<table>
<thead>
<tr>
<th>Project Name: <strong>SMORES (Smart Mobility Optimizing Resources, Equality, and Sustainability)</strong></th>
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<tbody>
<tr>
<td><strong>Eligible Entity Applying to Receive Federal Funding</strong></td>
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<td><strong>Total Project Cost (from all sources)</strong></td>
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<td><strong>ATCMTD Request</strong></td>
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<td><strong>Are matching funds restricted to a specific project component? If so, which one?</strong></td>
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<td><strong>State(s) in which the project is located</strong></td>
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<td><strong>Is the project currently programmed in the:</strong></td>
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<tr>
<td>• Transportation Improvement Program (TIP)</td>
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<td>• Statewide Transportation Improvement Program (STIP)</td>
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<td>• MPO Long Range Transportation Plan</td>
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<td>• State Long Range Transportation Plan</td>
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<tr>
<td><strong>Technologies Proposed to Be Deployed (briefly list)</strong></td>
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<td>• Enhanced transit and ride-sharing</td>
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<td>• Car Sharing</td>
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<td>• Van Pooling</td>
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<td>• Bike Sharing</td>
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<tr>
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i. Project Description

1. Introduction

The Smart Mobility Optimizing Resources, Equality, and Sustainability (SMORES) consortium is pleased to present an innovative proposal that will address a critical and unrecognized transportation need: expanding safe and sustainable transportation options in rural areas. The plan uses technology to integrate, communicate, and implement solutions for a specific high-profile rural region; moreover, it offers a replicable model that demonstrates how advanced transit technology can improve economic vitality, rural safety, and quality of life.

WHY?

The greater Bozeman, Montana area, which serves as a gateway to Yellowstone National Park, currently faces both the economic opportunities and challenges of a rural region experiencing rapid growth. With access to iconic natural areas, world class recreation, a leading research university, and diverse employment opportunities, Bozeman and surrounding communities attract large numbers of new residents every year. The region’s annual growth rate averages 4%, more than five times the national average. Businesses, particularly in the tourism, tech industry, hospitality, and construction sectors, are expanding and offering new employment opportunities.

However, housing prices in this region have far outpaced local incomes. Nationally, the median housing price is five times greater than the median annual income, but in Bozeman, the median housing price is more than 10 times greater. Low and middle-class families are living farther and farther from their jobs to afford housing, which in turn increases the time and money they spend commuting. Figure 1 provides an overview of the proposed deployment area and local statistics.

Figure 1: Smores Deployment Area and Local Statistics

Once deployed in Montana, SMORES can be replicated in any rural area to reduce congestion, and improve safety and quality of life.
western areas) or practical reasons (transportation alternatives do not exist or users lack information).

HOW WILL SMORES WORK?
The vision for the SMORES Consortium in the Advanced Transportation and Congestion Management Technologies Deployment Initiative (ATCMTD) program is to improve mobility for this national microregion that incorporates the communities surrounding the northwest corner of the Yellowstone National Park: Bozeman, Big Sky, West Yellowstone, Belgrade, Manhattan, and Three Forks. SMORES will deploy emerging transportation and wireless communication technology (including cellular G4 and emerging G5) to facilitate the use of transportation alternatives, which will change the mindset of users who previously embraced the car ownership/single occupancy vehicle model of transportation. The plan will also help reduce congestion and manage growth through alternatives to expanding the physical infrastructure. Figure 2 presents a visual of the deployments and their projected benefits and improvements to the region.

The dynamic rural technology deployments include:

- Ride-sharing software provided by a SMORES local transit provider (Streamline) will allow commuter behaviors and patterns to be measured to facilitate transit improvements
- Rider-friendly transit operational software to provide travelers with real-time information on travel times, travel planning, and on-demand services
- In-vehicle safety warnings and congestion information
- Data logging to determine origin-dwell-destination travel data as a mechanism by which to optimize travel modes and transit services

Figure 2: SMORES Vision for Rural Technology Deployment
These advanced technologies will integrate, facilitate, and promote the following transportation components:

- “New Mobility” - Ride-sharing/Car-sharing/Bike-sharing/Van-pools
- Enhanced and expanded transit services
- Transportation Demand Management (TDM) programs underway with the City of Bozeman to promote mode shifts and peak spreading
- Employer engagement/partnership programs (MSU, Bozeman Health, Big Sky, and Yellowstone National Park)

WHO BENEFITS?
The transportation deployments will serve the following users:

- Commuters: access to safer, more efficient, and less expensive transportation options
- Students: access to car-free options for travel within Bozeman and travel to recreation areas and part-time job locations
- Visitors: reduced congestion, improved traveler information, and transportation alternatives

WHAT ARE THE BENEFITS?
The proposed improvements have numerous potential benefits for stakeholders within the region and beyond:

- Enhanced mobility and reduced congestion for all travelers throughout the region
- Enhanced traveler safety through real-time traveler information and safety alerts
- Enhanced access to job opportunities for residents and reduced commuting costs
- Improved economic vitality for businesses with access to a greater employee pool, as well as to residents who benefit from greater effective household income
- Preservation of iconic regional scenic areas through reduced congestion and pollution and annual average daily traffic (AADT)
- Deployment of a regional model that can be replicated by other fast-growing rural areas

A description of the team and further details about the proposal components highlighted in this introduction are included in the following sections.

2. Who We Are

The Western Transportation Institute (WTI) at Montana State University (MSU) will lead the SMORES program and, on behalf of the SMORES consortium, will serve as the entity that will enter into an agreement with FHWA/USDOT. WTI is the nation's largest University Transportation Center focused on rural transportation planning and engineering. Founded in 1994, WTI brings together 70 professional researchers, staff, and affiliated faculty with an annual research budget of
approximately $8 million. WTI has coordinated research and deployment efforts in 40 states and has participated in international collaborations in more than a dozen countries. WTI’s work encompasses diverse areas including advanced transportation technologies, road ecology, winter maintenance, rural transit, and sustainable infrastructure. WTI currently leads FHWA’s National Center for Rural Road Safety, as well as the West Region Transportation Workforce Development Center.

**a) Consortium Members and Community Partners**

WTI has assembled a strong team of public and private sector partners and will coordinate deployment efforts with these consortium members. Consortium members have a role for implementing the advanced transportation technology deployment within the geographic service area (defined in next section). In addition to these members, community partners have been identified who will serve as project advisors and are beneficiaries of the deployment. An overview of the SMORES membership is provided in Table 1 followed by brief descriptions of the organizations.

**Table 1: Overview of SMORES Consortium Members and Community Partners**

<table>
<thead>
<tr>
<th>Project Partners</th>
<th>Relationship to SMORES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Transportation Institute, Montana State University</td>
<td>Consortium Lead</td>
</tr>
<tr>
<td>University of Southern Denmark (SDU)</td>
<td>Consortium Member</td>
</tr>
<tr>
<td>Montana Department of Transportation (MDT)</td>
<td>Consortium Member</td>
</tr>
<tr>
<td>Streamline, Skyline, Galavan</td>
<td>Consortium Member</td>
</tr>
<tr>
<td>City of Bozeman, Montana</td>
<td>Consortium Member</td>
</tr>
<tr>
<td>Bozeman Health</td>
<td>Consortium Member</td>
</tr>
<tr>
<td>PhantomALERT</td>
<td>Consortium Member</td>
</tr>
<tr>
<td>City of Belgrade, Montana</td>
<td>Community Partner</td>
</tr>
<tr>
<td>City of Manhattan, Montana</td>
<td>Community Partner</td>
</tr>
<tr>
<td>City of Three Forks, Montana</td>
<td>Community Partner</td>
</tr>
<tr>
<td>Big Sky Community</td>
<td>Community Partner</td>
</tr>
</tbody>
</table>

**Consortium Members**

**University of Southern Denmark (SDU)** has more than 27,000 students and 4,000 employees across 6 different campuses in Denmark. SDU has a strong reputation of working with industry, the transmission of technologies, and establishing international business partnerships. SDU began technology collaborations with Montana State University in 2017.

**Role:** Manage optimal placement of cars for the car-sharing element of this work

**Responsibility:** An operations-research approach, utilizing Bozeman demographic, topological, and driver behavior and travel patterns, will be used to determine optimal location of locations for car-sharing vehicles.

**Montana Department of Transportation (MDT)** is headquartered in Helena, Montana and helped establish WTI in 1995. Since that time, MDT and WTI have worked on over 200 projects together.

