternoon peak travel time.

Given the limited travel time savings, the cost, and the strong public opposition, the recommendation is that no additional alternate access be pursued at this time. However, by year 2035 over 450 vehicles would choose the Wing Mountain alternate access route in a given hour. If the alternative route is pursued, the results also indicate that a southbound right-turn bay should be implemented on Snow Bowl Road. Any alternate access should be wide enough for access to maneuver around impaired vehicles.

Public Transit

For the past three winter seasons, NAIPTA has operated Mountain Express, a free bus service to Arizona Snowbowl from downtown Flagstaff. The first year of winter service, the route attracted more than 2,600 riders, which increased to 9,800 the following winter season. Ridership decreased in the 2017-2018 season to 6,789, possibly due to the lack of snowfall. The majority of riders have used the service between Fort Valley Parking Area (base of Snow Bowl Road) and Arizona Snowbowl. Arizona Snowbowl partnered with NAIPTA to begin implementing recommendations of this Plan for the 2018-2019 season including 30-minute frequency from downtown. As of the printing of the documents, the increased service level over winter break attracted more than 12,000 bus trips with approximately half of ridership to Arizona Snowbowl originating in town, surpassing the ridership estimates in this Plan threefold. Despite record attendance at Arizona Snowbowl, only one day has had delays occur on U.S. 180 unrelated to an accident. Anecdotal information suggests that a high level of illegal parking along U.S. 180 may have contributed to the delays.

Frequency is key to attracting bus ridership to Arizona Snowbowl. The route also needs to begin and end in downtown Flagstaff, with service days to include holidays (December 26 through the first week of January) as well as weekends in January and February to impact congestion. To attract ridership by

Arizona Snowbowl's 500 employees, buses should start at 7:00 a.m. and end at 6:00 p.m. and operate every 20 to 30 minutes throughout the day. As ridership grows, buses also should to be equipped with ski and snowboard racks and the potential to drop off rentals or store ski gear at the resort for bus riders should be explored. Improving bus service between downtown Flagstaff and Arizona Snowbowl has the potential to reduce traffic by four to five percent on days where congestion is high.

Parking Fees

The price of parking is often used to influence travel choice by altering the cost of driving. Paid parking is becoming a common practice at many ski resorts throughout the western United States, including those in California, Colorado, Montana, Oregon, Utah, Washington, and Wyoming. Arizona Snowbowl has about 1,400 parking spaces, with an additional 350 spots under construction. The Fort Valley Lodge also has around 500 parking spaces. According to Arizona Snowbowl, the average car occupancy at the resort is 2.54 individuals per vehicle. The Victoria Transport Policy Institute has found that for every 10 percent increase in the cost of parking, there is a one to three percent reduction in cars, and Vail has reported that for every $5 increase for parking, the demand has dropped by five percent. Adding $15 to the current price of $89 for a lift ticket at Arizona Snowbowl is an approximately 17 percent increase in total cost of an Adult Day Pass. By moving to a system of paid parking of $15 per day on key weekends and holidays, traffic could potentially be reduced by two to five percent on those days.

A two-tier parking fee system is recommended at the Arizona Snowbowl parking lots during the holiday season and on weekends. The two tiers will be based on number of occupants in vehicles: those with one to two people will be charged $15 per day to park, and vehicles with three or more will pay five dollars per day. This will benefit those that choose to carpool (those with three or more per car), while also encouraging visitors to take the free bus service. Further, it is recommended no additional parking be built or provided and programs like carpool incentives and expanded bus service complement the implementation of a parking fee.

Carpooling

Carpooling is an effective way to reduce congestion during peak traffic hours throughout the ski season. Implementation of carpool incentives could include discounts, priority parking, a ridesharing app and website, and paid parking fee reductions. Several peer cities have adopted carpooling incentives to address traffic concerns to and from ski resorts. An increase in automobile occupancy could potentially reduce traffic by one to two percent. Providing a financial incentive for carpooling could increase the average automobile occupancy from 2.54 to 2.77.

Information and Signage

Dynamic message signs can also be an effective way to inform winter recreation visitors about parking conditions at recreation areas and traffic conditions on U.S. 180. Dynamic signage should be used in various forms and at various locations throughout the day along the U.S. 180 Corridor. Real-time travel information placed in downtown Flagstaff in the morning and at Arizona Snowbowl in the afternoon can warn travelers of delays and congestion. Dynamic message signs would be expected to reduce traffic by 0.5 to 1.5 percent. While an information campaign alone will not remove cars from the road, it will

increase the effectiveness of the other TDM strategies. By raising awareness about congestion problems associated with winter recreation and informing people about bus service, carpooling, and parking options, the marketing campaign will help people make more informed decisions about their travel choices.

Other Strategies

This Plan briefly describes other strategies that could be studied in more depth. They include the dispersion of winter recreation sites, private shuttles from outside the City of Flagstaff, and limited-hour lift tickets. The greatest congestion occurred on days when major snow play sites located on U.S. 180, including Wing Mountain and Crowley Pit, were open, further inducing demand for vehicles to travel along the corridor. Coconino County has already taken a step towards creating opportunities off the corridor by developing a public-private partnership with a snow play provider and approving snowmaking at Fort Tuthill, which is south of Flagstaff. Over the past couple of years, private transportation providers from Phoenix have operated occasionally. The Arizona Shuttle operates regular service throughout the year between Phoenix and Flagstaff with 13 daily trips in each direction. There may be opportunities to better coordinate drop-off locations if NAIPTA moves forward with a park-and-ride option. Finally, limited-hour ski lift tickets have the potential to reduce cars on the road during peak traffic hours while providing an affordable ski lift pass option for Arizona Snowbowl customers. Offering limited-hour ski lift tickets, such as morning-only access, will encourage people to leave at different times during the day. However, limited-hour lift tickets do not address the many people along the corridor not seeking a lift ticket.

Impacts

It is possible to package Transportation Demand Management (TDM) strategies to alleviate traffic on U.S. 180. While each of the strategies alone may not have a high impact on travel within the corridor, packaged together, there are short-term solutions which can start to make a noticeable difference. Through research and best practices, the projected traffic reduction percentage for each individual TDM strategy was tabulated. The table below compares the projected traffic reduction for all the TDM strategies considered. Based on the projected traffic reductions, implementing improved bus service, paid parking, and carpooling would have the greatest impact on traffic while the other strategies would only add a marginal reduction.

Exhibit 1: Projected traffic reduction from TDM strategies

	Low End of Range	High End of Range
Bus service	4.0%	5.0%
$15 paid parking	2.0%	5.0%
Carpool incentives	1.0%	2.0%
Dynamic signage	0.5%	1.5%
Marketing	0.5%	1.5%
Limited-hour passes	0.5%	1.5%

Source: AECOM, 2018.

RECOMMENDATIONS

Historic data from traffic congestion indicates that, while on a few occasions, traffic delays have exceeded 45 minutes from the base of Snow Bowl Road to downtown Flagstaff, more common delays are 25 to 30 minutes. In addition, extreme delays occurred when Wing Mountain and Crowley Pit Snow Play Areas added significant additional parking, and therefore significant traffic volume, along the corridor. Traffic modeling indicates the current capacity of parking at Arizona Snowbowl alone is unable to generate the types of delays previously seen. Nonetheless, illegal parking continues to occur and increases the number of recreationists along the corridor.

The first alternative that could be considered is a parking management-only solution. Since there is not enough legal parking on the corridor as of the 2018-2019 season to create significant delays, efforts could be taken to reduce illegal parking though increased law enforcement presence and long-term efforts to limit additional winter recreation parking opportunities in the corridor. Over time, this solution may not be sufficient as additional housing and development occurs along the corridor, increasing traffic volumes associated with residents. Additionally, it creates concerns about providing adequate access to the forest for those who want to recreate.

Transportation Demand Management solutions can be implemented quickly and at a relatively low cost. Core TDM Strategies include bus service, paid parking, and carpool incentives. The full package of alternatives only has a marginally higher traffic reduction than these core strategies. For this reason, it is recommended that the core strategies be implemented with the current funding, and in the future, if additional funding becomes available, other TDM strategies like dynamic signage can be implemented to enhance the performance.

It should also be noted that a marketing campaign is necessary to ensure that all of the TDM options are described and understood by the traveling public. This includes updating websites (Arizona Snowbowl, Mountain Line, Downtown Flagstaff, and others) with information about traveling to snow play activities on weekends and holidays.

Finally, it is expected that continued growth along the U.S. 180 corridor will continue at a similar rate as in the past. This growth will add additional traffic to the corridor and could make the opening of the Wing Mountain (FS222B to FS171) alternate a viable strategy around 2035 that should be reevaluated around 2033 for need and cost benefit. Opening the access will require partnership between USFS and Coconino County and can follow a management model such as Garland Prairie Road, where the road belongs to USFS but is maintained by Coconino County.

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CHAPTER 1 | INTRODUCTION

PLANNING PURPOSE

The San Francisco Peaks area north of Flagstaff attracts tourists and winter visitors eager to ski, sled, and play outdoors. In recent years, increased winter tourism has caused traffic congestion on U.S. 180, the lone route to many ski and snow play areas. During the highest congestion holiday weekends, visitors leaving the ski and snow play areas have experienced an increase in travel time to downtown Flagstaff from 25 minutes to two hours. Still, access to the forest and recreation is important to the quality of life of Flagstaff residents and the economy. A 2011 economic analysis of winter tourism completed by NAU showed that the combined annual economic impact of winter recreation visits to Arizona Snowbowl and Flagstaff snow play sites, such as Wing Mountain, was a combined total of $48 million, producing tax revenue of $7.3 million and more than 500 jobs. Additional concerns include the potential for delayed emergency response due to congestion and impacts of trash and safety related to illegal parking and snow play along the route. Finding ways to accommodate the desire for winter recreation while minimizing impacts to local citizens and sustain year-round economic vitality is crucial.

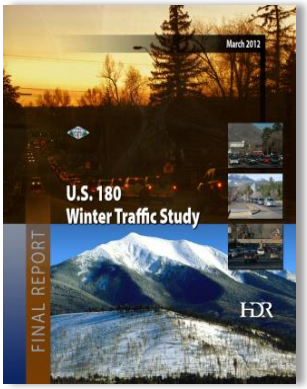
Exhibit 2 illustrates an example of the level of congestion experienced along U.S. 180 between Flagstaff and Arizona Snowbowl, the Nordic Center, and Wing Mountain Snow Play Area.

Exhibit 2: Humphreys Street congested on a Saturday afternoon during snow play season

Source: Taylor Mahoney, Arizona Daily Sun, January 19, 2016.

Related Studies

FMPO U.S. 180 Winter Traffic Study



In 2012, the Flagstaff Metropolitan Planning Organization's U.S. 180 Winter Traffic Study identified eight near- and mid-term strategies as well as long-term strategies for addressing congestion related to winter snow play. The Study included background research including analysis of traffic volume, speeds, and congestion instigators as well as snowfall, holiday weekends, and impacts of Arizona Snowbowl versus snow play sites. The Study anticipated future traffic conditions based on planned growth of Snowbowl and snow play sites and the economic value of winter tourism. Peer cities were reviewed for mitigation strategies which may be applicable to the U.S. 180 corridor. Extensive public outreach and a public comment period were conducted as well.

ADOT U.S. 180 Corridor Master Plan

The purpose of the U.S. 180 Corridor Master Plan (CMP) is to identify a 20-year vision for the U.S. 180 corridor that addresses current safety and traffic congestion issues by evaluating a mixture of previously recommended and newly introduced System Alternatives. These System Alternatives include a mix of scenarios that utilize and maintain the existing U.S. 180 right-of-way, alternatives that would require an expanded right-of-way, and alternative routes separate from and in addition to the U.S. 180 corridor itself. This Plan was conducted concurrently with the CMP, which is expected to be complete in Fall 2019.

