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Alternative Shuttle Service Delivery Models in Glacier National Park

Bronwen Chilton

Dylan Ham

Julia Naras

Kenneth Savage

Mason Miguel

Advisors: Corey Dehner,
Seth Tuler, Frederick Bianchi



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Abstract

Unprecedented visitation numbers in Glacier National Park prompted the introduction of a point-to-point shuttle service in 2007 that mitigates congestion on the Going-to-the-Sun Road. The most recent contract expired in September 2021, allowing the Park to consider new delivery models for the shuttle service. In collaboration with our sponsors, we assessed Glacier's previous shuttle service delivery models. We explored contracts and partnerships in other national parks, including self-delivery, third-party delivery, and public/private partnerships. We presented analyses of different models and recommended the Park implement a public/private indefinite-delivery, indefinite-quantity contract, which is flexible for changes in expected service demand.

The Role of a Shuttle Service

The National Park Service conserves over 84 million acres of land and a myriad of biodiversity, from carbon-sequestering old-growth forests in the Northwest to endangered species' habitats in the Southeast. In addition to serving as refuges for native plants and animals, the parks are accessible destinations for people to learn about and enjoy natural and cultural history. However, unprecedented visitation levels in recent years pose new challenges to conservation and positive visitor experiences (National Park Service, 2016a).

In 2019, over 300 million people visited the national parks—a 16% increase within ten years and a 116% increase since the turn of the century (National Park Service, 2020b). Rising visitation is associated with negative impacts on park ecosystems, park resources including infrastructure and staff, and visitor safety. Many of these impacts are a result of increased personal vehicle use and crowding, as shown in Figures 1 and 2 (Ament et al., 2008; Barrameda et al., 2018).



Figure 1. Road traffic congestion in Yosemite National Park (Source: NPS, 2021).



Figure 2. A parking lot at maximum capacity in Glacier National Park (Source: NPS, 2019).

Parks have tested many plans for mitigating visitor congestion and its negative impacts, from increasing roadway and parking lot capacity to implementing shuttle services. NPS' Congestion Management Toolkit (2020a) suggests that increasing vehicle capacity does not significantly affect congestion. Instead, the Toolkit identifies proper signage, pedestrian infrastructure, and tour bus systems as effective congestion management tools.

About 61 percent of transit systems in national parks are shuttle systems (National Park Service, 2016b), some with advanced features. Acadia National Park, for instance, employs the use of intelligent transportation systems (ITS) in its shuttle system to help mitigate traffic; ITS relays real-time data regarding parking areas and congested routes to visitors to help them make informed decisions (Wivagg et al., 2017; National Park Service, 2020a). Zion National Park successfully decreased vehicle congestion in both parking lots and roads by banning the use of private vehicles and establishing a shuttle service (Mace et al., 2013; National Park Service, 2016b).

A successful shuttle service can lessen traffic congestion on roads, turnouts, and parking lots, reduce noise and exhaust pollution—overall minimizing the impact of vehicles in a park—without limiting the number of visitors. For these reasons and the convenience of public transportation, a shuttle service can also improve the visitor experience (National Park Service, 2012; Edwards, 2021; National Park Service, 2016).

A shuttle service cannot lessen traffic congestion and improve the visitor experience if it does not appeal to potential riders. Studies in congested areas show that riders look for speed, frequency, timeliness, affordability, and ease of use in public transportation (Burian et al., 2018). Accessible stops need uncrowded shelters and facilities to appeal to riders. Maps and timetables need to be uncomplicated and readily available. Additionally, riders need a service that is safe and reliable. Often, riders prefer public vehicles to be clean and modern, retaining the sense of freedom and socioeconomic status that a personal vehicle provides (Abou-Zeid et al., 2012).

Alternatively, overuse of public transportation creates challenges. If nobody uses public transportation in a congested area, then ecological impacts, emissions, traffic, parking lot congestion,

and road wear will likely to remain high (Wadsworth, 2009). If everybody tries to use it, conflicts may arise over seat availability, and destinations nearby bus stops may see overuse and environmental strain (Fefer et al., 2017). Figure 3 shows a large crowd of visitors at Zion National Park waiting to get on and off the shuttles at the same places and times.



Figure 3. Visitors wait in line to board the shuttles in Zion National Park (Source: Zion National Park, 2019)

Visitors to national parks may look for additional features in public transportation compared to visitors in congested cities. 'Greener' transportation methods or shuttles with storage for bicycles, hiking packs, and other types of large, recreational gear may incentivize park-goers (Carrel et al., 2013; De Dios, 2019). Long wait times disincentivize visitors who plan to spend a limited amount of time in the parks to use shuttle services. For example, visitors in Acadia National Park have a tolerance of about 15 to 25 minutes for waiting for a bus, after which they would prefer to use their private vehicle (Holly, 2009).

Glacier National Park's Shuttle Service

Since being declared a national park in 1910, Glacier National Park has experienced a steady increase in annual visitors. As shown in figure 4, during the 1980s, Glacier's annual visitation reached 1.5 million. Around 1990, that number was 2.2 million, and in 2016, there were about 3 million visitors (U.S. Department of the Interior, 2021a).