**Role:** Provision of highway maintenance data, traveler information, and Linear Reference System (LRS) data.

**Responsibility:** Provide real-time data links to highway maintenance information, provide real-time data links to traveler information, and provide access to the LRS data to facilitate speed limit,
curve-speed advisories, and other geometric data used for in-vehicle safety warnings.

**City of Bozeman, Montana** has a population of 45,000 and is home to Montana State University and the Bozeman Yellowstone International Airport which brings over half a million travelers each year to the area. WTI and the City of Bozeman have worked on numerous projects and currently have a Memorandum of Understand in place for Travel Demand Management (TDM) to address congestion.

**Role:** Constituent awareness, space to locate bike-sharing kiosks, facilitation of car-sharing parking.

**Responsibility:** Permitting, traffic system design, constituent communications, leverage of TDM work presently underway with WTI personnel.

**Streamline, Skyline, Galavan:** Streamline bus system provides fare-free service in the city of Bozeman, and to and from Belgrade, Four Corners, Livingston, and seasonal rides to Bridger Bowl Ski Area. Skyline provides transit services between Bozeman and Big Sky, MT. Galavan provides door-to-door transportation service for senior citizens and persons with disabilities. Transit enhancements will be installed on and deployed on Galavan assets.

**Role:** Transit Technology and Service Provider

**Responsibility:** Procure 1.) ride-sharing software to track commuter behaviors and patterns and 2.) transit operational software to provide real time schedule information to riders.

**Bozeman Health (BH)** is one of the largest employers in southwestern Montana and services the SMORES geographic area. The health system is comprised of several specialty treatment centers, a network of physician and urgent care clinics, outpatient treatment facilities, retirement and assisted living facilities, all staffed by hundreds of doctors, nurses, medical assistants, technologists, specialists, experts of many varieties and dedicated professionals.

**Role:** Care Sharing / Identification of van-pooling candidates and coordination of riders and shifts.

**Responsibility:** Provision of parking spaces for car-sharing vehicles to support van-poolers who require mobility during breaks at the hospital.

**PhantomALERT**

**Role:** Provision of in-vehicle data collection, safety alerts and warnings, and congestion alerts and alternatives.

**Responsibility:** Traveler safety. The PhantomALERT system provides numerous safety benefits, with general speed limit and curve-speed warnings. Of interest to this project are curve speed warnings for Montana Highway 191 (MT 191), which links Big Sky and West Yellowstone to the northern end of the MT191 corridor. **Real time traffic updates.** PhantomALERT will provide real-time traffic updates to travelers in the Bozeman area. Recommendations can be made for alternative routes which are used to simultaneously reduce both congestion and travel times.
Community Partners
The towns of Belgrade, Manhattan, Big Sky, and Three Forks, Montana will benefit from the SMORES deployment as community partners. Residents of these communities who work in the Bozeman and Big Sky region and who utilize the new technology and take advantage of the “new mobility” options available to them will experience reduced congestion, economic growth, and improved quality of life. Members from these communities will serve on the project advisory board.

b) Program Management.
The MSU Office of Sponsored Programs (OSP) will manage the administrative and financial functions related to the award. OSP, comprised of professional Fiscal Managers and Grant Specialists, will takes a comprehensive managerial approach and engage in the life cycle of the award, assuming financial, reporting, compliance, auditing, and related tasks. In fiscal year 2016, MSU opened 600 new sponsored program grants and had $118 million in research expenditures.

As part of the program management, OSP will:
- Establish and maintain effective internal control over the Federal award, in compliance with Federal statutes, regulations, and the terms and conditions of the award
- Advise the technical Program Manager of USDOT guidelines and regulations
- Facilitate good project management practices by disseminating information
- Serve as the primary liaison between the PI and the sponsor in all areas requiring sponsor approval, including changes to scope, budget, and key personnel
- Maintain project files and records of the proposal and grants information system

Overall management and oversight of fiscal activities provided by OSP will include:
- Manage receivables, billings, and collections: OSP will manage the collection of award funds and will maintain account records for USDOT. OSP draws funds under Federal letters of credit as costs are incurred, and will issue billing to USDOT and conduct follow-up payments
- Project financial reporting: Preparation and submittal of financial reporting to USDOT will be conducted as well as generation of monthly Inception to Date Report (ITD) if requested
- Administer effort reporting to provide documentation for employee salary charges to Federal grants
- Monitor and respond to, in conjunction with the department, incidents of overspending;
- Coordinate government, private sponsor, and public accounting firm audits
- Develop and negotiate Federal facilities and administrative agreements
- Monitor government property accounting inventory maintained by Property Management

SMORES is a collaborative deployment consortium of public and private sector entities, as well as institutes of higher learning. The OSP Sub-Contract Manager will be responsible for the processing and monitoring of all sub awards issued from MSU to consortium partners.

At the ground level, Dr. Craig Shankwitz of WTI will serve as SMORES Program Manager and will assume primary responsibility for accomplishing the technical and deployment goals of the
Technical management includes complying with the financial and administrative policies and regulations associated with the award.

To ensure a smooth transition and the ability to hit the ground running upon award, SMORES consortium members have provided Letters of Commitment which are included in Appendix B. Upon selection of this funding opportunity, a memorandum of understanding (MOU) or other organizational mechanism will be initiated by Montana State University and executed in a reasonable timeframe.

The project has three thrusts:

- **Consumer Culture** - a focused effort to shift current personal automobile culture towards alternative transport modes.
- **Traditional Transit** - Use new technologies to improve on existing traditional transit systems, including fixed route transport, larger transit vehicles, bus stops, express service.
- **“New Mobility”:** car-sharing, ride-sharing, van-pooling, and bike-sharing.

An overview of the SMORES Consortium organizational structure and the management of the three thrusts described above is shown in Figure 3.

A cornerstone of this collaborative effort will be the Advisory Committee, which will help guide, implement, and communicate SMORES efforts. The committee will be assembled to complement the qualities of the consortium partners. The Advisory Committee will be composed of valued stakeholders in the geographic area’s rural communities, employers, and city leaders. Committee members will be asked to review SMORES progress, provide input into the strategic direction, and assess and evaluate the overall effectiveness of the deployments. Advisory Committee meetings will be held at least twice during each fiscal year throughout the duration of the deployment.

**Figure 3: SMORES Program Management and Execution Structure**

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3. Geographic Area of Deployment

The geographical area that the SMORES deployment will service is most of Gallatin County, located in rural southwestern Montana. The residents of Three Forks, Manhattan, Belgrade, Bozeman, and Big Sky, as well as visitors to this heavily traveled region, will directly benefit from the deployment. The region is shown in Figure 4.

Most important, a safety issue must be addressed: over 1400 people a day travel U.S. Highway 191 corridor between Bozeman and Big Sky for employment. This narrow road, which winds along the Gallatin River and serves Yellowstone National Park and the Big Sky area, suffers from a high fatal crash rate. In addition, the rapid population growth of Bozeman, Montana and the surrounding Gallatin County and the skyrocketing visitation to the local tourist and recreation attractions have contributed to two significant quality of life issues: affordable housing and traffic congestion.

Figure 5 provides a snapshot of relevant economic parameters including the ratio of median household income to median home price. On a macroscopic level, housing and home ownership is a significantly higher financial burden in the SMORES area when compared to greater Montana, Minneapolis (an urban city on the same latitude as Bozeman), and the greater United States. This burden is compounded by the relatively low ratings of Montana in terms of household median income and productivity (as measured by state Gross Domestic Product).

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According to the US Bureau of Labor Statistics, approximately 31% of the household budget is housing-related, and 17% of the household budget is related to transportation. In urban areas, public transportation is heavily subsidized, which provides low- to middle-class citizens who take advantage of public transportation a significant opportunity to redirect funds. By saving money on transportation, housing becomes more affordable because funds normally spent on car ownership and operations can be applied to housing.

For example, consider the citizen who lives in Three Forks and commutes to Bozeman for employment. Using the vanpool instead of a personal car would save that commuter $8,727 annually (please see Figure 11 in Section 8). Assuming a 15% income bracket, this savings is equivalent to an increase in income of $10,036. In the town of Three Forks, this increase could move a person in the 40th percentile income group to the median income group. This is a significant socio-economic jump. Not only does van-pooling save money, it reduces congestion (better space utilization), fuel consumption, and greenhouse gas emissions.