Fort Valley Highway 180 Scenic Corridor Area Plan

Adopted by Coconino County in 2001, the Area Plan sets a vision that states "any expansion of transportation infrastructure has low impacts on the environment, including open space, wildlife corridors, and water drainage." The Area Plan discusses maintaining rural character and lifestyle as well as protection of viewsheds and the natural environment.

Planning Process

This Plan was developed with the help of key stakeholders including Coconino County, City of Flagstaff, Arizona Department of Transportation (ADOT), U.S. Forest Service (USFS) and a citizen representative. The group developed the scope statement identifying the Plan's purpose, deliverables, success measures, and exclusions.

From October 2017 to April 2018, background research was conducted on historic congestion levels, opportunities for alternate access routes, transportation demand management (TDM) techniques used in similar communities, and potential for transit service along the corridor. This information was presented to the public on May 3, 2018 to gather feedback on which alternatives to pursue. From that

input, NAIPTA and the stakeholders created a series of management recommendations and implementation steps. Those action items were further evaluated for impacts of implementation. Additional feedback was sought in September 2018 during a U.S. 180 Citizen's Winter Task Force meeting. Partner agencies discussed timelines, methods, funding, and management of recommended implementation strategies which are documented herein.

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CHAPTER 2 | EXISTING CONDITIONS

In the five years since the Flagstaff Metropolitan Planning Organization's (FMPO) U.S. 180 Winter Traffic Study, efforts have been made to improve conditions along the U.S. 180 corridor with improved traffic signal timing and traffic signage plan, transit service to winter recreation sites, and dispersed winter recreation areas. On days with high volumes of winter recreation traffic, ADOT provides signage that directs travelers to use less-congested routes into downtown Flagstaff and to avoid parking along the highway. Arizona Snowbowl and NAIPTA have also entered into a partnership to offer Mountain Express, a fare-free bus service that travels between downtown Flagstaff and the ski area. Coconino County has also opened a winter recreation area at Fort Tuthill, south of Flagstaff, helping divert travelers from traveling north along the U.S. 180 corridor. Despite these positive steps, congestion persists along U.S. 180 and continues to be a concern.

Through the ADOT U.S. 180 Corridor Master Plan (CMP), extensive background on the conditions of the corridor was completed (https://www.azdot.gov/planning/transportation-studies/us-180-corridor-master-plan/overview). Analyses included right-of-way conditions, demographics, level of service, and safety along the corridor. Key findings related to winter congestion correspond to changes in volume within the corridor from winter to summer (see **Exhibit 3**).

Exhibit 3: Peak directional hourly volumes

Month	Northbound		Southbound	
	Mid-day	PM	Mid-day	PM
September	436	743	456	539
January	1,190	515	712	968
Difference	754	-228	256	429

Source: ADOT U.S. 180 Corridor Master Plan Working Paper 1 (Table 7.3).

In theory, a two-lane highway like U.S. 180 should have capacity for 1,400 cars per hour, per the Highway Capacity Manual (6th edition). However, due to a high number of access points, terrain, and traffic signals, U.S. 180 has capacity for 900 to 1,000 cars per hour without causing delays.

ORIGINS AND DESTINATIONS

The purchase of historic cell phone data has enabled real-time travel information to be included in the analysis of this Plan and its recommendations. This data set, called StreetLight Data, is derived from cellular and GPS devices and was used to help assess common origins and destinations along the corridor. The theory is that those travelers intending to take the I-40 or I-17 freeways straight from Arizona Snowbowl to other cities may choose to bypass downtown Flagstaff and Milton Road if the congestion is high enough to warrant it. The resulting analysis showed that, from the base of Snow Bowl

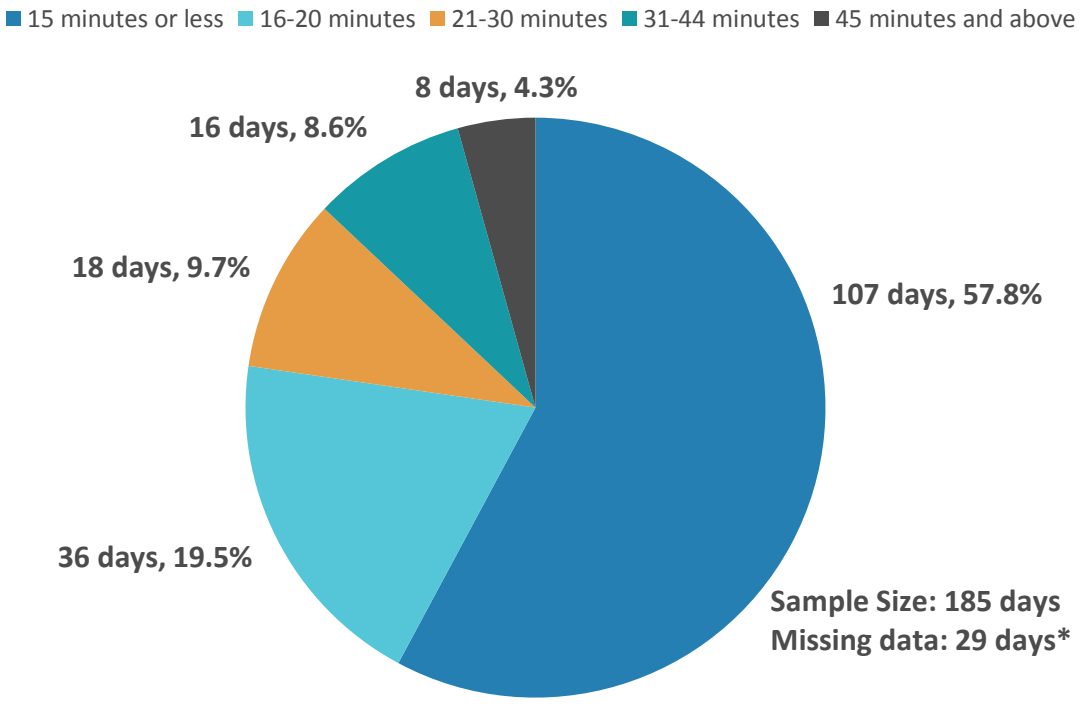
Road, fewer than one percent traveled to the I-40 eastbound, fewer than one percent traveled to I-40 westbound, 10 percent traveled to I-17 southbound, and the remaining stayed in the Flagstaff area.

Travel Times

U.S. 180 in northern Arizona is a scenic state highway connecting Flagstaff to Grand Canyon National Park after connecting with State Highway (SH) 64 in Valle (50 miles northwest of Flagstaff). A trip between Flagstaff City Hall (Route 66 and Humphreys Street) and the Fort Valley Lodge (U.S. 180 and Snow Bowl Road) usually takes 11 minutes under normal conditions. However, during peak snow play days, StreetLight Data shows that trips returning to Flagstaff often take two or three times this long and, in some cases, this seven-mile trip can take more than 50 minutes.

StreetLight Data was analyzed for each winter season from 2014 to 2018 and then further broken down by specific winter holidays and an aggregate of winter holidays. The data shows that there are delays occurring associated with snowfall. Delays are more concentrated on winter holidays: the week between Christmas and New Year's, Martin Luther King, Jr. Day weekend, and President's Day weekend.

Exhibit 4: Peak travel time during winter season (late December – late February) 2014 to 2018 (intersection of Snow Bowl Road and U.S. 180 to downtown Flagstaff on U.S. 180)



**Missing data likely no delay*

The data shows there have been 11 days since 2014 with a maximum travel time greater than 40 minutes from the intersection of U.S. 180 and Snow Bowl Road to City Hall. Additional analysis was completed for the travel times on those 11 days to determine the total travel time from Arizona Snowbowl and Wing Mountain (FS222B to FS171) to downtown Flagstaff. The maximum travel time experienced occurred on January 2, 2015, when the trip from Wing Mountain to City Hall took two hours and 26 minutes.

Exhibit 5: Total travel time on 11 most congested days 2014-2018

		Base travel time via U.S. 180 and Snow Bowl Road to City Hall	Additional time from Arizona Snowbowl Lodge	Total time from Arizona Snowbowl	Additional time from FS222B intersection with U.S. 180	Total time from Wing Mountain
1/1/2015	**Thursday**	52 minutes	50 minutes	**102 minutes**		
1/2/2015	**Friday**	65 minutes			81 minutes	**146 minutes**
1/3/2015	**Saturday**	57 minutes	12 minutes	**69 minutes**	13 minutes	**70 minutes**
12/26/2015	**Saturday**	44 minutes	18 minutes	**62 minutes**	48 minutes	**92 minutes**
1/2/2016	**Saturday**	40 minutes	10 minutes	**50 minutes**	57 minutes	**97 minutes**
1/17/2016	**Sunday**	43 minutes	24 minutes	**67 minutes**	6 minutes	**49 minutes**
12/24/2016	**Saturday**	45 minutes	23 minutes	**68 minutes**	4 minutes	**49 minutes**
12/25/2016	**Sunday**	48 minutes	31 minutes	**79 minutes**	12 minutes	**60 minutes**
12/26/2016	**Monday**	50 minutes	29 minutes	**79 minutes**	15 minutes	**65 minutes**
1/1/2017	**Sunday**	40 minutes	15 minutes	**55 minutes**	76 minutes	**116 minutes**
1/14/2017	**Saturday**	41 minutes	35 minutes	**76 minutes**		

EMERGENCY RESPONSE

Emergency responders were surveyed regarding congestion and delays along the U.S. 180 Corridor. Responses were received from the Arizona Department of Public Safety, Summit Fire and Medical District, the Flagstaff Police Department, Guardian Medical Transport, and the Coconino County Sheriff's Office. Results of the survey indicated that in time-sensitive emergencies, responders did not experience significant delays with their lights on. Congestion did affect responders' ability to get to certain areas for patrol and response time in non-critical situations. These delays were from one to three hours. Such delays impact responders' ability to serve other areas of their jurisdiction and have the potential to strain resources and staff time.

Legal Analysis

Through this planning process, it was necessary to understand the legal authority related to the ability to institute controls over the highway. Analysis was completed by Dickinson Wright, PLLC. Two important questions were asked in this process:

1. *Whether and to what extent may a city, county, authority, or other public entity regulate traffic on a United States (U.S.) highway, and may that regulation include prohibiting all traffic for a given period of time, or limiting traffic to local residents and business owners, or to certain kinds of vehicles, such as buses, as opposed to automobiles?*

2. *May a city, county, or the state impose a charge (toll) for access to a U.S. highway, as a means of limiting traffic on the highway, and thereby protecting the public health, safety, and welfare?*

State law authorizes local governments to regulate, and in some cases restrict, traffic on highways under their jurisdiction in order to protect the public health, safety and welfare. With respect to state highways such as U.S. 180, the Arizona Department of Transportation (ADOT) is vested with exclusive operational control, which it may not be able to delegate. In either case, government entities are not authorized to impose a fee as a condition of accessing an existing public street or highway. Toll roads may only be constructed and maintained as provided in state law, which specifically prohibits converting a public road into a toll road.

In light of this statutory framework, the following avenues may be legal possibilities with respect to closing U.S. 180.

Temporary Closures to Protect Road

The Director of ADOT is vested with authority for the operation and maintenance of the state highway and to protect the highway from "abuse" under Arizona Revised Statute (A.R.S.) § 28-7045. Thus, the Director would have the authority to implement measures to protect the road, potentially including road closure. The Director's discretion here is uncharted so it is unclear what the extent of his authority would be related to congestion.