Personal vehicle use has increased with visitation. Most visitors use personal vehicles to travel and park along the Going-to-the-Sun Road (GTSR). The GTSR, pictured in Figure 5, connects the East and West sides of Glacier and serves as the only

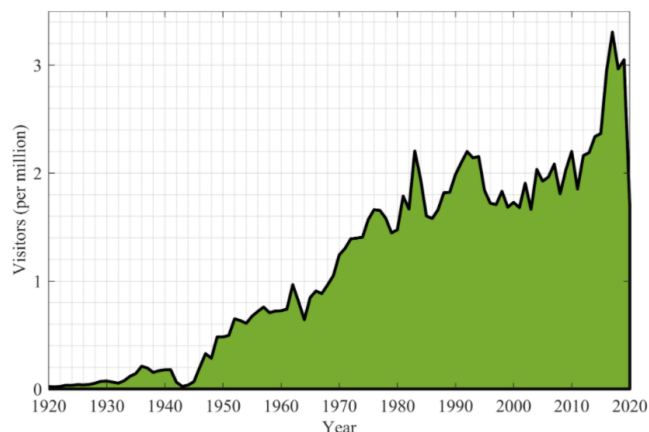


Figure 4. Visitors per million in Glacier since 1920 (US Department of the Interior, 2021a).

travel route in the Park. The Going-to-the-Sun Road was constructed in 1933 and can no longer accommodate the current number of visitors. Widening the road is not feasible because of the Park's rugged geography; building new roads would threaten the natural history and beauty of the Park. (Backus, 2017; National Park Service, 2019).



Figure 5. Visitors traveling the Going-to-the-Sun Road (Source: Frank, J., 2021)

In 2007, Glacier responded to GTSR traffic, overcrowded parking lots, noise and emissions pollution, and vehicle backup on Highway 2 by purchasing a fleet of shuttle buses and hiring a third party to operate them (Law, personal communication, Sept 16, 2021; Barrameda et al. 2018). The Park found that the shuttle program successfully alleviated parking problems at trailheads by providing hikers and backpackers with an alternative to parking their vehicles. More parking spots became available to short-term visitors and ultimately allowed more visitors to come and go from the destinations. Shuttle capacity was a challenge; in some cases, visitors waited up to several hours to find a shuttle with open seats (Is the shuttle really a nightmare?, 2016; Weinberg, 2014).

In 2019, Glacier responded to vehicle backup and the COVID-19 pandemic by implementing a

ticketed entry system and a Ticket-to-Ride system, respectively (Carolin et al., personal communication, May 10, 2021). The ticketed entry system required Park visitors to pay a \$2 reservation fee to access the GTSR with their vehicles. The Ticket-to-Ride system required a \$1 reservation fee for visitors to reserve a spot on the shuttle.

During the late 2010s, tensions rose between Glacier staff and Eagle Transit, the third party that operated the shuttles. Disagreements involving shuttle maintenance during the offseason led to the termination of the transit system cooperative agreement (Carolin et al., personal communication, May 10, 2021). For the 2020 and 2021 seasons, Glacier employed a labor contract with LC Staffing to hire shuttle drivers. Glacier is now seeking a shuttle service delivery model for the 2022 season (Carolin et al., personal communication, Sept 13, 2021). They may continue to find partners or third parties to deliver the shuttle service, or they may deliver the service internally.

Opportunities for Delivering a Shuttle Service

Glacier National Park may choose to deliver their shuttle services in a variety of ways: (1) self-delivery, (2) third-party delivery, or (3) by a public/private relationship. Self-delivery means that Glacier carries all responsibilities relating to funding, operating, and managing the service independently. Third-party delivery means that Glacier hires a third party to completely own and operate the service. A public/private relationship involves Glacier and a private company working together, where financial, operational, and managerial responsibilities of the shuttle service are split depending on the terms of the contract, agreement, or partnership. We explore the varying models below.

Self-Delivery

Glacier National Park may choose to operate the entire system without outsourcing anything to a third party. Full ownership and operation of the program includes purchasing (or using existing) buses for the shuttle system, fueling and maintaining the bus fleet, operations management (including staff hiring, training, and drug testing), scheduling and general planning of the shuttle system, advertising, and maintenance of the shuttle stops and related signage.

An example of an NPS-owned and operated

shuttle system is the Coast Guard Beach Shuttle in the Cape Cod National Seashore, which transports about 100,000 riders 1.8 miles during its peak season (National Park Service, 2016b). However, this is typically done on a small scale. None of the 10 busiest shuttle systems in 2015 or 2019 were run solely by NPS (Washington Support Office, 2015; Washington Support Office, 2019). Furthermore, of the 20 NPS shuttle systems owned and operated in 2019 by park units, the average ridership was 31,000; a fraction of Glacier's 2019 ridership (Washington Support Office, 2016; Carolin et al., personal communication, Sept 13, 2021). There is no NPS-owned and operated shuttle system with comparable ridership to Glacier (Madej, personal communication, Sept 21, 2021).