In practice, however, the opportunities for such programs in the rural states have been limited or non-existent. Nearly all transit funds have been allocated for urban and suburban areas. Three reasons cover the lack of attention paid to rural transit initiatives:

1. Low prioritization of mobility and economic issues faced by citizens in the rural U.S.
2. Lack of awareness of the opportunities for which various mobility options can lead to improved personal finance, effective household income, and socio-economic status.
3. Difficulties overcoming the car culture which has stronger hold on citizens in rural areas than it does in more urban and suburban areas. This is primarily due to the dearth of options available to the rural citizen; public transport ends at high school graduation when the graduate no longer has the option to ride the school bus.

The ATCMTD funding opportunity provides the SMORES area the opportunity to

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experience first-hand the benefits of varied and focused transportation options which address the three shortcomings listed above. Montana, as are many rural western states, is tightly associated with car culture. If car culture can be replaced with “mobility culture” in Montana, it has a high probability of success for deployment in the other parts of the country, including the non-coastal west.

4. Issues and Challenges Addressed by the Deployment

SMORES will address the economic, cultural, and growth issues that present challenges to improving quality of life for the citizens, employees, and visitors to the SMORES deployment area.

Economic Challenges.
Montana faces numerous economic challenges. Four significant economic conditions have made it more difficult for Montana and Montanans to compete on a national level.

1. **Household incomes** in Montana lag considerably far behind the national averages. The following facts regarding both Bozeman and Montana’s economic conditions, national ratings, and growth rates shown in Table 2 help frame the situation.

<table>
<thead>
<tr>
<th>Category</th>
<th>Ranking / Rate</th>
<th>Category</th>
<th>Ranking / Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT GDP rank</td>
<td>48</td>
<td>Connectivity</td>
<td>49</td>
</tr>
<tr>
<td>MT Population rank</td>
<td>44</td>
<td>U.S. population annual growth rate</td>
<td>0.80%</td>
</tr>
<tr>
<td>MT Household median income rank</td>
<td>38</td>
<td>MT population annual growth rate</td>
<td>0.79%</td>
</tr>
<tr>
<td>MT Per capita income rank</td>
<td>33</td>
<td>Bozeman population annual growth rate</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

A comparison household income distribution for the state of Montana and the United States shows that Montana trails the U.S. in all income brackets at the 95th percentile and lower. When SMORES is deployed, households with lower income may be more willing to change habits to improve their socio-economic standing than those who are in better standing.

2. **Housing Cost** – As previously shown in Figure 5, Montana homes are expensive when compared to the median household income. The economic burden of housing in the SMORES area is higher than in the U.S. in general. Many people find less expensive housing outside of Bozeman, that results in high transportation costs to commute into Bozeman daily for work and other essential services.

3. **Electronic Connectivity** - Montana ranks 49th for electronic connections or, equivalently is the 2nd least electronically connected state the U.S. The SMORES communities are relatively well connected, but the areas between those communities are not. This lack of electronic connectivity affects Montana’s “old” economy (agriculture, mining, forestry, etc.), but also hampers Montana competitiveness in the “new” economy: finance, IT, the Internet of Things, autonomous vehicles, etc. As an example, lack of cell coverage on MT 191 considerably delays the response of emergency services should a crash occur. The likelihood of improvements in connectivity within that corridor are slim, so the best approach to mitigation is crash reduction itself. (This is addressed more in the next section – culture.)

4. **Transit Options**: Montana, among other western states, lags far behind the rest of the country in terms of what transit services are available to its citizens, and as such, also lags in transit
subsidies. The blue shaded areas in Figure 6 show that the highest growth rates in the U.S. are occurring in rural areas in the non-coastal west. There is a high concentration of these areas in the SMORES region and beyond highlighted in yellow. The lack of transit services available to the SMORES region within the yellow outline compared to the rest of the country is of concern. Figure 6 illustrates how the work done by SMORES has applicability throughout the non-coastal west.

Figure 6: Growth in the U.S. from 2010 through 2015 and distribution of public transportation systems throughout the U.S.

Advanced transit, including technologies that promote ride-sharing, car-sharing, bike-sharing, and van-pooling simply have never been readily available to most Montanans and the non-coastal west, keeping them from enjoying the advantages that come with them. SMORES, as an example, will make these alternatives available to non-coastal west communities facing similar growth.

The Big Sky community serves as an example of where transit can play a major role and have significant positive impact on rural America, and the non-coastal west in particular. Affordable housing continues to be an issue in Big Sky. The seasonal nature of the ski resort business, high land and construction costs, and a resulting difficult business case / return on investment analysis has kept affordable housing out of Big Sky. This lack of affordable housing creates a huge commuter population. Figure 4 and Figure 5 highlight the challenges faced by Big Sky employees: lack of affordable housing, a long commute, and low wages.
The Big Sky situation epitomizes the relevance of rural transit. Long commutes, low wages, and the high cost of car ownership combine to keep those service employees from achieving economic independence. An efficient, affordable transit system would greatly improve the chances for socio-economic advancement.

Despite these economic challenges, Montanans may be ready to embrace the introduction of advanced transportation technologies if they’re made fully aware of the economic benefits (and corresponding increase in quality of life) that these technologies and systems can bring them.

**Cultural challenges.**

Car culture exploded in the U.S. after World War II; the personal automobile was so popular, that entire transit systems were dismantled in favor of the automobile. As history shows, dismantling was a detriment to society. In the non-coastal west, personal car ownership has become a standard operating procedure, and as such, the populace is generally unaware of the true costs of personal vehicle ownership as compared to other options. Car culture is unlikely to change for those who can easily afford cars, but for those who struggle to make ends meet and who rely upon the personal car for mobility, alternative transportation modes will certainly be attractive if the benefits can be convincingly explained.

Significant project resources are allocated to better understand the consumer culture – how should the advantages of alternative modes be presented to the segment of the population who benefits most from it? How to best demonstrate the advantages of “new mobility” far outweigh the perceived inconveniences? Sustainability will only occur if, from the end-user’s point of view, the benefits of the alternative modes outweigh any perceived disadvantages.

Investment in transportation options that make it more convenient for people to ride a bus, carpool, vanpool, bike, and/or walk is crucial to mode shifting away from Single Occupancy Vehicle (SOV) usage. Shifting modes from SOVs to alternate modes reduces the number of vehicles using the roadway, which reduces exposure, which in turn reduces the likelihood of a crash, ultimately reducing serious injury and fatal crash rates.

**Figure 7** highlights the savings which come from replacing single occupancy vehicle (SOV) usage with ride sharing, van-pooling or public transit. “New mobility” not only saves money, it reduces congestion (better space utilization), fuel consumption, and greenhouse gas emissions.

**Growth challenges.**

The final challenge area involves the rapid growth of the city of Bozeman. Bozeman population growth has risen to

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**Figure 7:** Comparison of private vehicle ownership to alternative modes of transportation.
4.2%, whereas the overall growth rate of the U.S. is 0.8%, one-fifth of that in Bozeman. As communities grow, either organically or through relocation, arriving residents need a place to live. Developers and constituents are faced with the same dilemma:

- Develop within city limits? Increases population density.
- Develop outside city limits? Increases sprawl.
- Develop in neighboring communities? Places some of the growth burden and benefits on the adjacent community.

No matter the decision, growth brings increased traffic volumes, increased congestion, parking limitations, decreased mobility, and conflict between long term residents and newcomers.

The use of technology to mitigate quality of life issues associated with growth is primarily motivated by the fact that the U.S., like many other developed countries, is facing declining societal productivity. Figure 8 shows a historical view of GDP and population growth in the U.S. after World War II.

The downward trends are obvious; the likelihood of periods of significantly higher growth, especially with the current U.S. national debt, are unlikely. With decreasing productivity, infrastructure projects are increasingly difficult to fund. This is validated by the fact that during the past 25 years, the number of highway vehicles registered in the U.S. has grown by more than 25%, yet the road miles added have increased less than 5%.

Bozeman infrastructure has not kept up with its population growth, and congestion is increasingly becoming a problem. Many primary Bozeman arterials are near or at design capacity, and projections of industries moving to the area and the housing needs they will create are on the rise.

The challenge here is what to do now that will be relevant from today through 2040 and beyond. Complicating the issue is the coming of age of the millennial generation: millennials are less about ownership, and more about sharing. Are infrastructure investments warranted if the next generation is fully accepting of transit, car-sharing, and ride-sharing? Will enhanced electronic connectivity replace face-to-face visits? Will travel demand decrease with the next generation? Unfortunately, answers remain unknown. What can be done, however, is the deployment of millennial-friendly technology, and measure their response to it. If the response is favorable, then

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the lessons learned in these early deployments can be used to design the optimal transportation system of the future – a transportation system strong on technology, but light on additional infrastructure and cost.