Long Term Closure or Abandonment

A.R.S. § 28-7046 concerning state highways clearly permits their abandonment back to either the county or the city depending on the where the state highway is located. It could be a viable long-term strategy to turn back this portion of the state highway to the county or the city giving them the ability to exercise authority over its operation. This approach would result in more local control to implement creative solutions but would require the local jurisdiction to also take over maintenance and repair.

Special Event Permitting

ADOT allows for special events such as parades or races to take place within the highway right of way with a special event permit. Therefore, it is theoretically possible that special event permitting can be used for temporary or seasonal closures. However, typically these events happen within the right of way and are related to uses alongside it (such as bike races or parades).

Parking

In preparation for the 2017-2018 winter season, Coconino County adopted an ordinance that prohibits vehicles from parking within the right of way of roads in the county between November 1 and April 1, subjecting those that do so to a $200 fine. Both the County and ADOT installed signs informing the public of parking restrictions along the U.S. 180 Corridor. The County added 18 winter parking signs in neighborhoods along the corridor to notify the public of its no parking ordinance. ADOT installed signs on a nine-mile section of the corridor that read "Emergency Parking Only." ADOT also uses electronic signs on the highways that address safety concerns for recreation along the sides of the roads. Unfortunately, the lack of snowfall in the 2017-2018 winter season did not allow for testing of these strategies.

Trash

Trash and littering as a result of winter recreation is increasingly a topic of public concern. Activities such as sledding and snow play tend to be spread out and take place along the roads, and this dispersed pattern makes cleanup difficult. Sleds are often left behind despite being considered a Class B misdemeanor that carries a $280 fine in the county. Cleanup typically falls to the United States Forest Service (USFS) which will deploy vehicles and staff for cleanup, as well as the City of Flagstaff, which will assist with mid-week cleanups and, depending on weather, will also install sled collection dumpsters (sleds are not recyclable) to areas like Thorpe Park, Peak View, Walter Lake, and near Arizona Snowbowl. Along with cleanup, prevention efforts have been focused on getting information out on the proper disposal of sleds through signage and winter tourism promotional materials. Getting information out on billboards and putting stickers on sleds sold in Flagstaff have also been discussed.

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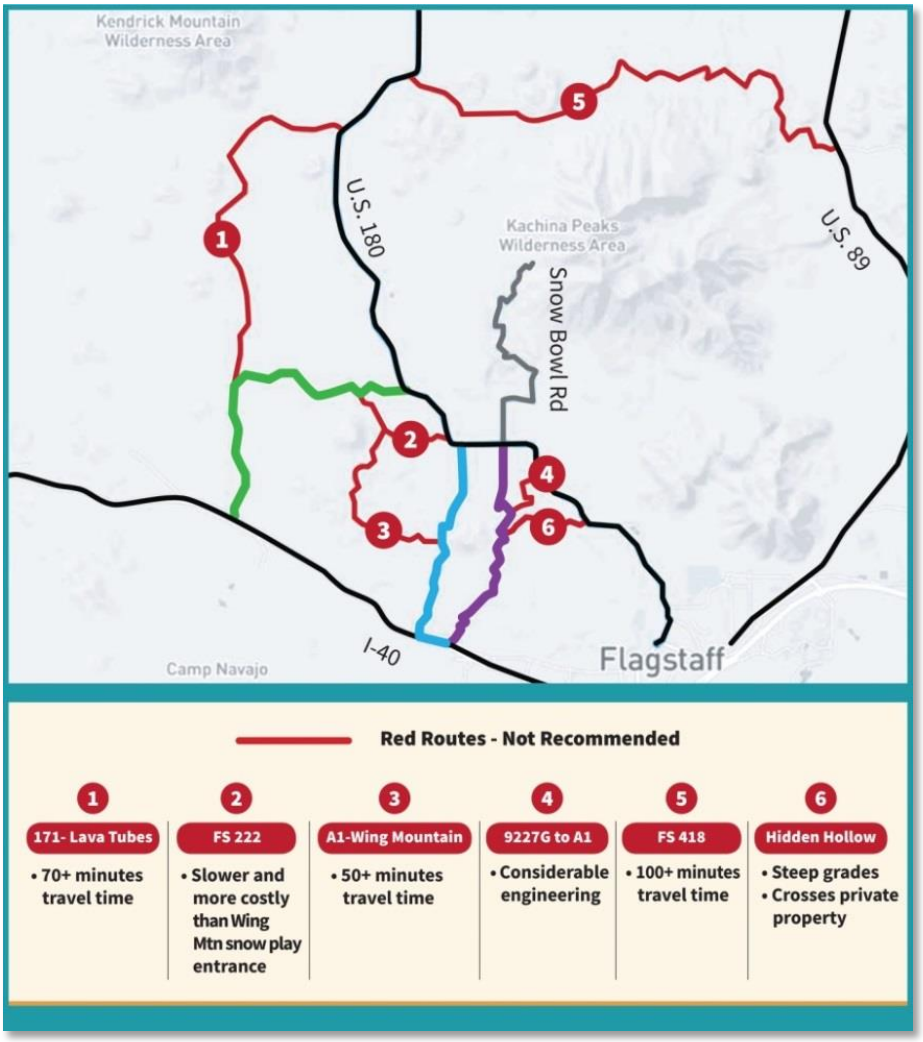
CHATPER 3 | ALTERNATIVES

ALTERNATE ACCESS

One solution identified in the FMPO U.S. 180 Winter Traffic Study was alternate access and egress from the U.S. 180 corridor to Interstate 40. This Implementation Plan further explores those alternatives, however excludes the possibility of paving a route due to the potential impacts to wildlife and land use as well as associated costs and limited seasonal utilization. Additionally, the ADOT U.S. 180 CMP is currently evaluating the option of a paved road; this evaluation is expected to be complete in Fall 2019. The Plan did explore the possibility of using existing infrastructure with only the minimum necessary improvements to make the routes functional for winter traffic. The routes were analyzed for three scenarios: open to the general public, open to residents and emergency responders, or open only to emergency responders.

Several alternatives were identified, and each route was driven with USFS, Arizona Game and Fish, and Coconino County Public Works to evaluate potential wildlife impacts, grade and roadway constraints, construction requirements, and cost estimates. Six routes were recommended to be removed from the planning process.

Exhibit 6: Alternate dirt road routes studied, not recommended in first phase



Source: NAIPTA, 2018.

Potential Alternate Routes

Three alternate routes were identified to potentially alleviate traffic on highway U.S. 180 (see **Exhibit 7**). On May 3, 2018, these alternatives were presented at an open house for public feedback; emails were also sent out to the public for review. The Bader Road to A-1 Mountain Road alternative (blue) and the S. Snow Bowl Road to A-1 Mountain Road alternative (purple) were abandoned as possible alternatives due to negative feedback from the public, as well as expectations for benefit-to-cost ratios. The Wing Mountain alternative (Forest Service Road FS222B to Forest Service Road FS171) (green) was further considered as it was most preferred of the routes by the general public and had fewer grade and improvement challenges.

Potential Alternate Routes

Bader Road to A-1 Mountain

Recommendation: **Not recommended**
Initial costs: **$500,000**
Annual costs: **$62,000**
Travel time savings: **5-8 minutes**

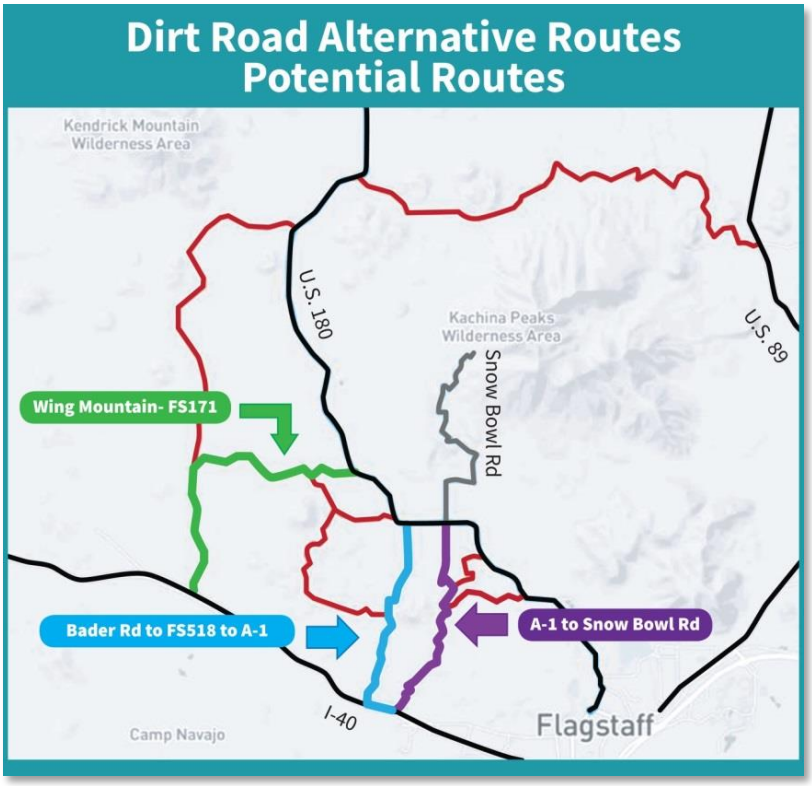
S. Snow Bowl Rd to A-1 Mountain

Recommendation: **Not recommended**
Initial costs: **$520,000**
Annual costs: **$56,000**
Travel time savings: **5-8 minutes**

Wing Mountain FS-222B to FS171

Recommendation: **Reevaluate the need and cost benefit of opening in 2033**
Initial costs: **$400,000 plus turn lane**
Annual costs: **$80,000**
Travel time savings: **10% in 2035**

Exhibit 7: Potential alternate access routes for public input

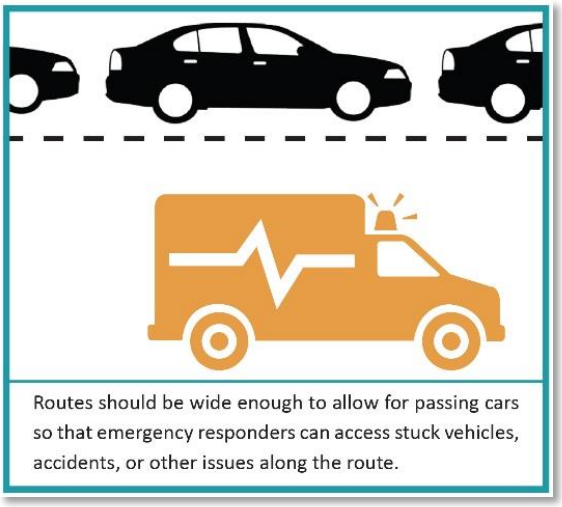


Source: NAIPTA, 2018.

Exhibit 8: Travel time and cost estimates for recommended potential routes

	Wing Mountain - FS171	Bader Rd to FS518 to A-1	A-1 to Snow Bowl Rd
Single Lane Dirt Road  **Egress only**	Travel time downtown: **49 min** Travel time I-17: **44 min** Improvement costs: **$326,699** Annual costs: **$43,020**	Travel time downtown: **35 min** Travel time I-17: **30 min** Improvement costs: **$419,239** Annual costs: **$34,520**	Travel time downtown: **31 min** Travel time I-17: **26 min** Improvement costs: **$411,839** Annual costs: **$31,970**
Double Lane Dirt Road 	Travel time downtown: **49 min** Travel time I-17: **44 min** Improvement costs: **$398,779** Annual costs: **$79,120**	Travel time downtown: **35 min** Travel time I-17: **30 min** Improvement costs: **$504,439** Annual costs: **$62,120**	Travel time downtown: **31 min** Travel time I-17: **26 min** Improvement costs: **$519,839** Annual costs: **$56,620**

Potential Impact on Congestion


Routes should be wide enough to allow for passing cars so that emergency responders can access stuck vehicles, accidents, or other issues along the route.