Figure 6. Coast Guard Beach Shuttle (Source: Markos, S., 2018)

Third-Party Delivery

Another model for offering a shuttle system to visitors is where the national park hires a third party to completely own and operate the service while providing all the services of the self-delivery model. The commercial service business model involves a third-party or external service provider who oversees the alternative transportation system (ATS) responsibilities in exchange for opportunities to generate revenue. This model includes *concession contracts* and *commercial use agreements*.

Concession contracts are a commercial instrument used when a Federal Land Management Agency (FLMA) hopes to incorporate a deeper level of legal protection and oversight into a contract. They are often used to improve visitor services from a private concessionaire. Concession contracts tend to focus less on a particular service. Instead, they bundle several types of services, such as food, lodging, and transportation. These contracts utilize a franchise fee, which is financial compensation for the FLMA. The recipient generates greater revenue from an improved visitor experience, resulting in

returning and new visitors (Wang et al., 2014).

Yosemite National Park and Denali National Park both operate under a concession contract with Aramark. Yosemite owns 18 electric-diesel buses, and Aramark delivers and maintains them year-round. Denali does not own its fleet of 20 propane buses. Instead, Aramark owns, delivers, and maintains the buses (National Park Service, 2021a). Denali also maintains several smaller concessionaires. Both Parks benefit due to the generation of a concession franchise fee, which is used to support other functions in the Park (Begley & Joslin, 2014).



Figure 7. Denali National Park Shuttle (Source: E.D., 2014)

Commercial use agreements (CUA) are used exclusively by the National Park Service (Begley et al., 2014). A CUA authorizes a third party to provide suitable commercial services for park visitors for a fee. The fee goes to the third-party company because running a transportation service for NPS profit requires congressional approval (U.S. Department of the Interior, 2010). CUA's are used in situations where a transportation service is not required but authorized by the National Park Service since it positively impacts the visitor



Figure 8. Visitors board Rocky Mountain National Park Shuttle (Source: Williams, R., n.d.)

experience (U.S. Department of the Interior, 2021b). Glacier National Park's Hiker-Biker CUA, for example, transports hikers and bikers to the trailhead for a fee (Carolyn et al, personal communication, May 10, 2021).

Public/Private Delivery

Some national parks, such as Zion National Park and Rocky Mountain National Park, operate shuttle systems under a public/private model (Washington Support Office, 2016). With a public/private model, the finances, operations, and management are split between the government entity and a private company depending on the terms of the contract, agreement, or partnership.

This model typically operates under a cooperative agreement between two or more partners. In general terms, these agreements are between the United States government and a local/state government or another recipient. They tend to involve a transfer of something of value and incorporate substantial involvement between partners (National Park Service, 2016b). Substantial involvement may refer to the joint participation of Glacier National Park and a partner when carrying out an activity mentioned in the agreement. The purpose of such a model is to transfer a thing of value to a partner capable of carrying out a public purpose, since the Park may be unable to meet this purpose on its own. Glacier National Park had a cooperative agreement with Eagle Transit until 2019. The basis of the agreement was that Eagle Transit would maintain and run the service and the Park would fund it.

A public-private relationship can also be achieved through service contracts awarded by a government agencies, such as the NPS, to a private company. The NPS will typically post a notice on contract websites such as SAM.gov (System for Award Management), and private businesses will bid on the contract. The highest bidder will assume responsibilities termed in the contract. There are various types of contracts; the two most frequently used by the NPS include service and labor contracts.

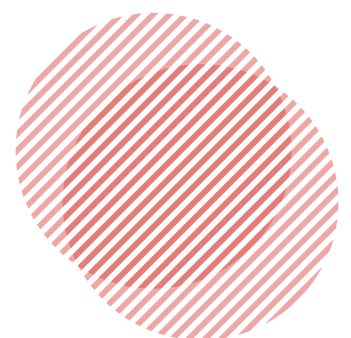
Service contracts are used if the primary purpose is to result in an acquisition of services or property for the direct benefit of the federal government, or when an FLMA decides a procurement contract is needed. Essentially, these contracts are arrangements that allow fees for services, where the FLMA has a contractual relationship with a particular service provider. Unlike

partnerships, service providers are typically private companies that range in size and are located throughout the nation.

Labor contracts differ from service contracts in that only drivers and other staff, as well as brief job descriptions, are included in the contract terms (Carolin et al., personal communication, May 10, 2021). A park retains responsibilities when it comes to the service of the shuttle system. However, since these contracts are for short periods, and because a park must evaluate potential labor contractors, this model has not been utilized in many national parks.

While Glacier National Park's current shuttle system successfully mitigates traffic congestion, there are still opportunities to make the system more efficient. Currently, the visitor experience is hindered by long wait times and overcrowded shuttle stops. Furthermore, traffic along the GTSR caused by an excess of personal vehicles, delays shuttle arrivals to shuttle stops and further impairs the visitor experience (Carolin et al., personal communication, May 10, 2021).