5. Transportation Systems

An overview of the transportation systems and technologies to be deployed by SMORES and the primary user who will benefit from the deployment are provided in Table 3.

Table 3. Transportation systems and technologies to be deployed by the SMORES Consortium.

<table>
<thead>
<tr>
<th>Transportation System or Technology</th>
<th>Primary Target User Group</th>
</tr>
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<tbody>
<tr>
<td>Ride-sharing/car-pooling</td>
<td>• MSU Students</td>
</tr>
<tr>
<td></td>
<td>• Bozeman Health employees</td>
</tr>
<tr>
<td></td>
<td>• Downtown Bozeman employees</td>
</tr>
<tr>
<td></td>
<td>• Clustered workers based on concurrent TMD work with the city of Bozeman (Section 12 – project leverage)</td>
</tr>
<tr>
<td>Car-sharing</td>
<td>• MSU students</td>
</tr>
<tr>
<td></td>
<td>• Bozeman residents who travel within proximity of Bozeman and who are properly “clustered” to ensure sufficient utilization of the shared vehicle.</td>
</tr>
<tr>
<td>Van-pooling</td>
<td>• Commuters from the cities of Belgrade, Manhattan, and Three Forks</td>
</tr>
<tr>
<td></td>
<td>o MSU</td>
</tr>
<tr>
<td></td>
<td>o Bozeman Health</td>
</tr>
<tr>
<td></td>
<td>o Clusters identified by the TDM study</td>
</tr>
<tr>
<td></td>
<td>• Service workers at Big Sky who reside in Bozeman, Belgrade, Manhattan, and Three Forks</td>
</tr>
<tr>
<td>Bike sharing</td>
<td>• MSU Students</td>
</tr>
<tr>
<td></td>
<td>• MSU Faculty</td>
</tr>
<tr>
<td></td>
<td>• Downtown Bozeman Visitors</td>
</tr>
<tr>
<td></td>
<td>• Car-sharers traveling to/from shared car</td>
</tr>
<tr>
<td>Enhanced Transit / Transportation Demand Management (TDM)</td>
<td>• Bozeman Health (local workers with clustered home locations)</td>
</tr>
<tr>
<td></td>
<td>• MSU Faculty and Staff</td>
</tr>
<tr>
<td></td>
<td>• Downtown Bozeman employees (local workers with clustered home locations)</td>
</tr>
<tr>
<td></td>
<td>• Bozeman citizens for improved mobility</td>
</tr>
<tr>
<td></td>
<td>• Commuters amongst Bozeman, Belgrade, Manhattan, and Three Forks</td>
</tr>
<tr>
<td></td>
<td>• Seasonal workers between Bozeman and Big Sky</td>
</tr>
<tr>
<td>In-vehicle traffic updates, speed zone, curve speed warnings, and other safety notifications</td>
<td>• Bozeman residents who frequently travel to Big Sky, West Yellowstone, or Yellowstone National Park</td>
</tr>
<tr>
<td></td>
<td>• Visitors to the SMORES are who are unfamiliar with the area, especially U.S. Highway 191</td>
</tr>
</tbody>
</table>
6. Deployment Plan
The previous section, Transportation Systems, described the proposed transportation systems, components, and users. This section describes how each of these components will be implemented, including a description of the advanced technologies to be deployed. It is important to note that each component will include cultural change elements to encourage users to embrace a shared mobility perspective. The elements of the deployment plan are summarized in Table 4 and described in more detail in the subsequent text.

Table 4: Deployment Plan Elements

<table>
<thead>
<tr>
<th>Transportation System Component</th>
<th>Deployment Technologies and Related Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ride-sharing/car-pooling</td>
<td>• Implement ride-sharing software</td>
</tr>
<tr>
<td></td>
<td>• Creation of target user groups and promotional materials</td>
</tr>
<tr>
<td></td>
<td>• Performance analytics to assess usage and benefits</td>
</tr>
<tr>
<td>Car-sharing</td>
<td>• Implement car-sharing program</td>
</tr>
<tr>
<td></td>
<td>• Map optimal car placement (Partner: Univ. of S. Denmark)</td>
</tr>
<tr>
<td></td>
<td>• Creation of target user groups and promotional materials</td>
</tr>
<tr>
<td></td>
<td>• Performance analytics to assess usage and benefits</td>
</tr>
<tr>
<td>Van-pooling</td>
<td>• Implement van-pool routes identified by Bozeman TDM</td>
</tr>
<tr>
<td></td>
<td>• Outreach to potential van-pool riders to increase usage</td>
</tr>
<tr>
<td></td>
<td>• Creation of target user groups and promotional materials</td>
</tr>
<tr>
<td>Bike-sharing</td>
<td>• Implement bike sharing program</td>
</tr>
<tr>
<td></td>
<td>• Work with local employers to implement peak spreading of employment hours</td>
</tr>
<tr>
<td>Enhanced Transit / Transportation Demand Management (TDM)</td>
<td>• Utilize ride-sharing software to track commuter patterns</td>
</tr>
<tr>
<td></td>
<td>• Implement rider-friendly transit operational software to provide real-time traveler information</td>
</tr>
<tr>
<td></td>
<td>• Expand transit services to reach new communities</td>
</tr>
<tr>
<td></td>
<td>• Work with local employers to implement peak spreading of employment hours</td>
</tr>
<tr>
<td>In-vehicle warnings and information</td>
<td>• Deploy in-vehicle systems in local vehicles (Partner: PhantomAlert)</td>
</tr>
<tr>
<td></td>
<td>o in-vehicle safety warnings</td>
</tr>
<tr>
<td></td>
<td>o in-vehicle congestion information</td>
</tr>
<tr>
<td></td>
<td>o data logging for analyzing travel patterns</td>
</tr>
</tbody>
</table>

Ride-sharing/Car-pooling.
Using data from the Bozeman TDM project currently underway (please see Section 12), six “clusters” of ride-sharing user groups will be initially formed:

<table>
<thead>
<tr>
<th>MSU Students</th>
<th>Downtown Businesses</th>
<th>Bozeman Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSU Faculty and Staff</td>
<td>University Ave. Rsrch. Park</td>
<td>General Bozeman Population</td>
</tr>
</tbody>
</table>

The SMORES Consortium Consumer Culture Expert, Dr. Graham Austin, will work with partners to develop optimal approaches to recruit members of each of the ridesharing groups to the
SMORES program, and then produce target materials to attract each group to ride sharing. Once those materials are available, project advertisement / subject recruitment begins, with a specific methodology and approach likely required for each of the six member groups.

After implementation, feedback will be collected from the ride-share members to determine what makes the system attractive to both the riders and the drivers. In addition, the team will perform analytics to determine the benefits of the ride sharing system and how well the expected benefits (Section 9) map to the actual benefits. The primary goal is high utilization rates. If user feedback and analytics suggest that the system is not meeting expectations, modifications will be made (and encouraged) to ensure a sustainable program.

**Car-Sharing.**

Car sharing in a small, rural town presents a significant challenge. Car-sharing models must be adapted to a rural town, where population density is generally lower and residents have a tighter connection to car culture. Because of lower population density, car-sharers will be generally located further from their shared car than car-sharers in an urban area. The challenge is to determine where to locate cars in the rural area which maintains a relatively high level of convenience for the user. the car-sharing program.

Consortium members from Denmark offer recently identified best practices that greatly increase the likelihood of success for rural car sharing, and car-sharing in general.\(^4\) The model is based on operations research dealing with network flows, plant location, and shortest path for warehousing to minimize time to store and retrieve produced goods. Convenient car-sharing follows those same principles; where to park the shared vehicle after use so it is convenient for both the driver return the vehicle (easy walk/ride home) but still easily accessible to other car-sharers under the constraint that parking may/may not be available in what is theoretically the optimal spot.

**Van-pooling**

Based on the work performed for the Bozeman TDM Study, the initial van-pooling routes will consist of routes carrying passengers between Bozeman and Three Forks, including the communities of Manhattan and Belgrade.\(^5\) WTI identified 127 hospital employees that want van-pooling for commuting; 128 more are listed as “maybe.” The consumer culture work will focus on the “maybe” voters – what will it take those “maybe” respondents to adopt van-pooling?