The three routes have expected travels times of anywhere from 31 to 49 minutes to downtown Flagstaff. StreetLight Data from 2014 to 2018 indicated peak delays have exceeded 30 minutes on 17 days and 40 minutes on 11 days, meaning days on which alternate access would have congestion relief value is limited. In order to determine the potential impact that opening the Wing Mountain FS222B to FS171 route would have on congestion, a VISSIM model was completed which took into account an alternate access route through the currently closed Wing Mountain snow play area and across existing forest service routes, which brings vehicles out near the I-40 Bellemont interchange. The theory is that those travelers intending to take the I-40 or I-17 freeways straight from Arizona Snowbowl to other cities may choose to bypass downtown Flagstaff and Milton Road if the congestion is high enough to warrant it. StreetLight origin-destination (O-D) data was collected for the same time period over which the highest travel time was identified as December 26, 2016. The same O-D proportions were assumed for this analysis. The resulting Streetlight analysis showed that, from the

base of Snow Bowl Road, fewer than one percent traveled to I-40 eastbound, fewer than one percent traveled to I-40 westbound, 10 percent traveled to I-17 southbound, and the remaining stayed in the Flagstaff area. The results from the model showed that, on average, drivers of 240 vehicles over a four-hour peak period would chose to use the alternate access route to reach their desired destinations, saving about nine minutes. An additional traffic analysis was completed to determine if and when opening this route would make an impact on congestion in the future assuming continued growth on the corridor. A right-turn volume from Snow Bowl Road was assumed. The 2025 model with a 500-foot right-turn bay allows vehicles the ability to make the turn, and consequently increases the volume on the alternate route. The model proposed building a southbound right-hand turn lane to facilitate movement towards the Wing Mountain route. The alternative route volume indicates that by 2035 over 450 vehicles would choose the route in the given hour and would have an impact on overall travel times by as much as 10 percent per hour during the afternoon peak. If use of the alternative route is anticipated, the results also indicate that a southbound right-turn bay should be implemented.

Public Input

Of the three alternatives, the Bader Road to A-1 Mountain Road route was consistently the least popular. Feedback from the May 3, 2018 Open House showed a divided interest between the Wing Mountain FS222B and FS517 route and a "no build" option. However, public input from the email outreach effort strongly opposed all three of the alternatives. Additionally, there was significant feedback from the public that expressed a desire for a higher level of infrastructure – such as paving the roads or a full highway bypass – than was being proposed by this Plan. While paving is outside the scope of this Plan, the ADOT U.S. 180 CMP is studying a paving option. Finally, the public opposed limiting access to just residents and emergency responders, instead wanting to see access to alternate routes for everyone.

Concerns from the public about the route alternatives include:

- Disrupting quiet neighborhoods
- Conflicts with safety
- Children playing in neighborhoods
- Reduction in property values
- Dust concerns from more traffic
- Trash
- Illegal parking
- More "pop-up" snow play sites
- Stuck vehicles
- Ability to staff and manage the additional roadway
- Costs
- Emergency response needs
- Impacts from salt on vehicles
- Wildlife impacts
- Noise

Access

The scope of this Plan includes identifying whether alternative access routes should be open only to emergency responders, local residents, or to the general public. Limiting access was not preferred by those who wanted to open the routes; however, this section looks at management for all three options.

To only allow emergency responders would require relatively simple management with placement of a gate and responders given keys or electronic access. To minimize delay, electronic gates could be installed; however this would likely be more expensive. Responders have indicated that it would be unlikely that they would use one of these alternative routes; however, the Coconino County Sheriff's Office has said that S. Snow Bowl Road would be used as a shortcut to other areas. To limit access to only residents, a gate could also be used; however, difficulties could arise regarding who qualifies as a resident and how guests might gain access. There is also a greater risk of the gates not being closed and non-residents gaining access to the route.

Allowing the general public access was the most favored scenario of those supporting alternative access. This is consistent with comments received wanting the alternate access to be a paved option. The USFS and Coconino County Sheriff's Office specifically mentioned that alternate access for general public would need to be managed for egress only and not allow for snow play or stopping vehicles. Additional concerns related to stuck vehicles creating further delays, particularly on a one-way road design.

Management Responsibilities

Opening access to an alternative route would require additional management duties and staffing considerations. It is likely that this would fall to both the USFS and Coconino County for maintenance and plowing. Coconino County would likely incorporate the road into its existing priority system; however, this could mean a delay to other areas for plowing services. If gating is used, USFS would likely be in charge of access and maintenance. An alternative route would also need patrolling to ensure that cars were not stopping at snow play sites and that the route was only being used for egress. This responsibility could fall to either the Coconino County Sheriff's Office or Arizona Game and Fish. Costs for patrolling are included in the annual cost estimates at $68 per hour for an off-duty officer for eight hours a day during peak weekends only.

Funding

A variety of funding options exist for alternative access routes: federal grants, tolling, a tourism-based tax, and/or parking fees at winter recreation sites. Tolling could be required to access the route in order to generate revenue for the costs associated with the alternative route; however, this could deter someone from using the route and diminish the route's ability to relieve congestion on U.S. 180. Issues of equity and slowing down traffic along the route are also potential implications. Implementing a tax or charging for parking could also help offset costs for pursuing the alternative route option.

Considerations

A number of concerns arise from opening an alternative route to help relieve congestion on U.S. 180 including access, operational logistics, maintenance, staffing requirements, and recreation management concerns. Operational concerns include considering how people will be able to access the route (e.g. tolling, gates, etc.), staffing requirements, and possible conflicts with unmanaged and dispersed snow play occurring. Additionally, the alternate route will need to be maintained and plowed on a regular schedule to ensure safe driving conditions.

RECOMMENDATION

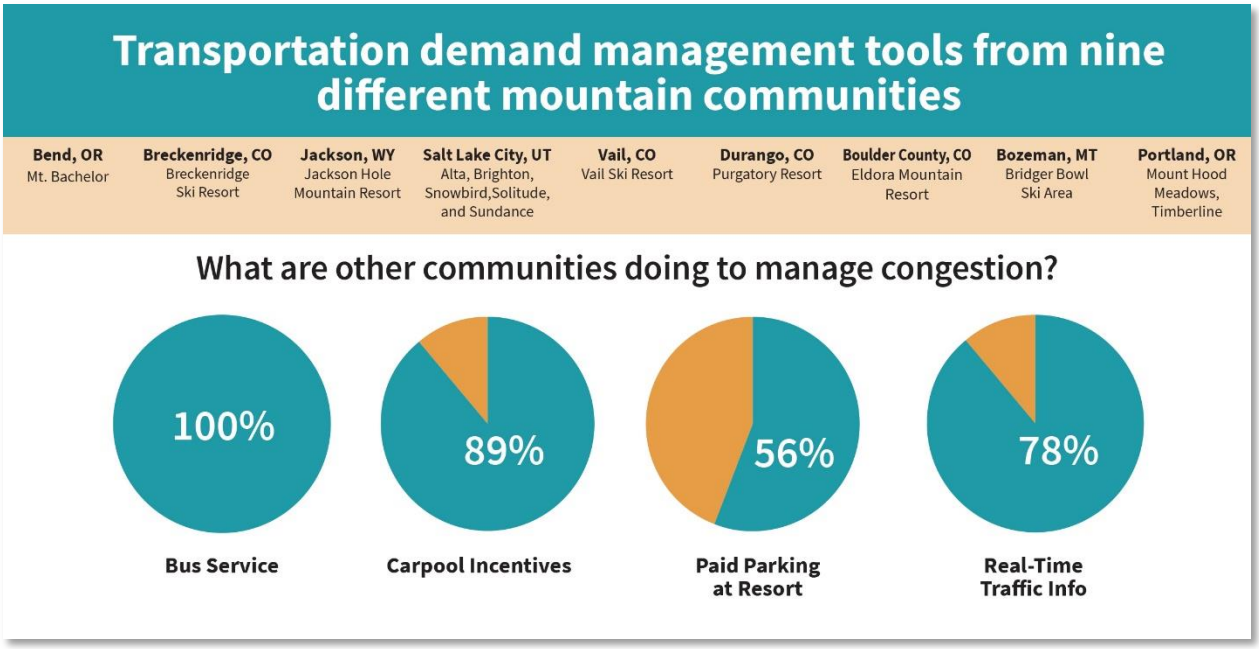
Given the limited travel time savings, the cost, and the strong public opposition, the recommendation is that additional alternate access not be pursued at this time.

However, by 2035 over 450 vehicles per hour would choose the Wing Mountain FS222B to FS171. Its opening could result in a reduction in travel times on U.S. 180 by as much as 10 percent per hour during the afternoon peak. If use of the alternative route is anticipated, the results also indicate that a southbound right-turn bay should be implemented. Any alternate route should allow for access to maneuver around impaired vehicles.

TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (or TDM) is a tool box of low-cost strategies that focus on changing travel behaviors to better use the existing transportation infrastructure, thereby reducing the need to implement higher-cost capital improvements. A TDM program will be successful if a variety of strategies are implemented together to provide both incentives to change travel behaviors and options to do so. Each section describes the strategy, summarizes capital and operating costs, proposes funding sources, and projects congestion impacts.

Exhibit 9: Peer cities travel demand management analysis



Bus Service

For the past three winter seasons, NAIPTA has operated the Mountain Express route, a free bus service to Arizona Snowbowl from downtown Flagstaff. For the 2017-2018 season, this route operated daily between December 26 and January 7, as well as on weekends during the months of January and February. Mountain Express provided two morning trips from downtown Flagstaff to Arizona Snowbowl and two return trips in the afternoon. During the day, bus service was between Fort Valley Lodge and the Hart Prairie Lodge at Arizona Snowbowl, providing a shuttle from overflow parking as well as parking areas that require four-wheel drive or chains. The first year of winter service, the route attracted more than 2,600 riders, which increased to 9,800 the following winter season. The number of riders decreased to 6,789 in the 2017-2018 season (see **Exhibit 10**), possibly due to the lack of snowfall. The majority of the riders have used the service between Fort Valley Lodge and Arizona Snowbowl, having no impact on U.S. 180 congestion.

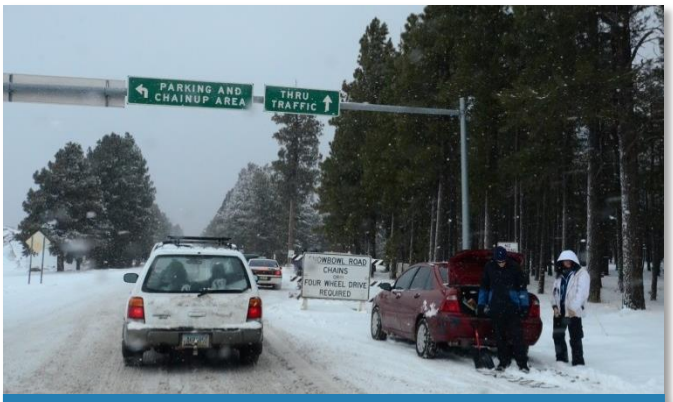
Exhibit 10: Historic ridership on NAIPTA's Mountain Express route

Month	2015-2016	2016-2017	2017-2018
December	620	1,700	495
January	1,716	5,306	2,899
February	297	2,820	3,395
Season Total	**2,633**	**9,826**	**6,789**
Service Days	37	31	36
Average Riders per Service Day	71	317	189

Note: NAIPTA provided some unscheduled services in March 2018, which attracted an additional 127 riders that are not included in the above total. *Source: NAIPTA.*

Peer communities

High-frequency, convenient bus service has been an effective way to reduce winter recreation traffic. The Bridger Bowl Ski Resort near Bozeman, Montana, recently increased its service to include 30-minute all-day service on weekends and holidays. This free service has seen as many as 1,000 riders (or 18 percent of all visitors) on busy weekends. Transit has also been effective for the ski resorts served by the Utah Transportation Authority (UTA). UTA currently serves five major ski areas, and in the 2016-2017 season implemented a 15-minute on-peak bus service. The UTA reported there was a 60 percent reduction in vehicular traffic on Sundays and an 88 percent increase in overall ridership from the previous season.