Additionally, consistent traffic during peak seasons impacts the surrounding ecosystems within the Park, which goes against the mission statement of the NPS (Gardner, 2020). The Park is specifically interested in suggestions regarding the type of contract or agreement to pursue and potential partners that will provide a viable service. This is a good opportunity to reassess the shuttle system because of the uncertainty that remains regarding the future of the service (Carolin et al., personal communication, May 10, 2021). By taking into account some of the current shortcomings of the shuttle system, we hope to provide meaningful suggestions to the Park on how to proceed with formulating a new contract or agreement.



Methodology



Our project aimed to highlight the strength and weaknesses of shuttle service delivery models for Glacier National Park’s Going-to-the-Sun Road shuttle. To achieve our goals, we completed four objectives.

Objective 1

Assessed the successes and limitations of Glacier National Park’s previous shuttle service systems

To complete Objective 1, we interviewed our four project sponsors: Transportation and Fleet Manager Patrick Glynn, Chief of Facilities Management Jim Foster, Director of the Crown of the Continent Research Learning Center Tara Carolin, and Transit & Visitor Use Management Fellow Ma’ayan Dembo. In this meeting, our sponsors explained the successes and limitations of Glacier’s past transportation contracts and agreements. We cross-referenced our background research, which included shuttle bus feasibility studies and transportation journals, with our sponsors’ experiences managing Glacier’s shuttle service. We asked them to rank their priorities for the shuttle service and for finding a transportation partner. We requested and reviewed documents including digital copies of the contracts/agreements, 2019 visitor use surveys, and a 2010 transportation study in Glacier.

Objective 2

Explored alternative shuttle system delivery models in national parks and other congested areas

To identify and evaluate alternative shuttle delivery models, we used snowball sampling to increase

our number of interview participants and searched online databases looking for case studies, newspaper articles, or other sources of information about public shuttle systems. We searched for contract officers, contract specialists, and fleet managers within the National Park Service whom we could interview. The purpose of these meetings was to explore components of the partnership model, especially funding sources. In total, we conducted five interviews.

1. Billie Thomas, the Contract Specialist and Clerk Facilities Manager in Glacier National Park. We met via Microsoft Teams and discussed contracts, agreements, and purchase orders, including how each model may be applied to Glacier’s shuttle service.
2. Susan Law, Program Manager of the National Park Service and Federal Highway Administration (FHWA) Western Federal Lands Representative. Ms. Law helped develop plans for the shuttle system in the early 2000s. We interviewed Ms. Law via Zoom regarding her role in the project and considerations for selecting an appropriate business model.
3. Michael Madej, NPS Alternative Transportation Program Manager in the region. We met with him via Zoom and discussed the differences of each model. He emailed us a copy of the decision tool that transportation managers use when developing partnership or contract plans.
4. Several representatives for the Island Explorer Shuttle, including Stephanie Clement from Friends of Acadia, and Paul Murphy from

Downeast Transportation. The purpose of these meetings was to explore components of the partnership model, especially sources of funding.

5. Nathan Peck from LC Staffing, who worked with Glacier for the 2019 and 2020 seasons. We received details on the contract between LC Staffing and the Park, information about labor costs and wages, and areas of tension/conflict.

We originally planned to use Cost-Benefit Analysis to compare shuttle delivery models in Glacier. However, Cost-Benefit Analysis limited our comparisons between financial data. Our sponsors' priorities for Glacier's shuttle included not just cost to the Park and to visitors, but also control over operations, traffic mitigation, viability (locality of partners), and service quality. We decided that SWOT analysis would be a more appropriate analytical tool for our purposes because SWOT juxtaposes strengths and opportunities with weaknesses and threats. Figure 9 is a template we used for our SWOT analyses.

	Delivery Model			
	S Strengths	W Weaknesses	O Opportunities	T Threats
Financials				
Operations				
Management				
Other				

Figure 9. Example SWOT Analysis

For each model, the financial, operational, and managerial aspects were explored. These three aspects are the main responsibilities of a shuttle system. Among all the strengths, weaknesses, opportunities, and threats listed, one to two points would be highlighted as the reasons we decided to recommend or not recommend a business model.

Objective 3

Conduct market research for viable transportation companies in Northwestern Montana.

To complete Objective 3, we used the information we collected from earlier interviews to conduct market research, where our goal was to find potential bus transportation companies Glacier could develop a future contract or agreement. Our initial method, suggested by Billie Thomas, was to

plug North American Industry Classification System (NAICS) codes in the System for Award Management (SAM) website (sam.gov) to find small, local businesses that provide the coded service. We found some relevant NAICS codes, however, a lack of federal clearance pushed us to use the U.S. Census Bureau's website (census.gov/naics) for more in-depth market research.