The survey respondents worked an 8-hour shift (40%), 9-hour shift (30%) or a 10-hour shift (20%); (10% work 12, 4 or 6 hour shifts). These shifts fall outside normal commuting hours; therefore, these employees are excellent candidates for the flexibility of a van-pool. If those workers can be converted from “maybe” to “yes,” it will double the demand for van-pool riders. As shown in Section 9, van pool usage substantially reduces commuting costs and will contribute greatly to improvements in household income in the communities the van-pool serves.

**Bike-sharing.**

The SMORES Consortium will begin with a 50-bicycle bike sharing-program which will service downtown Bozeman and the MSU campus. A number of potential bike-sharing companies have formed in the past decade; one such company, Zagster, provides turn-key bike sharing for smaller communities and college campuses, and will be investigated as a potential source to provide

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\(^5\) More work in the Bozeman TDM project needs to be completed to determine whether enough commuters live in the towns of Amsterdam and Churchill to warrant van-pool services to those communities.

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similar services in the Bozeman area. After the introduction and sustainable adoption by the community, bike-sharing can expand its service to areas north and west of downtown, where community growth rates are highest.

**Enhanced Transit / Transportation Demand Management (TDM)**

As the Bozeman community grows, existing population centers expand, and due to land costs, new developments and subdivisions form farther from the town center. In general, these new developments bring increased SOV usage. When individuals or families move into a new location, they are generally unfamiliar with the surroundings, neighbors, and travel patterns. If new residents can be attracted to an alternative transportation mode early in their relocation, the likelihood that they adopt that mode is high. As a means to this end, Bozeman transit providers Streamline, Skyline, and Galavan will procure the following software and will implement peak-spreading which will enable them to keep up with Bozeman growth.

- **Ride-sharing software** allows the SMORES transit providers to track commuter behaviors and patterns. Improved understanding of commuter behaviors and patterns facilitates data-driven changes in system scheduling and operations, improving the rider experience. Better traveler experience is a requirement for the transit system to sustain itself if funding and subsidies diminish.

- **Rider-friendly transit operational software** provides riders with real-time information regarding bus travel times, departure and arrival times, mobile and desktop-based travel planning, and transit on-demand services (critical to Galavan’s mission). These services are designed to improve the traveler experience, which is critical to successful and sustainable operations.

- **Peak spreading.** The MSU TDM project with the city of Bozeman is examining peak spreading with local employers as a congestion mitigation strategy. Initial results are favorable, and employers are open to adjusting work hours to reduce local congestion. The SMORES team will work with local employers, including MSU and Bozeman Health, to add flexibility or structure (depending on what is needed) to implement variable job start/finish times. By spreading roadway demand, commuter times can be maintained (or improved) even in the face of growth without a need to build more infrastructure.

In addition, new Streamline Transit Services will be implemented to connect Three Forks and Manhattan to Bozeman. Primary Bozeman destinations are MSU and Bozeman Health/hospital facilities.

**In-vehicle safety warnings and traveler advice**

In-vehicle devices serve three purposes in the SMORES program:

- **in-vehicle safety warnings** (and in particular for the SMORES area, curve speed warnings for the MT 191 corridor)

- **in-vehicle congestion information** allowing travelers to select less congested alternative routes

- **data logging** to determine origin-dwell-destination travel data as a means to adjust travel modes to best accommodate ever-changing travel patterns due to high population growth.

PhantomALERT is the mechanism by which the in-vehicle information is generated, displayed, and relayed. PhantomALERT is available for Apple and Android phones and TomTom, Garmin, and Magellan GPS devices. PhantomALERT has made its product available to the SMORES ATCMTD project to improve highway safety through relevant, temporally and spatially accurate warnings and alerts. (More information can be found here: http://www.phantomalert.com/). As
cost share, PhantomALERT has reduced the cost of its subscription by 50% to support the effort of the SMORES Consortium.

The distribution of the PhantomALERT subscriptions to SMORES is shown in Table 5.

**Table 5. Distribution of PhantomALERT licenses for the SMORES Consortium.**

<table>
<thead>
<tr>
<th>User Group</th>
<th>Location / Destination</th>
<th># Licenses issued</th>
<th>License duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors</td>
<td>Yellowstone National Park</td>
<td>16,000 (8,000 per year)</td>
<td>One month</td>
</tr>
<tr>
<td>Residents</td>
<td>SMORES Area</td>
<td>3,000</td>
<td>Two years</td>
</tr>
</tbody>
</table>

Sixty-two percent of all visitors use the West Yellowstone entrance, and of those, many travel the MT 191 corridor, which has a high fatality rate. By providing YNP visitors who travel that road with spatially-relevant warnings, crashes and related traffic fatalities should be reduced. Eight-thousand, one-month subscriptions to PhantomALERT will be distributed to visitors to the SMORES area who are likely to use MT 191 on their way to and from Big Sky, West Yellowstone and Yellowstone National Park. Licenses will be made available to visitors who indicate an interest in PhantomALERT on a first-come, first-served basis on a to-be-determined website.

Three-thousand, two-year PhantomALERT subscriptions will be distributed to:

- Commuters at major employment centers (Oracle, MSU, Bozeman Health). This will be a mix of commuters who live in Bozeman and commuters who travel to work from communities outside of Bozeman.
- Bozeman residents who are likely to travel during non-rush hour times (MSU students, downtown business owners, delivery drivers (through their employer), stay-at-home parents, etc.
- Travelers who live north of Big Sky but travel frequently to Big Sky for recreation and employment purposes.

In exchange for the use of the PhantomALERT application, users will agree to allow their travel data to be used (anonymously) for analysis by the SMORES consortium. The incentive to participate is the safety and convenience benefit they receive from the PhantomALERT application.

By recording and analyzing trips to, from, and within Bozeman, the benefits of the congestion mitigation strategies deployed by the SMORES consortium can be quantified. Benefit quantification is crucial to the ATCMTD as it is used to provide concrete measures of benefits of the congestion mitigation strategies to other communities facing similar growth issues. Moreover, the PhantomALERT model of acquiring origin-destination-dwell data provides communities an inexpensive, accurate, and convenient means to acquire crucial travel data.

### 7. Deployment Challenges

Given very tight budgets and relatively low state incomes, the deployment goal of the SMORES consortium is to deploy transportation systems which are technology-based and which require a minimum amount of infrastructure-related work, including permitting, construction, wiring/cabling, designs, or NEPA approvals. The transportation systems consist primarily of software, applications which operate on cellular phones or GPS devices, leasing of vehicles for car-sharing, bike-sharing, van-pooling, and extra transit operations (buses). These vehicles will be leased for the duration of this project.

The SMORES sustainability model requires that after the ATCMTD project period concludes, these technologies and systems must continue on their own merits, either generating sufficient
revenue to exist on their own, or operating on revenue from major employers who will provide
transportation options as a mutual benefit to their employees or themselves. If the sustainability
fails to materialize, no “white elephants” will remain.
No foreseeable regulatory, legislature, or institutional obstacles exists that will present significant
challenges to the deployment of SMORES.

8. Quantifiable System Performance Improvements

Quantifiable system performance improvements are measured in two categories: 1) benefits for
the SMORES geographic area, and 2) benefits for the members of the SMORES consortium.

Performance Improvements to the SMORES Deployment Area.

System improvements for the SMORES geographic area fall into three categories: improved
mobility/reduced congestion, improved safety, and net increases in household income (for those
who take advantage of the transit opportunities offered to them).

1. Improved Mobility. Mobility can be measured directly (using self-reported ride-sharing
data or data collected by the PhantomALERT system) or indirectly using surrogate measures.

*Figure 9* shows the data collected by the direct measurement method. For this
ATCMTD project, the PhantomALERT system data-logging feature is used to track
travel times of Bozeman residents, commuters, and visitors. The use of
PhantomALERT simplifies data collection by using its existing
features, and the distribution model means that a wide cross-
section of road users is included, providing travel time data for all
segments of the traveling public. Because PhantomALERT is an
off-the-shelf product, it can be distributed as soon as contracting details are finalized. This will be the first deployment
element, and as such, provides the baseline data used for subsequent comparisons. Data
collection will continue throughout the life of the project. As ride-sharing, car-sharing, van-
pooling, and enhanced transit features are deployed, the benefits of each can be quantified.
Comparing the performance of each of the various enhancements to the transportation
network provides a mechanism by which communities can determine which approach(es)
may work best for their situation.