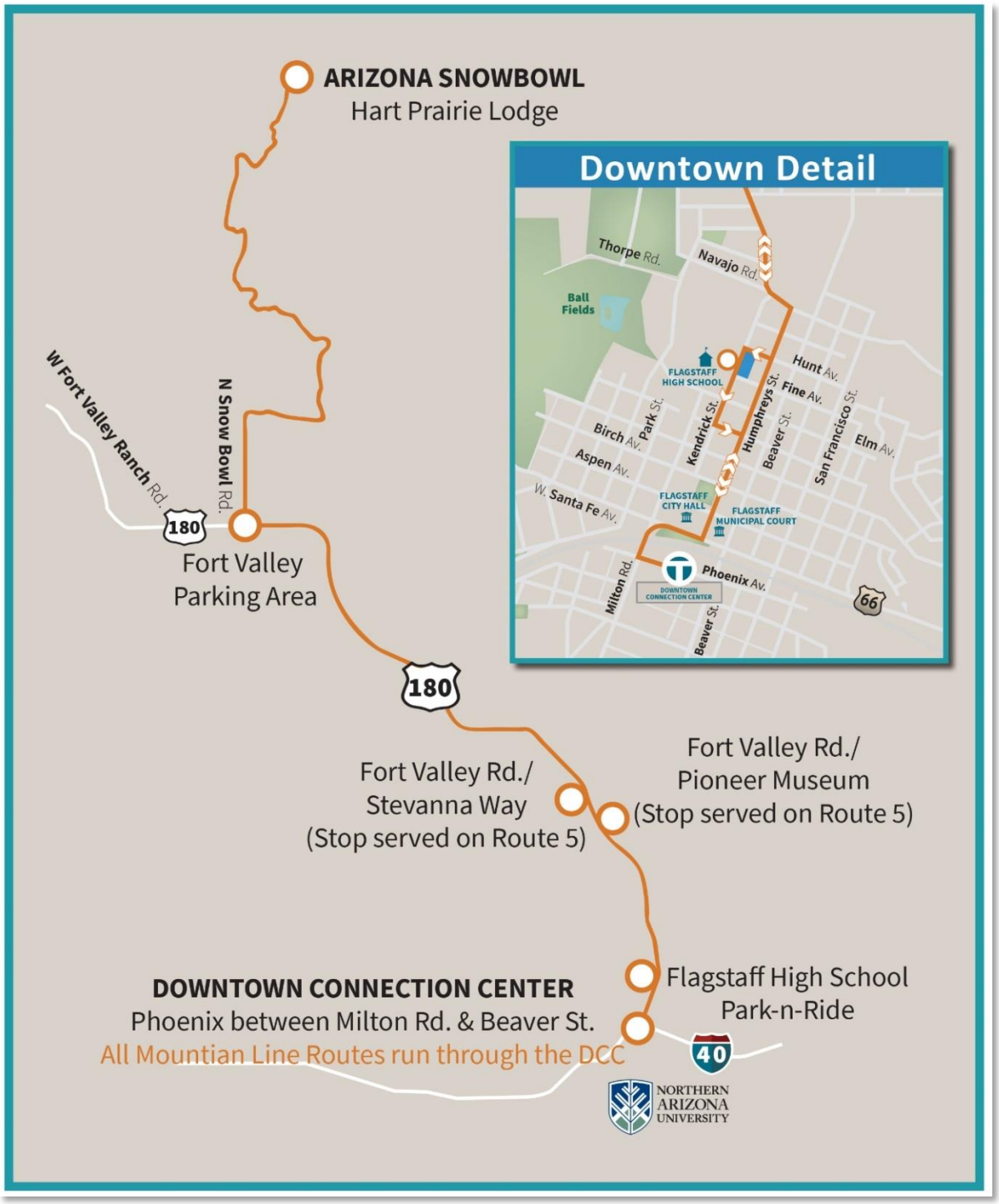


Chains or four wheel drive vehicles are sometimes required on Snow Bowl Road.
Source: jariarkko, http://planetskier.blogspot.com

Capital and Operating Costs

Using estimated travel times and the anticipated number of service days, an operating plan could include runtimes which accommodate both 20-minute and 30-minute frequencies for peak and off-peak service. Each trip is estimated to take 120 minutes round-trip from downtown Flagstaff to Arizona Snowbowl (see **Exhibit 11** for proposed route), with stops at Flagstaff High School and Pioneer Museum/Stevanna in between. **Exhibit 12** shows the operating scenario for this proposed level of service (see below). Projected operating costs for the 2018-2019 winter season were then derived from the operating hours for the proposed level of service (see **Exhibit 14**). While so far funding is only secured to operate 30-minute frequencies on holidays, the ultimate goal should be to have 20-minute peak holiday service with 30- to 60-minute service on weekdays and weekends for the entire season.

Exhibit 11: Mountain Express routing 2018-2019 season



Source: NAIPTA, 2018.

Exhibit 12: Projected operating hours of improved bus service, short-term

Operating Hours	Hours per Day	Season Hours	Round Trip Travel Time	Bus Frequency	Buses Required	Total Bus Hours (30-min frequency)	Total Bus Hours (20-min frequency)
Saturdays (7)							
7:00 – 14:00	7	49	120	30	4	196	
14:00 – 18:00	4	28	120	20	6		168
Sundays (8)							
7:00 – 14:00	7	56	120	30	4	224	
14:00 – 18:00	4	32	120	20	6		192
Holidays (15)							
7:00 – 14:00	7	105	120	30	4	420	
14:00 – 18:00	4	60	120	20	6		360
Total Season Service Hours by Frequency:						**840**	**720**
Total Season Service Hours						**1,560**	

Note: Holidays are determined to be weeks between Christmas and the start of the school year, Martin Luther King Jr. Day weekend, and Presidents Day weekend. *Source: AECOM, NAIPTA; 2018.*

Exhibit 13: Projected operating hours of improved bus service, long-term

Operating Hours	Hours per Day	Season Hours	Round Trip Travel Time	Bus Frequency	Buses Required	Total Bus Hours (30-min frequency)	Total Bus Hours (20-min frequency)
Non-Holiday weekdays (35)							
7:00 – 18:00	11	385	120	30	4	1,540	
Total Season Service Hours by Frequency:						**2,380**	**720**
Total Season Service Hours						**3,100**	

Note: Long-term service is in addition to short-term service. *Source: AECOM, NAIPTA; 2018.*

Operating costs were developed using projected 2018-2019 season operating costs, based on operating hours developed in **Exhibit 12** above. **Exhibit 14** shows projected total hours at full build out of the recommended level of service.

Exhibit 14: Projected operating cost to implement short-term bus service

	Cost
Administration (at $13.00 per Service Hour)	$20,280
Operating (at $77.00 per Service Hour)	$120,120
Total Cost	**$140,400**

Source: AECOM, NAIPTA; 2018.

Ultimately, providing transit service every day from Christmas though the end of February would provide increased reliability and make the service even more attractive. The long-term plan, which includes 35 non-holiday, non-weekend days each year at 30-minute service is projected to double the cost of service.

Funding Source

Arizona Snowbowl currently pays the full cost for all service to the resort. Thus far, NAIPTA has not been successful at securing federal grants and it is likely local funding sources will be required. By implementing paid parking at Arizona Snowbowl (see page 31), this could create a supplemental funding source to pay for improved bus service.

Impact on Congestion

Improving bus service between downtown Flagstaff and Arizona Snowbowl has the potential to reduce traffic by four to five percent on days where congestion is high. In the past winter season, Mountain Express has not been able to help reduce congestion on U.S. 180; however, with the implementation of frequent, all-day bus service from downtown on weekends and holidays, higher ridership would be expected. In addition to increased frequency, bus-only lanes and paid parking at the ski mountain will continue to make the bus a more appealing option for winter visitors and continue to reduce congestion on U.S. 180.

Amenities

A variety of amenities could be implemented to make the bus more convenient and therefore attract ridership. First, the bus itself could be equipped with ski and snowboard racks. Second, Arizona Snowbowl could provide lockers on site where patrons could leave gear so they do not have to carry it on the bus, and finally, Arizona Snowbowl could arrange a partnership with other ski rental business to allow for pick-up and/or drop-off at the resort itself.

Recommendation

Frequency is key to attracting bus ridership to Arizona Snowbowl. These routes need to begin and end in downtown Flagstaff, with service days to include holidays (December 26 through the first week of January) as well as weekends in January and February. Bus frequency should be every 20 to 30 minutes throughout the day. To attract ridership by Arizona Snowbowl's 500 employees as well as visitors, buses should start at 7:00 a.m. and end at 6:00 p.m. As ridership grows, buses also need to be equipped with ski and snowboard racks and the potential to drop off rentals or store ski gear at the resort for bus riders are preferred.

Implementation

Continued partnership between Arizona Snowbowl and NAIPTA is required to fund and operate the Mountain Express bus service. Park-and-ride options also need to be identified, as the Downtown Connection Center (DCC) does not have a sufficient amount of parking. This is also a paid parking lot, which discourages ridership from the DCC. Ideal lots will be located close to downtown and in the direction of Arizona Snowbowl, such as at Flagstaff High School. Parking lots further south on the Northern Arizona University (NAU) campus could potentially serve as a park-and-ride option on the

weekends; however, the added distance for the bus route would require one or two additional buses to maintain 20-minute and 30-minute frequencies. See **Exhibit 15** for proposed park-and-ride locations.

Exhibit 15: Potential park-and-ride locations

Paid Parking at Arizona Snowbowl

Peer Communities

The price of parking is often used to influence travel choice by altering the cost of driving. Paid parking is becoming a common practice at many ski resorts throughout the western United States, including those in California, Colorado, Montana, Oregon, Utah, Washington, and Wyoming. Often parking fees help to offset costs of other travel options such as shuttle service within or bus service to the resort. Parking costs vary widely between resort communities. In locations like Vail and Breckenridge, Colorado, the ski areas are adjacent to downtown areas and congestion and parking are major issues. At Mount Bachelor near Bend, Oregon, and Teton Village near Jackson, Wyoming, there is regularly congestion on the roadways leading to the ski resorts. In other locations like the Eldora Mountain Resort west of Nederland and Arapahoe Basin Ski Area just outside of Keystone (both in Colorado), parking is free (Eldora) or a combination of free and paid (Arapahoe Basin).

Exhibit 16: Peer cities paid parking prices

Resort	Cost
Mt. Bachelor, OR	$20 weekends and holidays
Breckenridge Ski Resort, CO	$8.75 - $12 per day, parking meters
Jackson Hole Mountain Resort, WY	$10 - $20
Vail Ski Resort, CO	$50 per day, parking meters
Mount Hood Meadows, OR	$5 daily, $30 full season
Timberline, OR	$4 daily, $9 three-day, $25 full season

Pricing is critical, and parking costs vary widely between resort communities. It is important to find a price point that is high enough to encourage a change in travel behavior, but not so high as to discourage patrons from making the trip all together. In ski areas like Vail, parking rates began at $15 per day and are now as high as $50 per day, as the resort has been raising its prices by five dollars per year. Vail has a task force comprised of business owners, city officials, and other stakeholders to determine the price of parking for each season. In other peer cities, parking costs range between five dollars and $25. Other communities have set prices by conducting research on parking fees at other recreational facilities including amusement parks, state and national parks, and stadiums, which generally have a range of $10 to $20. Breckenridge, Colorado offers a $5 discount on parking for cars with four or more people. This past season, Breckenridge reported that 22 percent of cars that parked at the resort had four or more people per car. Jackson, Wyoming also implemented a carpooling incentive

that allows cars that have three or more people per car to park for free at the resort. Such systems require a way to identify the number of people in a vehicle, likely through staff counting.