We used primarily the Montana Bids website (montanabids.us) and the Dun & Bradstreet (D&B) website (dnb.com) to find potential transportation and shuttle-bus companies who could serve as contractors and partners. We filtered our search results by using NAICS codes 485113 and 485210 which represented Bus and Other Motor Vehicle Transit Systems and Interurban and Rural Bus Transportation. Our primary criteria for identifying potential companies were geographic viability (locality) and business size (small businesses). Our sponsors defined viability as northwestern Montana, west of the mountains, and not in Idaho. Figure 10 shows a map of Glacier National Park and surrounding lands.



Figure 8. Map of Glacier National Park (Gorp.com, n.d.)

We also filtered our search results to only include companies located in Montana. We then analyzed each search result. We recorded the names of companies with more than ten employees into a chart. If the search result did not specify what services the company offered, we searched their website. The companies we found on these websites were then cross referenced on the SAM website to see if they are registered for government contracting.

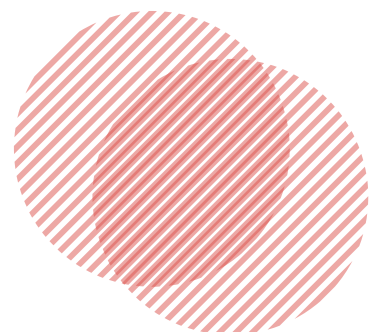
We also interviewed multiple small, local businesses who have worked with Glacier as well as potential partners for the Park. We asked about the probable costs involved with running a shuttle system of this type. Specifically, we inquired about the costs related to labor, maintenance, and running the system. We then used the data we collected from these interviews to synthesize the metric used for recommendations.

Objective 4

Recommend plans of action that meet the requirements of Glacier's visitor transportation service program.

To communicate our recommendations at the end of the term, we developed a presentation for our sponsors to accompany our report. In the presentation, we explored the benefits and drawbacks of the three main delivery models using SWOT analysis. We then developed a comparative table which evaluated the different delivery models on a list of criteria, mentioned to use by Park staff. These criteria included the amount of control Park staff possess, estimated total cost, service quality, flexibility, responsibilities of park staff and timespan.

After recommending a delivery model, we highlighted several potential businesses Glacier could work with, if the model requires a third-party, based on the information we gathered as part of Objective 3. Due to the variability of contract bidding and other uncertainties, multiple companies were presented.



Findings and Recommendations

Findings

We divided our findings into three main sections. First, we explored Glacier's current need for a shuttle system and past delivery models. Second, we analyzed the strengths, weaknesses, opportunities, and threats for each shuttle delivery model we deem feasible for Glacier's fleet. Third, we discussed other considerations for the future of the shuttle service.

Experiences and Needs with a Shuttle System in GLAC

Glacier National Park needs a visitor shuttle system to help address visitor congestion on the GTSR. Unprecedented visitor numbers in Glacier in the early 2000s led to congestion in parking lots and roadways. According to Susan Law, Program Manager of the National Park Service and Federal Highway Administration, road traffic congestion combined with a large-scale rehabilitation project on the GTSR called for the implementation of Glacier's shuttle system (Law, personal communication, September 16, 2021). The system, introduced in 2007, successfully decreased vehicle congestion along the GTSR and improved the visitor experience (Baker & Freimund, 2007; Carolin et al., personal communication, September 13, 2021). However, the system increased congestion in the Logan Pass parking lot (Weinberg, 2014).

The first shuttle system operated through a cooperative agreement between a public transit service, Eagle Transit, and Glacier National Park. Eagle Transit managed operations and maintenance, while the Park funded the service (Carolin et al., personal communication, May 10, 2021). During the offseason, the Park lent its buses to state agencies through Eagle Transit. According to James Foster, Chief of Facility Management, this partnership provided riders with a high-quality service, for only a third the price of a service contract or commercial (Madej, personal communication, September 21, 2021; Carolin et al., personal communication, September 13, 2021).

Eagle Transit and Glacier terminated their agreement in 2019 in response to the binding terms of the partnership. Fleet and Transit Manager Patrick Glynn suggested there were differences in opinions

regarding shuttle maintenance during the winter season and the negative effects on vehicle lifespans (Carolin et al., personal communication, May 10, 2021). The Park lacked direct control of the shuttle system's routes and schedule and financial transparency due to this partnership as well.

Glacier National Park implemented a labor contract with LC Staffing for the 2020 and 2021 seasons. According to Nathan Peck, a recruiter of the company, LC Staffing provided employees to run the shuttle service, hired workers, and advertised job opportunities for the Park (Peck, personal communication, September 22, 2021). Glacier trained employees and operated the system using park-owned buses (Gardner, 2020). Billie Thomas, Contract Specialist of the National Park Service's regional office, stated that maintenance of the fleet was split between the Park and Transportation Equipment Inc., a vehicle maintenance specialist (Thomas, personal communication, September 13, 2021). While Glacier continued to operate the system successfully, there were several sources of tension between LC Staffing, maintenance workers, and the Park mechanic.