The *indirect method* of mobility measurement focuses on the reduction of traffic counts as
measured by the Montana Department of Transportation (MDT) in its annual survey of traffic
volumes. Indirect methods are easily implemented, the measurements are generally accurate,
but coarse (typically measured at intersections). However, MDT has a deep history of traffic
volume data, and that history can be used to support before-analysis data of traffic volumes.
Traffic volumes can be normalized against population to determine the trends associated with the SMORES congestion mitigation strategies.

- **Improved Safety.** The safety focus of the SMORES consortium lies in the U.S. Highway 191 corridor between Bozeman and West Yellowstone. As has been described, this section of road suffers from a well-documented high crash rate, with crash data extending back in time for years. The safety benefit of this ATCMTD program is measured directly via crash-rate comparisons, comparing before data with the first round of “after” data when PhantomALERT is made available, and the second round of “after” data once the improved transit service is deployed. The first round of “after” data can be used to measure the effectiveness of the geo-specific curve speed warnings; the second round of “after” data can be used to measure the effects of reduced traveler exposure and the merits of a professional driver.

- **Net increases in household income.** As shown in Figure 7, the annual cost of car ownership and operations is significant, and for seasonal workers, a very substantial portion of their income. Gains in net income will be made using the following methods:
  - **Bus ridership.** For 2017, the IRS uses $0.535 per mile as its cost of car ownership rate (slightly lower than that shown Figure 7 due to today’s lower fuel prices). By measuring bus ridership, the net gain in income can be computed using trip distance and fare cost.
  - **Car sharing.** For the case of car sharing, each shared vehicle will be equipped with a device with PhantomALERT subscription capable of logging trip miles. Usage costs for the car sharing users will be apportioned per the number of users. Let x equal the cost of fuel per mile, and let y equal the remaining car operation costs per mile so that IRS cost/mile = x+y. Let \( m_{ij} \) represent the mileage driven by car-share member j on trip i. Let \( m_j = \sum_i \sum_l m_{ij} \) be the total miles driven by car-share owner j over the course of a year, and let \( m = \sum_l \sum_j m_{ij,j} \), the total mileage driven by the car-sharing group over the course of the year. The money saved by car-share owner j is then \( M_j = m_j(1 - \frac{m_{ij}}{m})y \); that owner is paying only his or her share of the non-fuel cost (proportioned as miles driven by that share owner) plus whatever fuel they consume.
  - **Ride sharing.** For the driver, the net income gained is the amount received from the riders. Ride-sharing software allows a driver to record trip details, including revenue generated. If a driver elects to use this software module, and allows SMORES access to that data, collection of that information becomes automatic. For the rider, no income is assumed gained as the ride-sharer is assumed to not own a car.

**Performance Improvements to the SMORES Consortium**

The goal of the SMORES Consortium is a sustainable set of safety and mobility improvements which will provide benefits to residents, commuters, and visitors to the SMORES project area. Partners realized that the community benefits greatly from improved safety and mobility, but sustainability only comes from the partners benefiting as well. The benefits to the SMORES partners are understood by them, and as such, will contribute to its long-term sustainability.

- **Montana State University:** Decreased congestion on campus, fewer student and staff personal cars on campus, opportunity to teach students the true cost of car ownership. With
explosive growth in student enrollment, decreased need for parking lots makes available space for new buildings to house classrooms and labs or increased green space.

- **Montana State University Students:** Immediate benefits include mobility options without the need for a personal vehicle on campus. In the eyes of many students, mobility represents freedom. With mobility options, students need (and perceived need) for a personal vehicle on campus is reduced, and can save that student considerable money, especially if that student planned to purchase or lease a vehicle. Students learn an important economic lesson, and can leave college with lower student debt or (more) money in their pockets.

- **City of Bozeman:** Decreased congestion, ability to execute long-range innovation as day-to-day operations dealing with exploding population growth consume most resources. The response to and success of these technologies will help planners and engineers deal with long-term city growth.

- **Montana Dept. of Transportation (MDT):** MTD is interested in the PhantomALERT system to reduce speed-related crashes, particularly with the visitor population who are unfamiliar with Montana roads, weather, topography, and (generally) high speed limits. MTD has limited options for providing active curve and other speed warnings to motorists, so a successful demonstration by PhantomALERT can leverage private-sector technology to solve public-sector problems.

- **City of Big Sky:** Improved transportation options will lead to improved employee well-being, which leads to a better visitor experience, and likely additional return business. Because of exceptionally high land and constructions costs, Big Sky has been unable to provide affordable housing for workers, with most living in Bozeman. Improved transit options should alleviate worker fatigue, and improve socio-economic status by lessening transportation costs. Improved transit options and improved SOV safety enabled by PhantomALERT makes travel to Big Sky easier, and safer for resort visitors.

- **Bozeman Health:** Transit offers a net improvement in personal and household income by reducing the costs of travel. By educating its workforce and promoting alternative modes, Bozeman Health is improving employee net income without incurring the costs themselves. Long term Bozeman Health facilities planning includes an on-site parking garage. Bozeman Health may be able to delay or postpone the construction of a parking garage if ride-sharing, car-pooling, van-pooling, or additional transit options adequately reduce parking demands, allowing existing facilities to provide sufficient parking into the future. Postponement of the construction of a parking facility saves millions, which is the incentive for the SMORES support and membership by Bozeman Health.

9. **Safety, Mobility and Environmental Benefit Projections**

This proposal offers a broad range of safety, mobility, environmental and socio-economic benefits:

- **Safety:** Reduced risk of serious crashes through in-vehicle warning systems.
- **Mobility:** Reduced congestion through reductions in SVO and through improved traveler information, which increases route and/or mode shift.
- **Environmental:** Conservation of iconic natural environments and resources through reduced transportation impacts to air, water, and land resources.
- **Socio-economic:** increased access to regional employment opportunities and increased household income for travelers who use alternatives to personal vehicles and single
occupancy travel. Of these, the socio-economic impacts offer a clear example of a benefit that can be projected and quantified. For each component of the deployment plan, the following sections illustrate the potential financial benefits and how they were calculated.

**Car-sharing.** Car-sharing analysis focuses on the potential socio-economic benefits for the end user. Historically, successful car sharing programs have 40-45 members for each car shared, and viability requires that utilization is ~30 percent on a 24-hour schedule, or a bit more than 7 hours per day.

Personal economic gains used through car sharing can be modeled many ways; the following model is presented in Table 6. Table 7 shows the monetary savings on an individual basis for the car-sharer.

**Table 6. Car Sharing model.**

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hourly Rate (includes fuel)</td>
<td>$10.00</td>
<td>Annual. Membership</td>
<td>$100</td>
</tr>
<tr>
<td>Days used/year</td>
<td>300</td>
<td>AAA annual Ownership Costs[^6]</td>
<td>$6400</td>
</tr>
<tr>
<td>Average speed</td>
<td>20 mph</td>
<td>AAA per mile costs</td>
<td>$0.147</td>
</tr>
</tbody>
</table>

Table 7. Car-sharing usage model: values and potential savings.

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours driving /day</td>
<td>0.5</td>
<td>1.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Off-Cost of sharing</td>
<td>$1,600.00</td>
<td>$3,100.00</td>
<td>$4,600.00</td>
</tr>
<tr>
<td>Annual miles driven</td>
<td>1,500.00</td>
<td>3,000.00</td>
<td>4,500.00</td>
</tr>
<tr>
<td>Cost of personal car OWNERSHIP + Operations</td>
<td>$6,619.50</td>
<td>$6,840.00</td>
<td>$7,060.50</td>
</tr>
<tr>
<td><strong>AMOUNT Saved per year</strong></td>
<td>$5,019.50</td>
<td>$3,740.00</td>
<td><strong>$2,460.50</strong></td>
</tr>
</tbody>
</table>

For the person or family with limited household income looking to improve their socio-economic status, car-sharing is an attractive alternative to personal car ownership, especially at lower annual travel mileage. If a second vehicle is in the household, use of that vehicle should be evaluated and compared to car-sharing – car-sharing may offer a significant cost savings to car ownership.

Of particular interest is the provision of car sharing to MSU students. Once students are in town, few are going to drive more than 4,500 miles in the 9 months they are in town. Even at the 4,500-mile value, car sharing can save students almost **$2,500 each year**. Over a 4-year period, car-sharing would reduce their debt by almost $10,000 without changing their mobility.