Report 95, *Parking Pricing and Fees,* from the Transit Cooperative Research Program (TCRP) states that the "effects of parking pricing are often hard to separate from those of parking supply. Moreover, application of parking pricing is frequently accompanied by various other strategies." The proposed TDM program would consist of implementing paid parking at Arizona Snowbowl, as well as providing a cost reduction of the paid parking program to carpoolers and improving the bus service. TCRP Report 95 goes on to state that "perhaps the biggest lever available to employers and institutions interested in reducing single occupancy vehicle use for access to their facility is the imposition of parking supply constraints or parking pricing." It is important to ensure pricing does not drive away customers but rather changes their behavior for getting to the resort. Coupling fees with options such as a free bus and carpool incentives, including reduced parking fees, are important complements to paid parking.

Capital and Operating Costs

There are a variety of costs associated with collecting parking fees. First, it is ideal to collect fees at the bottom of Snow Bowl Road in order to capture those who park at the lower lot and still add to congestion. However, delays associated with collecting a fee have the potential to back congestion up on northbound U.S. 180 since the lot does not allow much room for queuing. Therefore, employing a technology which automates and speeds collection is critical. Ideal technology would allow people to park quickly and pay once in the lot, much like a gate at a parking garage or airport which gives you an initial ticket and allows you to pay later. However, to implement phased fees, a way to identify the number of people in a car is needed. This could be done through staff handing out scannable tickets on entry to a parking lot that are required to be paid to open a gate upon exit from the lot. Multiple lanes should also be considered to speed flow. Alternatively, parking meters could be used, but there are additional concerns related to plowing and enforcing meters. Either way, it is likely several staff will need to be employed to assist in a parking fee program, though the number will vary depending on technology.

Impact on Congestion

Arizona Snowbowl has about 1,400 parking spaces, with an additional 350 spots under construction. The Fort Valley Lodge also has around 500 parking spaces. According to Arizona Snowbowl, the average car occupancy at the resort is 2.54 individuals per vehicle. The Victoria Transport Policy Institute has found that for every 10 percent increase in the cost of parking, there is a one to three percent reduction in cars, and Vail has reported that for every $5 increase for parking, the demand has dropped by five percent. Adding $15 to the current price of $89 for a lift ticket at Arizona Snowbowl is approximately a 17 percent increase in total cost of an Adult Day Pass. By moving to a system of paid parking of $15 per day on key weekends and holidays, traffic could potentially be reduced by two to six percent on those days; however, other places have seen higher rates of success. The price for parking may need to be adjusted after the first season of implementation to find a price point that effectively encourages people to change their behavior.

Exhibit 17 estimates the number of low occupancy (one to two persons per vehicle) and high occupancy (three or more persons per vehicle) vehicles that would be expected to park at Arizona Snowbowl, based on average weekend attendance during the 2017-18 snow play season and assuming a $10 parking fee. The total reduction in vehicles is expected to be anywhere from 80 to 170.

Exhibit 17: Projected change in vehicle traffic per weekend day

	Number of Vehicles	Auto Occupancy	Number of Patrons per Average Weekend Day
No Paid Parking			
Employees (1-2 per vehicle)	125	1.5	188
Employees (3-4 per vehicle)	25	3.5	88
Patrons (1-2 per vehicle)	750	1.5	1,125
Patrons (3-4 per vehicle)	750	3.5	2,625
Total Vehicles	**1,650**	**Patron: 2.5**	**Employees: 275 Patrons: 3,750**
Paid Parking 5% Change			
Employees (1-2 per vehicle)	100	1.5	150
Employees (3-4 per vehicle)	36	3.5	125
Patrons (1-2 per vehicle)	630	1.5	945
Patrons (3-4 per vehicle)	801	3.5	2,805
Total Vehicles	**1,567**	**Patron: 2.62**	**Employees: 275 Patrons: 3,750**
Paid Parking 10% Change			
Employees (1-2 per vehicle)	90	1.5	135
Employees (3-4 per vehicle)	40	3.5	140
Patrons (1-2 per vehicle)	490	1.5	735
Patrons (3-4 per vehicle)	861	3.5	3,015
Total	**1,481**	**Patron: 2.77**	**Employees: 275 Patrons: 3,750**

Source: AECOM and NAIPTA, 2018.

Recommendation

A two-tier parking fee system is recommended at the Arizona Snowbowl parking lots during the holiday season and on weekends. The two tiers should be based on number of occupants in vehicles: those with one to two people will be charged $15 per day to park, and vehicles with three or more will pay $5 per day. This would benefit those who choose to carpool (those with three or more per car), while also encouraging visitors to take the free bus service. Further, it is recommended no additional parking be built or provided and programs like carpool incentives and expanded bus service complement the implementation of a parking fee.

Implementation

The U.S. Forest Service (USFS) and Arizona Snowbowl negotiate their winter operating plans in October and November and the paid parking program would need to be approved through this annual update. Identification of how revenue sources should be specifically laid out will take place through this plan.

Recently the City of Flagstaff adopted paid parking and created ParkFlag as the agency to implement the plan and manage parking. ParkFlag is established as an enterprise fund so that the revenues and expenses of the program are self-contained. Funds in this account must be associated with the operation and maintenance of the parking system. This approach would also work well for a paid parking program at Arizona Snowbowl, with revenues being dedicated to TDM measures. Other resort communities have dedicated parking revenues to the implementation of TDM measures as well.

Currently, Arizona Snowbowl has employees at the parking lots directing traffic, so there are already employees dedicated to parking management. The goal would be to implement a system where employees are not collecting cash payments for parking, but instead tagging vehicles to indicate which parking tier and subsequent parking rate pertains to that car. Additional technologies such as license plate readers could also be employed to speed the flow.

Exhibit 18 projects the amount of parking fees that could be collected assuming low occupancy (one to two persons per vehicle at $15) and high occupancy (three or more persons per vehicle at $5). The chart assumes that employees with one or two people per vehicle would pay to park but those with three or more would park for free.

Exhibit 18: Projected annual revenue from paid parking

	Number of Vehicles	Daily Parking Fee	Total Parking Fees Collected per Average Weekend Day	Paid Parking Days (typical season)	Total Parking Fees
Key Holiday Season Paid Parking					
Low occupancy (1-2 per vehicle)	630	$15	$9,450	35	$330,750
High Occupancy (3-4 per vehicle)	801	$5	$4,005	35	$140,175
Total	**1,567**			**35**	**$470,925**

Carpool Incentives

Carpooling is an effective way to reduce congestion during peak traffic hours throughout the ski season. Several peer cities have adopted carpooling incentives to address traffic concerns to and from ski resorts. Aside from providing a discount on parking, there are other incentive models that communities have implemented to encourage carpooling. In Utah, the Brighton Ski Resort offers tokens to cars traveling with four or more to the resort that can be used towards rewards, such as free coffee or hot chocolate. These tokens can also be saved to be exchanged for free food and discounted lift tickets. At the Kirkwood Mountain Resort in California, an online forum connects commuters to the Lake Tahoe Resort to find other interested carpoolers and gives out $20 vouchers to those who sign up early.

Online winter recreation-related rideshare forums and apps are a convenient way for people to connect with rides to and from the ski resort based on the day and the time that they plan to make their trip. For example, Snowbird Ski Resort developed a transportation management app to help people find shared rides to and from the resort while earning points that can be cashed in for prizes. The app works by awarding people points for ridesharing through the app or for riding the bus. Awards include a free water bottle, half-price lift tickets, and early-bird lift tickets, where the resort will exclusively open the ski lift an hour early for customers who have more than ten points. The app will track the carbon reduction that the user has achieved by opting to carpool or take the bus. The low-cost rewards offered with the program had little to no cost to the resort, and Snowbird considered it an easy way to create a more sustainable business. There are also a number of online forums that already exist that can connect people with rides to ski resorts. These include CarpoolWorld, ShareLift, and Rideski, among others. There may also be opportunities to work with the business community in Flagstaff to provide incentives for people to get an “early bird” meal or drink special to shift some traffic to before peak exodus hours.

Capital and Operating Costs

The creation of an app could cost anywhere from $10,000 to $100,000 depending on the level of sophistication. Additionally, revenue losses could occur from the discounts provided by the program. See page 34 for a discussion of costs associated with paid parking incentives.

Impact on Congestion

An increase in automobile occupancy from 1-2 people to more than 3 could potentially reduce traffic by one to two percent. As shown in **Exhibit 17,** providing a financial incentive for carpooling could increase the average automobile occupancy from 2.54 to 2.77.

Recommendation

Begin implementation of carpool incentives including discounts, priority parking, a ridesharing app and website, and paid parking fee reductions.

Implementation

Incentivizing carpooling is most easily done when paired with a paid parking program as previously discussed. Additionally, a mobile app that provides information on transportation to winter recreation destinations, with a carpooling feature or forum, will help connect people to rides to and from the ski resort. The Convention and Visitors Bureau, Downtown Business Alliance, Flagstaff Chamber of Commerce, and Local First groups should all be employed to make discount packages the most attractive possible.

Dynamic Travel Time Signage

Dynamic signage should be used in different forms and at various locations throughout the day along the U.S. 180 corridor. Real-time travel information can warn travelers of delays and congestion. In the morning, signs can warn travelers of longer travel times on their return before they leave for the resort and direct people to carpool or ride the bus. These could be placed along S. Milton Road, N. Humphreys Street, and Forest Avenue. These signs could initially be temporary (see **Exhibit 19**), and at a time when more funding can be secured, can be converted to permanent variable message signs (see **Exhibit 20**). ADOT also has variable message signage along I-17 which could be used. Current policy only allows for travel times or safety messages to be displayed but consideration of a change of policy to allow for TDM messaging such as directions to Fort Tuthill or park and rides could be helpful.

Dynamic signs can also be an effective way to inform winter recreation visitors about parking conditions at the resort. Mount Hood Meadows Resort in Oregon places temporary dynamic signs along the highway on the way to the resort on peak snow days that let drivers know about parking availability. If there is limited parking, the resort asks its patrons to park at a park-and-ride and take the bus to the ski resort.

Exhibit 19: Example of temporary variable message sign

Exhibit 20: Example of permanent variable message sign

Original Image Source: http://www.rms.nsw.gov.au/about/corporate-publications/annual-report/achievements-and-business-results.html.

Additionally, signs can be installed at Arizona Snowbowl with updated travel times back to downtown Flagstaff so visitors can make informed decision on when to depart the resort. This strategy could spread out peak commuting hours from the resort, by keeping visitors up-to-date throughout the day. Only one or two travel signs would likely be required at the base of Snowbowl.

Capital and Operating Costs

Capital costs associated with dynamic signs would include the procurement of the signs as well as installation costs for the permanent signs. According to the USDOT, a portable dynamic message sign costs between $5,000 and $7,500, while a permanent dynamic message sign will cost between $80,000 and $175,000 for procurement and installation. The cost will depend on several factors including the size, structure, and controller type.

For portable signs, operating costs will include labor for people to place and retrieve the signs on peak traffic days. Both portable and permanent signs will require maintenance over the years including electrical work, software and firmware updates, and mechanical maintenance. USDOT estimates dynamic message signs can cost anywhere from $750 to $5,000 per year to maintain and operate. Additionally, screens could be used within Arizona Snowbowl at low cost.