According to Patrick Glynn, Fleet and Transit Manager, and James Foster, Chief of Facility Management, priorities to consider when planning the shuttle service delivery models are (in descending order): staying in operation, low cost, direct control over shuttle operations and management for Glacier staff, and excellent service quality. Partners or contractors should be located in northwestern Montana and dedicated to the mission of the National Park Service. We also considered fluctuating visitor demand, changes to fleet size, transitioning to zero-emission vehicles, and integrating the shuttle service into nearby towns (Carolin et al, personal communication, September 13, 2021).

Obtaining additional funding for the shuttle service would be difficult. A percentage of Glacier's gate fee is designated for its transportation fund; increasing the transportation fund decreases the percentage of the gate fee distributed to other departments (Carolin et al, personal communication, September 13, 2021). According to Michael Madej, Alternative Transportation Program Manager of the

National Park Service, increasing the gate fee may incentivize visitors to purchase an America the Beautiful Pass. The Pass costs slightly more than two seven-day entrance passes but provides one year of access to all national parks and does not contribute to transportation funds. Furthermore, national parks can only charge a fee to ride a shuttle if it is a tour shuttle, otherwise it is considered “fee-layering,” which does not align with NPS policy, according to the Solicitor’s Office (Madej, personal communication, September 21, 2021).

Strengths and Weaknesses of Shuttle Delivery Models for GLAC

Self-delivery means the fleet is owned and operated by the NPS. Glacier’s Going-to-the-Sun Road shuttle is currently the closest the NPS has to a large-scale self-delivered shuttle service. Glacier owns their shuttles and in the past two years operated the system, including training shuttle drivers, but contracted LC Staffing to hire the drivers.

Total self delivery has its strengths. Glacier would have maintenance and operational control, greater financial transparency, and it would avoid administrative fees associated with hiring a third party (Carolin et al, personal communication, September 13, 2021). Being so close to total self delivery, Glacier had the opportunity to determine the actual costs of shuttle delivery.

However, because no national park with similar ridership self-delivers its shuttle system, unexpected challenges may threaten to take transportation staff away from their current jobs (Madej, personal communication, September 21, 2021). Supervisor Contracting Officer of the region, Andrea Hannon, voiced concerns that the current staff could be unable to handle the additional workload needed to self-deliver (Hannon, personal communication, September 22, 2021). Considering the unknowns, there could be an increased risk of mismanaging the transportation budget and sacrificing the quality of service. Table 1 highlights the strengths, weaknesses, opportunities and threats of a self-delivery model.

	Self Delivery			
	S Strengths	W Weaknesses	O Opportunities	T Threats
Financials	Avoid administrative fees Total transparency of costs	Coordinator salary/benefits Inadequate transportation fund	Determine actual delivery cost (for future bids)	Coordinator salary more expensive than admin fees
Operations	In-house maintenance Vehicle ownership	No off-season shuttle storage	Local drivers familiar with GNP culture, aware of the visitor experience Avoid conflict between 3rd party and operations staff	Potentially limited driver applicant pool
Management	Avoid middlemen GNP employees’ ability to solve problems ‘on the ground’	Limited transportation staff	Flexibility for future outsourcing	More responsibilities for current shuttle managers
Other				Unpredictability; no precedent for intermountain NPS shuttle

Figure 10. SWOT Analysis for the self-delivery model

Third-Party Delivery				
	S Strengths	W Weaknesses	O Opportunities	T Threats
Financials	Reasonable return on investment Competition between contractors for bids	Vendor costs Bids come in higher than GNP budget Greater cost for visitors	Sell buses, make a profit Concession bundles	Loss of transparency of costs Contract termination penalties
Operations	Infrastructure and maintenance covered	GNP employees can't solve problems 'on the ground'	Experienced party improves the visitor experience	Non-local drivers/coordinators unfamiliar with GNP culture Conflict between the company and the mechanics
Management	Long-term solution	Party does not have experience with GNP's service	Fewer responsibilities for current shuttle managers	Conflict between GNP and the company
Other			Gateway to updating the service, electric fleet	Unassured longevity of the company

Figure 11. SWOT Analysis for the third-party delivery model

Third-party delivery means Glacier would, through the use of concessionaire contracts or commercial use agreements, have one or more partners and funds supporting all aspects of their shuttle service. Roughly half of the shuttle systems in the National Park Service are delivered via a third party (Washington Support Office, 2019).

Strengths of delivering a shuttle via a third party include reasonable return on investment and the potential for a high quality of service when hiring an experienced company. Opportunities include the ability to generate revenue through bundling services, and potentially lighten the workload of park staff (Begley & Joslin, 2014; Carolin et al., personal communication, September 13, 2021)

There are considerable downsides to a third-party delivery model. This model is likely the most expensive of the three we explored. James Foster suggested that visitors would have to pay a fee to use the shuttle (Carolin et al., personal communication, September 13, 2021). Charging a fee limits shuttle accessibility to lower class visitors, which may negatively affect ridership and defeat the purpose of the service. Other threats include a loss of financial transparency and termination fees. Table 2 highlights the strengths, weaknesses, opportunities and threats of a third-party delivery model.