**Ride-sharing.** Due to the array of ride sharing programs, a number of different models for determining costs and revenue for ride sharing users are available. In this example, the Lyft model of ride sharing is used to quantify benefits, both to the rider, and to the person providing the ride. Table 8 shows ride sharing financial parameters; Table 9 shows the financial results using the Lyft model of ride cost/payment.

Table 8. Ride-sharing modeling parameters.

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average speed, mph</td>
<td>20 mph</td>
<td>Per minute</td>
<td>$0.09</td>
</tr>
<tr>
<td>Number of weeks service used</td>
<td>60</td>
<td>Per mile</td>
<td>$0.90</td>
</tr>
<tr>
<td>Lyft Initial Booking cost</td>
<td>$0.90</td>
<td>Minimum Fare</td>
<td>$3.50</td>
</tr>
<tr>
<td>Lyft Service Fee</td>
<td>$1.90</td>
<td>Lyft Takes</td>
<td>25%</td>
</tr>
</tbody>
</table>

Table 9. Ride-sharing revenue model using Lyft parameters.

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Value</th>
<th>Value</th>
<th>Value</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip Length, minutes</td>
<td>15</td>
<td>20</td>
<td>30</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Number Miles</td>
<td>5</td>
<td>6.67</td>
<td>10</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Number of trips/week</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Cost per trip: Lyft</td>
<td>$8.65</td>
<td>$10.60</td>
<td>$14.50</td>
<td>$20.35</td>
<td></td>
</tr>
<tr>
<td>Cost per week</td>
<td>$17.30</td>
<td>$10.60</td>
<td>$14.50</td>
<td>$5.09</td>
<td>$47.49</td>
</tr>
<tr>
<td>Cost per year</td>
<td>$865.00</td>
<td>$530.00</td>
<td>$725.00</td>
<td>$254.38</td>
<td>$2,374.38</td>
</tr>
<tr>
<td>Miles per year</td>
<td>500</td>
<td>333.3</td>
<td>500</td>
<td>187.5</td>
<td>1520.83</td>
</tr>
</tbody>
</table>

- **Rider.** Using the AAA medium sedan operational cost model, the rider pays $2,374.38 for his or her rides, but he or she saves $4,199.19. That is more than the in-state cost of a semester of tuition at Montana State University.

- **Driver.** The driver in this model also makes money from the ridesharing; 75% of the revenue from the trip. In this model, the driver would collect $1,780.78 (75% of $2,374.38).

  There are clearly more riders than drivers in a ride-sharing program; if there are 5 riders per driver, over this timeframe, a driver would gross $8,903.91.

**Transit bus service: Bozeman-Belgrade-Manhattan-Three Forks.** Analysis underway with the WTI – Bozeman TDM project shows that sufficient ridership exists to support two transit trips along this route per workday. The ridership model, based on local experience with Streamline (the existing service within Bozeman), is modeled in **Table 10.**

Table 10. New Transit Service: Travel distances and projected ridership.

<table>
<thead>
<tr>
<th>Year</th>
<th>Belgrade</th>
<th>Manhattan</th>
<th>Three Forks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Riders</td>
<td>Round trip, miles</td>
<td>Riders</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>22</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>22</td>
<td>9</td>
</tr>
</tbody>
</table>

This transit service offers significant cost savings to the riders; as expected, the longer the ride, the greater the benefit, as shown in **Table 11.**

<table>
<thead>
<tr>
<th>Category</th>
<th>Belgrade</th>
<th>Manhattan</th>
<th>Three Forks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Round Trip, miles</td>
<td>22</td>
<td>41</td>
<td>66</td>
</tr>
<tr>
<td>Individual miles per year, 240 rides per year</td>
<td>5280</td>
<td>9840</td>
<td>15,840.00</td>
</tr>
<tr>
<td>Money saved, if car ownership retained</td>
<td>$776.16</td>
<td>$1,446.48</td>
<td>$2,328.48</td>
</tr>
<tr>
<td>Money saved, if car sold</td>
<td>$7,175.16</td>
<td>$7,845.48</td>
<td>$8,727.48</td>
</tr>
</tbody>
</table>

This highlights how rural transit can substantially increase the effective household income of rural residents. The Montana median household income is $46,200. For a household in Three Forks, MT, operating at the median income level in a 15% tax bracket, rural transit represents an opportunity to move that household income to $52,867, which is sufficient to move a household from the 40th percentile of statewide household income to the 50th percentile, not an insignificant amount. Even if a rider decides to keep his or her own personal car, the savings are significant. Even if transit riding creates problems for people who need to run errands in Bozeman, car-sharing or bike-sharing offers mobility options at a price significantly less than car ownership. Significant gains in socio-economic status can be facilitated by adequate transit options, even in rural areas.

Van-pooling. Van-pooling offers the benefits of transit to riders with schedules that do not fit the times of the standard transit service. This van pool service is based on work with Bozeman Health, whose workers often work split or off-hour shifts. Van pool ridership over the next three years is shown in Table 12. The operational and financial parameters are found in Table 13.

Table 12. Van-pooling: Travel distances and projected ridership

<table>
<thead>
<tr>
<th>Year</th>
<th>Belgrade</th>
<th>Manhattan</th>
<th>Three Forks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Riders</td>
<td>Round trip, miles</td>
<td>Riders</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>22</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>22</td>
<td>4</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Van cost/month</th>
<th>Total Person Miles</th>
<th>Belgrade Cost/mo/person</th>
<th>Manhattan Cost/mo/person</th>
<th>Three Fork Cost/mo/person</th>
<th>Total riders per van</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,000.00</td>
<td>387.00</td>
<td>$56.85</td>
<td>$105.94</td>
<td>$170.54</td>
<td>9.00</td>
</tr>
<tr>
<td>$1,000.00</td>
<td>494.00</td>
<td>$44.53</td>
<td>$83.00</td>
<td>$133.60</td>
<td>11.00</td>
</tr>
<tr>
<td>$1,000.00</td>
<td>516.00</td>
<td>$42.64</td>
<td>$79.46</td>
<td>$127.91</td>
<td>12.00</td>
</tr>
</tbody>
</table>
Using this model, the socio-economic benefits made available to the van-pool rider are shown in

Table 14.

Table 14. Van-pooling: Socio-economic benefits of van pooling from Bozeman for the
Bozeman – Three Forks route.

<table>
<thead>
<tr>
<th>Year</th>
<th>Belgrade</th>
<th>Manhattan</th>
<th>Three Forks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>$93.99</td>
<td>$175.16</td>
<td>$281.97</td>
</tr>
<tr>
<td>Year 2</td>
<td>$241.75</td>
<td>$450.53</td>
<td>$725.24</td>
</tr>
<tr>
<td>Year 3</td>
<td>$264.53</td>
<td>$492.99</td>
<td>$793.60</td>
</tr>
</tbody>
</table>

Money Saved, car ownership *dropped*

<table>
<thead>
<tr>
<th>Year</th>
<th>Belgrade</th>
<th>Manhattan</th>
<th>Three Forks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>$6,492.99</td>
<td>$6,574.16</td>
<td>$6,680.97</td>
</tr>
<tr>
<td>Year 2</td>
<td>$6,640.75</td>
<td>$6,849.53</td>
<td>$7,124.24</td>
</tr>
<tr>
<td>Year 3</td>
<td>$6,663.53</td>
<td>$6,891.99</td>
<td>$7,192.60</td>
</tr>
</tbody>
</table>

Clearly, the gains are not as large as for those using the bus-based transit service, but to a family
in Three Forks at the median MT household income level, the van-pool represents a 15.6%
*increase in household income, and this is without any government subsidy.* We know of no
other mechanism by which effective household income can be increased by such an amount by
such a simple means.

10. Vision, Goals, and Objectives

**SMORES VISION**

*Improve mobility for the national rural microregion surrounding the northwest corner of Yellowstone National Park, which offers sustainable economic growth and enhanced quality of life in the face of a rapidly growing population, fewer natural resources, and high national debt.*

Achievement of the vision requires the use of emerging transportation and wireless communication
technology (including cellular G4, emerging G5) to reduce congestion while facing population
growth and fixed physical infrastructure, and a change in the mindset of a constituency which has
embraced the car ownership/single occupancy vehicle model of transportation.