Impact on Congestion

According to research conducted by the Victoria Transport Policy Institute, improved information and marketing is half as effective as other TDM strategies such as paid parking and encouraging changes in mode. Because paid parking is expected to reduce traffic by one to three percent, dynamic message signs would be expected to proportionally reduce traffic by 0.5 to 1.5 percent. While a marketing campaign alone will not remove cars from the road, it will increase the effectiveness of the other TDM strategies. By raising awareness about congestion problems associated with winter recreation and informing people about bus service, carpooling, and parking options, the marketing campaign will help people make more informed decisions about their travel choices.

Funding Source

The new revenue generated from paid parking at Arizona Snowbowl could be used to help cover costs to procure and operate digital signage.

Recommendation

Implement real-time travel information signage at Arizona Snowbowl and along U.S. 180 to Arizona Snowbowl from downtown Flagstaff.

Implementation

Temporary signage, similar to what is described above, should be considered as a first step. Partnership with ADOT will be required for placement of signs along U.S. 180. Arizona Snowbowl would need to install screens with real-time travel time data in highly used areas. ADOT has recently procured real-time travel data that is available statewide. Coordination for sharing this technology between agencies and popular attractions is recommended. Additionally, ADOT could explore policies which allow the promotion of TDM strategies on variable message signs.

Other Transportation Demand Management Options

Dispersion of Established Snow Recreation Sites

The congestion issues on U.S. 180 are ultimately related to a high demand for winter recreation. The dispersion of winter recreation sites is another strategy to reduce congestion on U.S. 180. The greatest congestion occurs on days when major snow play sites are all located on U.S. 180, including Wing Mountain and Crowley Pit, further inducing demand for vehicles to travel along the corridor. The dispersion of snow play sites throughout the region should be encouraged and marketing campaigns continued to make travelers aware of options. Coconino County has already developed a public-private partnership with a snow play provider and has approved snowmaking at Fort Tuthill, located on the south end of Flagstaff.

Accommodating some demand on U.S. 180 itself is also important because parking along the roadway causes slowing and congestion. Allowing a few small parking areas with room to safely pull off the road can help alleviate illegal parking, which increases travel time.

The locations of snow play sites should have adequate parking, some grades, and ideally be north facing and or with enough trees to reduce direct sun on snow play areas. The development of sites will likely require the partnership of public land owners with private contractors. Potential locations include ADOT rest stops on I-40 west of Flagstaff, USFS sites near Williams, and a host of parks and recreation sites within the City of Flagstaff. Creating designated snow play spots will also reduce illegal parking on U.S. 180 and help with trash removal, which is considerably easier in designated sites than spread throughout the forest.

Encourage Private Service Providers

The U.S. Forest Service Flagstaff Ranger District identifies the need for more shuttles to Arizona Snowbowl. The USFS requires private service providers to obtain a permit. For this type of activity to be expanded, it is important to determine what is allowed in the Vendor Plan.

Over the past couple of years, private transportation service providers have occasionally operated to Arizona Snowbowl. These types of high-capacity shuttles should be encouraged, particularly from outlying areas. As an example, In Colorado, the Front Range Ski Bus operated Wednesday through Sunday during the 2017-18 snow play season between Denver and the Loveland Ski Area. In Denver there were two pickup points. The cost of the service was $45 for adults and $38 for kids under 12 years of age. They provided ski lift discounts of nearly 25 percent for riding the bus, and they also offered one-way rides as well.

Additionally, the Arizona Shuttle operates regular service throughout the year between Phoenix and Flagstaff. The bus stops at the Phoenix Sky Harbor Airport and the Phoenix Metro Center Mall in Phoenix and the Northern Arizona University Walkup Skydome, Northern Arizona University Central Campus, and the Amtrak Station in Flagstaff. There are 13 daily trips in each direction, with one-way fares costing $48 for adults and $27 for children. There may be opportunities to better coordinate drop-off locations with Mountain Express and reduce ticket costs.

Limited-Hour Lift Tickets

Limited-hour ski lift tickets have the potential to reduce traffic during peak traffic hours while providing an affordable ski lift pass option for Arizona Snowbowl customers. Offering a limited-hour ski lift ticket, such as morning-only access, will encourage people to leave at different times during the day, reducing the amount of people leaving the ski resort during peak hours. Encouraging people to leave at staggered times throughout the day will also help the ski resort turn over parking spaces, thereby allowing more customers to be able to park at the resort.

Operationally, there are several different models for implementing limited-hour tickets. At Ski Big Bear in Lackawaxen, Pennsylvania, a morning half-day ski lift ticket is offered between 9 a.m. and 12:30 p.m. At Ski Big Bear, the customer purchases a half-day ski pass in the morning that will allow them to complete as many runs as they would like until 12:30 p.m. After 12:30 p.m., the ski lift will no longer accept the barcode on the skier's pass indicating that the pass has expired. The Ski Big Bear half-day pass encourages more people to start skiing earlier in the day and allows customer to pay a lower price for their ski pass for leaving before peak traffic. Loveland Ski Area offers a flex pass that allows customer to ski for any four consecutive hours during the day. Loveland Ski Area operates its flex pass by requiring customers to purchase a full-day pass when they arrive at the resort. If the customer returns their full-day pass to the ticket office within four hours of purchasing the pass, the customer will receive a partial refund on their purchase. Loveland Ski Area's flex pass encourages people to leave at staggered times of the day, depending on when the initial ski pass was purchased. Arizona Snowbowl offers a similar credit for leaving early, though on good condition days, skiers often want to ski the whole day. It is expected that limited hour passes could reduce traffic by 0.5 to 1.5 percent by encouraging people to make their trips during off-peak traffic hours.

Packaging Transportation Demand Management Opportunities

It is possible to package TDM strategies to alleviate traffic on U.S. 180. While each of the strategies may not make a high impact on travels along the corridor on its own, packaged together, there are short-term solutions which can start to make a noticeable difference. Through research and best practices, the projected traffic reduction percentage for each individual TDM strategy was tabulated. **Exhibit 21** compares the projected traffic reduction for all the TDM strategies considered. Based on the projected traffic reductions, implementing improved bus service, paid parking, and carpooling would have the greatest impact on traffic while the other strategies would only add a marginal reduction.

Exhibit 21: Projected traffic reduction from TDM strategies

	Low End of Range	High End of Range
Bus service	4.0%	5.0%
$15 paid parking	2.0%	5.0%
Carpool incentives	1.0%	2.0%
Dynamic signage	0.5%	1.5%
Marketing	0.5%	1.5%
Limited-hour passes	0.5%	1.5%

Note: TDM strategy impacts are not additive as they have overlapping impacts.
Source: AECOM, 2018.

Two alternatives were packaged for further evaluating the impact of different groupings of TDM strategies. The first alternative was a core package consisting of the three TDM strategies projected to have the greatest impact on congestion, reducing car volume by 5.0 to 7.5 percent. These core strategies are intended to provide a low-cost, highest impact package. The second TDM alternative is a comprehensive package of strategies expected to reduce traffic volume by 5.75 to 9.75 percent. **Exhibit 22** outlines the two alternatives.

Exhibit 22: TDM alternatives

Alternative 1: Core Strategies	Alternative 2: Comprehensive
Bus service	Bus service
Paid parking	Paid parking
Carpooling	Carpooling
	Dynamic signage
	Marketing campaign
	Limited-hour passes

Source: AECOM, 2018.

Volumes and Potential Travel Time Reductions

A VISSIM traffic model was completed to understand the congestion impacts of the Core Strategies Alternative. A "base case" model replicated the existing travel times on the worst travel day. The simulation was run for four hours, and the results for the last hour were used for analysis to allow for traffic to "build up." As a result, the travel time for the base model was 48.6 minutes.

The overall reduction in volume for the combined TDM treatments is not simply a sum of the reduction for individual treatments. The projected traffic reduction for implementing the Core Strategies Alternative is 5.0 to 7.5 percent, which equates to a reduction of 150 to 220 vehicles over a four-hour peak period. The volumes in the base case VISSIM model were reduced accordingly to determine the change in travel times. When the model was run, it was determined that implementing the Core Strategies Alternative would reduce travel times to 40 to 43.3 minutes at peak congestion. **Exhibit 23** demonstrates the potential reduction in travel times if the Core Strategies TDM alternative is implemented as compared to the base case model.

Exhibit 23: Predicted core strategies TDM travel times

	Base Case	5% Volume Reduction	7.5% Volume Reduction
Minutes of travel time, base of Snow Bowl Road to Humphreys/Milton	48.6	43.3	40.0

Source: AECOM, 2018.

ILLEGAL PARKING

Parking along the right of way of U.S. 180 increases travel time delay, is unsafe, and is illegal. In 2017-2018, Coconino County and ADOT took several steps to try to reduce illegal parking along the corridor and in adjacent neighborhoods by clearly displaying no parking signs. While the lack of snow provided limited opportunity to test the new signage, it is likely this signage will need to be accompanied by enforcement until other, adequate sites are created to meet the demand for snow play activities.

The Coconino County Sheriff's Department has tried enforcement in the past but found two things. First, asking people to move their car over a loudspeaker is as effective as handing out tickets, and second, once vehicles leave, a new wave of cars fill in the spots once enforcement has left.

ADOT has expressed that it would require but allow for an encroachment permit for other agencies to do non-ticketed illegal parking enforcement along the corridor. The permit application requires a scope of work including who, with what authority, and how enforcement would occur and a $2 million general aggregate, $1 million per occurrence insurance requirement.

COSTS

The estimated annual costs of one additional officer along the corridor on key winter congestion holidays along is $7,500.

IMPLEMENTATION

A variety of options exist for enforcement, including additional Arizona Highway Patrol, additional Sheriff's Deputies, or the Sheriff's volunteer patrol or citizen staff member, so long as no ticketing occurs. The last two approaches would be taken with extreme caution because of the potential risk of confrontation. Finally, other law enforcement, such as Game and Fish, could be contracted for the management.

TRASH

Each year, there is a considerable amount of litter left along U.S. 180 at dispersed snow play locations. Litter includes everything from broken sleds to food wrappers and diapers. The City of Flagstaff and Coconino National Forest spend significant resources trying to educate tourists not to litter and on cleanup efforts. There are two main strategies to addressing this litter problem: prevention and cleanup.

Previous prevention efforts include an education billboard, hot chocolate for returning trash, art demonstrations, advertising, press releases, ADOT signage, educational stickers on sleds, and the renting of higher-quality sleds. Cleanup has historically been a joint effort of the City Public Works Department and USFS. The City has deployed and picked up dumpsters at Thorpe Park, Peak View Watchable Wildlife Area, Ski Lift Lodge and Cabins, and Walker Lake. Coconino National forest has conducted cleanups throughout the forest.

COST

Major costs include staffing, advertising and operational costs of trash removal. Rough estimate of cost is between $3,000 and $5,000 for the season. While a sled fee has been discussed to help provide revenue for these costs, it is not recommended at this time.

IMPLEMENTATION

For the 2018-2019 season, it was determined that both recycling and trash receptacles with clear signage would be at each location. Tipping dumpsters is to occur on Mondays and Fridays. Community Stewards Winter Snow Play volunteers will conduct mid-week cleanup events based on high use. They will also photograph and document trash levels and tipping needs by reporting observations to environmental services while the Master Recyclers will conduct education and outreach at the Flagstaff Visitor's Center on high-volume snow play weekends. The City Sustainability Section will determine the dumpster messaging and procure signage and work with a marketing firm to ensure winter snow play messaging is included in the anti-litter campaign.

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CHAPTER 4 | IMPLEMENTATION PLAN

RECOMMENDATIONS

Historic data from traffic congestion indicates that while on a few occasions, traffic delays have exceeded 45 minutes from the base of Snowbowl Road to downtown Flagstaff, more common delays are 25 to 30 minutes. In addition, extreme delays occurred when Wing Mountain and Crowley Pit snow play areas added significant additional parking, and therefore significant traffic volume, along the corridor. Traffic modeling indicates the current capacity of parking at Arizona Snowbowl alone is unable to generate the types of delays previously seen. Nonetheless, illegal parking continues to occur and increases the number of recreationists along the corridor.