Under a public/private delivery model, finances, operations, and management are split between a government entity and a private company depending on the terms of the contract, agreement or partnership.

Stephanie Clement, Conservation Director at Friends of Acadia, suggested that one strength of partnerships is that they can incorporate multiple sources of funding. For example, the Island Explorer shuttle system in Acadia National Park, which is under a partnership agreement, has five primary funding sources. Most visitors purchased a 7-day pass costing around \$25, where a portion was set aside to fund the Island Explorer. In the State of Maine, non-profit companies such as Friends of Acadia with sponsor L.L. Bean, municipalities and passenger donations also contributed significant funds (Clement, personal communication, September 23, 2021). As with contracting, partners possess operational and management expertise. They are also relatively easy to terminate, and are comparatively inexpensive (Carolin et al., personal communication, September 13, 2021).

One weakness is that partnerships tend to have stringent administrative requirements. Since the purpose of a partnership is to benefit both parties, Glacier would need to consider, for example, lending

its shuttles during the offseason. Furthermore, according to Paul Murphy, Executive Director at Downeast Transportation, because this method relies heavily on expected financial contributions from Congress, donors and fees, funding is not assured (Murphy, personal communication, September 28, 2021).

While these findings regarding Acadia National Park provided our team with great insight, Stephanie Clement informed us that the financial estimates of one park’s model cannot be extrapolated to another. In other words, there can be important differences between Glacier National Park and other parks that use this model. These differences include the number of shuttles and drivers, schedules, routes, and park geography that make comparing potential shuttle models and financial estimates a challenge. Table 3 highlights the strengths, weaknesses, opportunities and threats of a public/private partnership delivery model.

An indefinite delivery/indefinite quantity (IDIQ) contract is a flexible public/private contract that defines a minimum quantity of supplies or services, ordered by the government, and a maximum quantity of supplies or services decided by the contracting

officer. No national park uses an IDIQ contract for their shuttles yet, but they’re becoming increasingly popular in other departments (Hannon, personal communication, September 22, 2021).

An IDIQ contract could be implemented specifically for operational or maintenance activities. Glacier could explicitly mention what responsibilities they would like contractors to possess. The Park tends to have significant control when hiring a contractor. Additionally, an IDIQ contract is a relatively short term solution, which could allow the Park to concurrently search for long term opportunities. Similar to other delivery models, contractors are highly specialized, and could better operate or maintain the service than through self-delivery. The process of competitive bidding screens companies or contractors that can afford the business opportunity and are highly committed to the mission of the National Park Service.

IDIQ contracts tend to upcharge; national parks are charged more for the services they provide than through other delivery models. This upcharge is due to its variability of delivery. At times, service quality may be sacrificed for cost efficiency (Hannon, personal communication, September 22, 2021).

Public/Private Delivery - Partnership				
	S Strengths	W Weaknesses	O Opportunities	T Threats
Financials	More partners = more sources of funding Comparatively inexpensive	Partner liability Reliance on Congress, donors, fees...	Potential for sponsorships (brand exposure)	Unexpected partner withdrawal
Operations	Partners have operational expertise	GNP employees can't solve problems 'on the ground'	Transportation partner = vehicle quality	Quality of partner affects quality of service
Management	Partners have transportation management expertise	Difficult to define terms & conditions with multiple partners	Partner reduces responsibilities of GNP employees	Conflict between partners
Other	Easy to form			Limited viable partners for GNP

Figure 12. Public/Private Delivery - Partnership SWOT Analysis

Public/Private Delivery - IDIQ				
	S Strengths	W Weaknesses	O Opportunities	T Threats
Financials	Flexible to change goods/services High costs with competitive bids = reasonably priced contract	Upcharge for variability of delivery		
Operations		Limited budget, Could limit opportunities for growth/expansion	Ability to test different amounts of labor hours	Service quality may be sacrificed for cost efficiency
Management	Precedence, growing in popularity in NPS	Moderate operational control	Can be used solely for maintenance purposes	
Other	5-year solution, not long-term	5-year solution, not long-term	Allows for exploration of future delivery models	

Figure 13. Public/Private Delivery - IDIQ SWOT Analysis

To summarize the information we gathered in our SWOT analyses, we developed Table 5, which compares how models performed on a set of criteria defined in our initial interview (Carolin et al., May 10, 2021). Green boxes indicate considerations that are most optimal. They exceed Glacier National Park’s criteria for operating and managing a shuttle system. Yellow boxes represent properties that meet the Park’s shuttle service criteria. They are not the most optimal, however, they are still feasible. Red boxes represent criteria where a delivery model may be lacking. The column labeled “Timespan” remains transparent, as the desirability of short or long term contracts and agreements may differ depending on terms and conditions.

Future Considerations

Some business models are more flexible than others and therefore should be considered for the upcoming transition to zero-emissions vehicles (ZEV’s). Cost is one of the main challenges of implementing ZEVs. According to Stephanie Clement, Conservation Director at Friends of Acadia, one of these buses costs between \$250,000 and \$275,000 (Clement, personal communication, September 23, 2021). Meanwhile, electric vehicles of the same size have an expense of about \$1 million per bus. As of 2021, Glacier uses propane-based shuttles.

Additionally, Glacier’s shuttles operate for at least eight continuous hours per day. Likely, the buses they would need to recharge throughout the

day. Glacier’s terrain would require recharging stations along the sides of roads. There are few areas flat enough to place such a station, and hills require more energy (Law, personal communication, September 16, 2021; Clement, personal communication, September 23, 2021).

We also considered the viability of extending the shuttle service into surrounding cities and towns. Our sponsors expressed interest in adding bus stops in Columbia Falls and Kalispell to mitigate parking lot congestion in the Park (Carolin et al., personal communication, September 13, 2021).

The Island Explorer Shuttle budget for Acadia National Park gained \$46,880 in the 2021 season from business direct service. This is when a business donates to the shuttle service because the bus stops at the business’ front door (Murphy, personal communication, September 28, 2021). This may be an additional source of income for Glacier, should they choose to expand the shuttle to nearby municipalities.

Recommendations

Based on the priorities of Glacier National Park and its staff, we recommend a public/private delivery system. The key strength of this model relative to others is the flexibility of deliverables for the Park. Unlike the partnership and third-party models, an IDIQ contract gives Glacier moderate control of the system. This delivery model also allows the Park to experiment with different quantities of labor hours, which may be useful in future contracts.

A public/private delivery system would allow the Park to have some direct control of the shuttle system, unlike a third-party model. This model is also cheaper than hiring a third-party. While a public/private model is more expensive and provides less direct control than a self-delivery system, it takes many financial, operational, and managerial responsibilities off the Park. Through a public/private delivery, a specialized contractor or partner could run the shuttle service, knowing what is optimal for Glacier. Furthermore, unlike a self-delivery or third-party model, a public/private delivery provides several options in the form of service contracts, agreements and partnerships. Since there are several local transportation companies in the area, Glacier could likely find a potential service provider.

We recommend using an IDIQ-based system where staffing for drivers and vehicle maintenance would be contracted out. This is different from last year's contract, where only labor and partial vehicle maintenance were labored out. We recommend outsourcing more because according to Andrea Hannon, staff in charge of maintenance could not focus on their other responsibilities (Hannon, personal communication, September 22, 2021). While the Park would not have full control over the service, the terms could be flexible considering changes in ridership due to COVID and the ticket-to-ride system (Hannon, personal communication, September 22, 2021). Moreover, certain aspects of the shuttle system can be outsourced to contractors, while other aspects can be operated by the Park. However, there are significant downsides in an IDIQ contract. There is an upcharge for variability of the quantity delivered.

In our research, we explored implementing a public/private delivery mostly through partnerships and IDIQ service contracts. Additionally, we do not recommend implementing a public/private delivery through a partnership. Unlike IDIQs and other service contracts, partnerships are not very flexible. Due to the language of the agreement, Glacier could be required to carry out tasks that may go against its interest (Madej, personal communication, Sept 21, 2021). Partners could also be a liability, particularly if they fail to maintain their service. Perhaps most notably, Glacier would lose much of its direct control on its shuttle service if a partnership was developed.

Glacier staff expressed interest in operating with local companies. We identified three companies that are local to Northwestern Montana, and have a

reputable history. These include Stone Transportation LLC, Harlow's School Bus Service Inc, and Treasure State Transit Inc. More information is listed on them in Table 6.

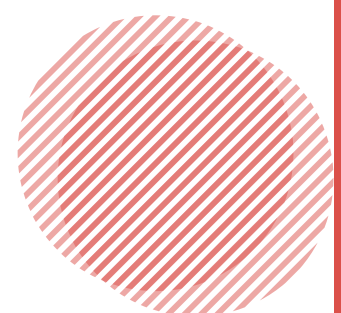
Company	Location	Est.
Stone Transportation, LLC	Dupuyer, MT 59432 (58 mi.)	2005
Harlow's School Bus Service, Inc. of Montana	Stevensville, MT 59870 (123 mi.)	1992
Treasure State Transit Inc.	Kalispell, MT, 59901 (33 mi.)	1990

Figure 14. Local and reputable companies under NAICS code 485

Conclusion

In this report, we analysed shuttle service business models to determine which are viable for delivering Glacier National Park's point-to-point shuttle service. Viable models are low in cost, give Glacier staff control over shuttle operations and management, and provide Glacier visitors with a quality service. Of the models that we explored, we determined that an IDIQ public/private model will be most advantageous for Glacier. The flexibility and moderate control the Park retains are important for the Park and our sponsors. We recommend contracting out staffing for drivers and all vehicle maintenance.

The continual operation of the shuttle system is central to mitigating congestion along the Going-to-the-Sun-Road, in parking lots, and at trailheads. As visitation continues to rise, the shuttle system must be able to accommodate more riders. The National Park Service's core value of shared stewardship and Glacier's commitment to keeping the Park accessible are often conflicting doctrines, however, the shuttle system may be the best possible accommodation.



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