The first alternative that could be considered is a parking management-only solution. Since there is not enough legal parking on the corridor as of the 2018-2019 season to create significant delays, efforts could be taken to reduce illegal parking though increased law enforcement presence and long-term efforts to limit additional winter recreation parking opportunities in the corridor. Over time, this solution may not be sufficient as additional housing and development occurs along the corridor, increasing traffic volumes associated with residents. Additionally, it creates concerns about providing adequate access to the forest for those who want to recreate.

Transportation demand management solutions can be implemented quickly and at relatively low cost. While two TDM packages were explored, based on the projected traffic reductions for each alternative, the Comprehensive alternative only has a marginally higher traffic reduction than the Core Strategies alternative. For this reason, it is recommended that the Core Strategies alternative be implemented with the current funding, and in the future, if addition funding becomes available, other TDM strategies like dynamic signage and marketing can be implemented to enhance the performance of the Core Strategies.

It should also be noted that a marketing campaign at a minimal level is necessary to ensure that all of the TDM elements are described and understood by the traveling public. This includes updating websites (Arizona Snowbowl, Mountain Line, Downtown Flagstaff, and others) to update information about traveling to snow play activities on weekends and holidays).

Finally, it is expected that growth along the U.S. 180 corridor will continue at similar rates as in the past. This growth will add additional traffic to the corridor and could make the opening of the Wing Mountain FS222B and FS171 route a viable strategy around 2035. The needs and cost benefit of opening the route should be reevaluated around 2033. Opening the route will require partnership between USFS and Coconino County and can follow models such as Garland Prairie Road, where the road belongs to USFS but is maintained by the County.

IMPLEMENTATION TIMELINE

Illegal parking enforcement, transit services, parking fees, and carpool incentives have the most impact on traffic congestion and therefore should be prioritized right away. Because of the short timeframe to implement and need for public to adopt new behaviors, phasing is recommended for these strategies.

Exhibit 24: Implementation phases

	Year 1	Year 2	Year 3
High Impact TDM Solutions			
Transit service	30-minute service.	20-minute service; add lockers at Arizona Snowbowl.	20-minute service; add new ski return locations.
Parking fees	Recommended.	$15/ $5 high occupancy.	Add free parking for 4+ people.
Rideshare incentives	Employee carpool program.	Add reduced pricing for parking, work with businesses for giveaways.	Continue to grow incentives.
Additional TDM Strategies			
Real time traffic	N/A	Add real-time travel info inside Arizona Snowbowl.	Work with ADOT to expand real-time travel information.
Limited Hour Passes	Continue Arizona Snowbowl's weekday-only pass structure and part-day credit.	Consider formal morning or 4-hour pass options.	
Marketing and awareness	Enhance materials to promote taking the bus from Flagstaff HS.	Consider development of a winter snow play app.	
Trash and Parking Solutions			
Illegal parking enforcement	Monitor improvements made in 2017-2018.	Evaluate increased patrol. Determine if successful or if more is needed.	
Trash clean up	Continuing deploying dumpsters to key locations. Use Community Stewards Winter Snow Play volunteers to conduct mid-week clean ups. Master Recycles to conduct outreach at the Visitors Center.	Evaluate improvements last year. Considering secure billboard on I-17 for advertising.	
Surveys	Conduct baseline survey.	Conduct follow up satisfaction survey. Analyze for new opportunities.	Conduct follow up satisfaction survey. Analyze for new opportunities.

Additionally, anticipated growth results in traffic conditions make the opening of FS22B to FS171, Wing Mountain, feasible around 2035. Opening the dirt road alternate access is anticipated to save 10 percent in travel time if associated with a right-hand, southbound turn lane from Snow Bowl Road. Conditions should continue to be monitored for the potential opening of the route in future years.

Exhibit 25: Partners for implementation

	Bus Service	Parking fees	Rideshare incentives	Real Time Travel Info	Illegal Parking Enforcement	Trash Cleanup	Marketing & awareness	Wing Mountain Access
NAIPTA	■						■	
City of Flagstaff/CVB						■	■	
Arizona Snowbowl	■	■	■	■			■	
ADOT	■			■	■		■	■
Coconino County					■	■		■
Arizona Game and Fish					■			
U.S. Forest Service		■				■		■
Businesses			■					

Exhibit 26: Implementation timeline

Deliverables/ Components/ Activities	Responsible party(ies)	2018			2019												2020				
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	S	M
Finalize 30-minute bus service schedule	NAIPTA, AZ Snowbowl																				
Find partners for rideshare incentives	AZ Snowbowl, private businesses, City of Flagstaff																				
Plan for increased law enforcement presence	Coconino County, AZ Game and Fish																				
Make plan for trash collection	Coconino County, USFS																				
Develop and conduct marketing and awareness campaign	City of Flagstaff, NAIPTA, AZ Snowbowl																				
Administer satisfaction survey	NAIPTA																				
Write grants for more bus service	NAIPTA																				
Satisfaction survey results	NAIPTA																				
Research paid parking implementation options	City of Flagstaff, AZ Snowbowl																				
Convene agency group to debrief season	Coconino County																				
Install real-time travel info technology	AZ Snowbowl, ADOT																				
Schedule 20-minute bus service	NAIPTA, AZ Snowbowl																				
Amend AZ Snowbowl operating agreement with USFS to allow for parking fee	AZ Snowbowl, USFS																				
Renegotiate incentives with business community	AZ Snowbowl, private businesses, City of Flagstaff																				
Develop and conduct marketing and awareness campaign	City of Flagstaff, NAIPTA, AZ Snowbowl																				
Implement winter season strategies	All																				
Administer satisfaction survey	NAIPTA																				
Satisfaction survey results	NAIPTA																				
Convene agency group to debrief season	Coconino County																				

Five-Year Budget

Exhibit 27: Five-year budget

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Total
Expenses						
Bus service	$80,000	$96,000	$115,200	$132,480	$140,400	
Parking management		$300,000	$50,000	$50,000	$50,000	
Carpool incentives		$5,000	$5,000	$5,000	$5,000	
Law enforcement staffing	$10,248	$10,760	$11,298	$11,863	$12,457	
Trash removal	$5,000	$5,250	$5,513	$5,788	$6,078	
Total	**$95,248**	**$417,010**	**$187,011**	**$205,131**	**$213,934**	**$1,118,335**

Revenue opportunities

There are variety of revenue options to support these programs. Paid parking at Arizona Snowbowl could be expected to generate more than $450,000 annually. Revenues could help pay for a variety of programs from transportation demand management programs to parking enforcement and litter collection. Alternatively, each agency could budget annually for these expected costs and incorporate them into their operating budgets. For example, City of Flagstaff Public Works could pay for litter cleanup, NAIPTA for expanded bus service, and Coconino County Sheriff and Department of Public Safety for law enforcement. However, such budget additions can be challenging for departments and agencies.

Ski Resort Taxing Districts

In addition to revenues identified above, there are other opportunities for revenue collection. Taxing opportunities may exist. For example, Big Sky, Montana has had its own taxing district (adding a three percent charge to purchasers) since 1992. Money raised from the tax goes to funding services and programs including tourism development, infrastructure facilities, post office services, ambulance and emergency services, public transportation systems, parks and trails, the community library, and other services.

Flagstaff itself also has a tax known as the "Bed, Board, and Beverage (BBB) Tax." This is an additional two percent tax at all restaurants, bars, and hotels in the city. The tax, which began in 1988, generates $6 million annually. Currently the funds are used for tourism (Convention and Visitors Bureau), beautification (landscaping and public art), recreation (maintenance of parks), arts and science (distributed to a variety of organizations), and economic development (intended to attract and keep businesses).

If Arizona Snowbowl were to create its own resort taxing district like Big Sky, money collected from the tax should be used to fund the TDM measures proposed in this project. Additionally, the City could consider using BBB revenue to offset costs.

Satisfaction Survey Plan

The multi-agency stakeholders group identified the need for statistically valid surveys to document changes in satisfaction before and after implementation of congestion reduction strategies among businesses and residents. Two seasonal surveys will be conducted, one during the 2018-2019 season and the second during the 2019-2020 season. The surveys will collect base-level data regarding satisfaction levels, travel habits, needs, and priorities of Flagstaff visitors, businesses, and residents. The goal of the survey is to determine not only how people currently choose to travel, but also how willing they are to try out alternative transportation modes, motivators for and barriers to doing so, and their current level of satisfaction with available transportation options and travel times. The second survey, conducted after more Implementation Plan strategies are enacted, will provide a direct comparison of satisfaction levels before and after. The survey will have a three-pronged outreach effort that emphasizes new media (such as email, social media, and other electronic distribution channels), and direct-mail marketing (particularly in areas where electronic communications are less effective). Surveys will be conducted and analyzed by Moore & Associates, which has been contracted by NAIPTA to complete the work.

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CHAPTER 5 | MARKETING

A variety of efforts to get the word out related to issues on the U.S. 180 corridor are already being employed. Ongoing marketing includes websites and print materials through NAIPTA, Flagstaff Convention and Visitors Bureau, Flagstaff Chamber of Commerce, the Flagstaff Downtown Business Alliance, and the Arizona Snowbowl. Coordinated messaging should focus on describing the congestion on U.S. 180, outlining alternatives to low-occupancy vehicle use along the corridor, and discussing legal parking and litter reduction. The Flagstaff CVB placed ads in the *Arizona Republic* gathering more than 300,000 impressions. More than a dozen media appointments and interviews were also conducted, resulting in continuous print, web, and broadcast coverage throughout the season. The Flagstaff Visitors Center also offered a snow play hotline and snow play map printed in English and Spanish. All agencies employed social media as well.

In order to inform the public about the implementation of the TDM strategies, including promoting options not along the corridor like Fort Tuthill snow play area, a robust marketing and communication campaign is needed. The marketing campaign is a crucial part of implementing any TDM strategy because it will allow people to make informed decisions about their travel choices. The marketing campaign will deploy a wide range of strategies to reach a diverse audience including people visiting from out of town.

AUDIENCES

Two specific audiences should be targeted, each with unique needs.

- **Visitors:** Out-of-town guests staying in Flagstaff hotels (particularly those hotels that offer Arizona Snowbowl packages).
- **Locals:** Those lacking adequate transportation, youth, NAU students, FASST Members, and Arizona Snowbowl season pass holders.

COLLATERAL MATERIAL

A variety of collateral materials should be created and distributed each year. Flyers can be specific to each TDM strategy as well as audience. Particular audiences to consider for printed materials are hotels, ski shops, and NAU. Agencies should work together to share information so it can be included on others' materials as applicable.

BUS ADVERTISING

NAIPTA can employ exterior bus advertising as well as post interior 11x17" signs on all Mountain Line buses.

Online/Email

All agencies should use their websites, distribution lists, and social media to consistently distribute information each season. Special attention should be paid to posts in coordination with holiday weekends.

Public Relations

Each year, Mountain Line will draft and disseminate a press release around the first week in December specific to its Mountain Express service. Other agencies should also work to inform the public through newspapers, radio, and television of Transportation Demand Management solutions being offered annually.

Mobile App

A mobile app could also be developed to provide information on transportation to winter snow play destinations. The app would give users alerts about traffic conditions, parking availability, and possible delays while encouraging people to take the bus or carpool on weekends and holidays. The mobile app will also provide information about bus wait times, carpool and rideshare options, and parking costs. The app should also remind users not to litter and where legal snow play options exist. The app could also be developed as part of a city-wide app to attract a wider audience and help to reduce development costs.