To achieve these aggressive goals, the following objectives are established

- Promote wealth creation/economic opportunities by facilitating ride-sharing, car-pooling, car-sharing, van-pools, and enhanced transit services which are so compelling that they free the public of the need for car ownership. Reducing car usage in any community is the easiest, least expensive means to reduce congestion.
- Implement ride-sharing and other enhanced transit options to make high occupancy vehicle utilization greater and easier in the city of Bozeman and surrounding areas (primarily the Big Sky Resort)
- Leverage TDM programs underway with the City of Bozeman to promote mode shifts.
- Engage major SMORES area employers (MSU, Bozeman Health, Big Sky resort, and Yellowstone National Park) to make employees more aware of options, and to offer incentives for usage of the alternative modes offered by the SMORES Consortium. These
employers and their employees hold the key to system sustainability. By making the economic benefits and the service extremely attractive to the ridership, sustainability can be achieved. Sustainability is the mark of success.

11. Plan for Partnering
The SMORES consortium formed in response to the ATCMTD RFP is well-positioned to carry out the deployment described herein and Section 6 describes how the consortium partners will work together to deploy the technology. SMORES is unique in that it relies on an interdisciplinary network of private sector, public agencies, and technology and transportation leaders for implementation and success. SMORES leadership has been interacting with these stakeholders and discussing “New Mobility” solutions since before the release of Funding Opportunity 693JJ317NF0001. SMORES has been received with great enthusiasm and interest for the long-term potential it presents. As described in Section 2, SMORES consortium members and community partners have provided Letters of Commitment which are included in Appendix B. Upon selection of this funding opportunity, a memorandum of understanding (MOU) or other organizational mechanism will be initiated by Montana State University and executed in a reasonable timeframe.

12. Leveraging and Optimizing Existing Investments
WTI is working with the City of Bozeman on the development of a Travel Demand Forecast Model (TDFM) as the City has just completed an update to their Transportation Master Plan (TMP). WTI is developing a TDFM that the City of Bozeman can utilize to more frequently evaluate transportation investments and will parallel the work being done for the City by Robert Peccia and Associates and MDT. The goal is to develop a model and methodology that will enable the city to incorporate the use of a TDM into development review, as well as annual capital planning for transportation.

13. Project Schedule
A schedule for conducting the technology deployment and for completion of all proposed activities is provided in Figure 10 on page 27.

14. ITS Program / Innovative Technology Initiatives
SMORES ACTMTD initiatives leveraging and aligned with the ITS Joint Program Office7 include those shown in Table 15.

<table>
<thead>
<tr>
<th>ITS Program</th>
<th>Leverage / Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerating Deployment</td>
<td>SMORES applications all technology based – speeds deployment.</td>
</tr>
<tr>
<td>Connected Vehicles</td>
<td>PhantomALERT real-time, geo-spatially relevant alerts/warnings</td>
</tr>
<tr>
<td>Emerging Capabilities</td>
<td>“New Mobility” models. New generations “shares,” changing needs and requirements of infrastructure and vehicles</td>
</tr>
<tr>
<td>Enterprise Data</td>
<td>Ride-sharing, car-sharing, van-pooling, and enhanced transit</td>
</tr>
<tr>
<td>Interoperability</td>
<td>Ride-sharing, car-sharing, van-pooling, and enhanced transit</td>
</tr>
</tbody>
</table>

7 https://www.its.dot.gov/research_current.htm
### Figure 10. SMORES project schedule. Consumer culture is a continuous feedback process used to gauge what makes alternative transport modes desirable by the traveling public.
i. Staffing Description

1. Key Staff

The organization of staff to manage and conduct SMORES is illustrated in Figure 11. The Key Staff of the SMORES consortium is made up of transportation leaders in the public and private sectors and includes an interdisciplinary group of experts on topics from transit, to information technology, to consumer culture.
2. Primary Point of Contact

<table>
<thead>
<tr>
<th><strong>Dr. Craig Shankwitz</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Transportation Institute</td>
<td>Phone: (406) 994-6030</td>
</tr>
<tr>
<td>Montana State University</td>
<td>Email: <a href="mailto:craig.shankwitz@montana.edu">craig.shankwitz@montana.edu</a></td>
</tr>
<tr>
<td>P.O. Box 174250</td>
<td></td>
</tr>
<tr>
<td>Bozeman, MT 59717-4250</td>
<td></td>
</tr>
</tbody>
</table>
# Appendix A – Resumes

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Doe</td>
<td>Project Manager</td>
<td>XYZ Corp.</td>
</tr>
<tr>
<td>Jane Smith</td>
<td>Software Engineer</td>
<td>ABC Inc.</td>
</tr>
<tr>
<td>Mike Brown</td>
<td>Sales Representative</td>
<td>DEF Corp.</td>
</tr>
<tr>
<td>Emily Davis</td>
<td>Marketing Analyst</td>
<td>GHI Ltd.</td>
</tr>
<tr>
<td>Mark Wilson</td>
<td>Data Analyst</td>
<td>IJK Corp.</td>
</tr>
<tr>
<td>Lisa Green</td>
<td>Executive Assistant</td>
<td>MNO Ltd.</td>
</tr>
<tr>
<td>Tim Brown</td>
<td>Human Resources Manager</td>
<td>PQR Corp.</td>
</tr>
<tr>
<td>Sarah Black</td>
<td>Accounting Manager</td>
<td>STU Inc.</td>
</tr>
<tr>
<td>David White</td>
<td>IT Director</td>
<td>VWX Corp.</td>
</tr>
<tr>
<td>Karen Blue</td>
<td>Operations Manager</td>
<td>YZX Corp.</td>
</tr>
</tbody>
</table>
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Appendix B Letters of Commitment

Letters of Commitment were submitted by SMORES Consortium Members and Community Partners to show support for the project and readiness to enter into formal agreement upon award. The following pages include letters from:

City of Bozeman
Montana Department of Transportation
PhantomALERT
University of Southern Denmark
Bozeman Health
City of Belgrade
Big Sky Chamber of Commerce
June 5, 2017

Steve Albert
Executive Director
Western Transportation Institute
Montana State University
2327 University Way, Suite 6
Bozeman, MT 59715

Re: U.S. Department of Transportation
Notice of Funding Opportunity Number 693J317NF0001
“Advanced Transportation and Congestion Management Technologies Deployment Initiative”

Dear Mr. Albert:

The City of Bozeman is pleased to serve on the Western Transportation Institute’s (WTI) team for the USDOT Funding Opportunity 693J317NF0001: “Advanced Transportation and Congestion Management Technologies Deployment Initiative,” specifically on the Smart Mobility Optimizing Resources, Equality, and Sustainability (SMORES) project as proposed by WTL.

The City of Bozeman has a history of strong collaboration with WTI. Currently, we are working together on a Transportation Demand Management (TDM) project. Our TDM work focuses on helping people use the infrastructure in place for transit ridesharing, walking, and biking. The proposed (SMORES) proposed is a smooth next step to implement TDM efforts.

The City of Bozeman is willing and prepared to enter into a cooperative agreement or memorandum of understanding (MOU) with WTI upon award of the above referenced opportunity. We agree to commit the resources promised in this proposal to successfully complete our tasks in a timely and efficient manner.

Thank you for the opportunity to participate in this exciting project. We look forward to working with you.

Sincerely,

[Signature]

Carson Taylor
Mayor
June 7, 2017

Steve Albert  
Executive Director, Western Transportation Institute  
Montana State University  
2327 University Way, Suite 6  
Bozeman, MT 59715

Subject: U.S. Department of Transportation  
Notice of Funding Opportunity Number 693J31?NF0001  
"Advanced Transportation and Congestion Management Technologies Deployment Initiative"

Dear Mr. Albert,

The Montana Department of Transportation is pleased to support and provide in-kind match for the USDOT Funding Opportunity 693J31?NF0001: “Advanced Transportation and Congestion Management Technologies Deployment Initiative,” specifically on the SMORES (Smart Mobility Optimizing Resources, Equality, and Sustainability) project as proposed by WTI.

The technologies to be deployed by the SMORES Consortium will improve mobility and safety for both residents and visitors in the SMORES study area, and will serve as a model of how other rural communities, both within and outside Montana, can deploy technology-based solutions which address today’s mobility and safety challenges.

MDT has three initiatives underway that are directly related and could provide in-kind match for this funding opportunity. These initiatives are state funded except for the Linear Referencing System, which has State Planning and Research monies contributing 20% to that project.

- Traveler Information System. MDT is upgrading its statewide traveler information system, to provide an enhanced experience for the 12.4 million annual visitors to Montana. Of relevance to the SMORES project will be traveler information regarding US Highway 89 and US Highway 191, which carry 75% of the entries to Yellowstone National Park. Project value: $300K. Match Value: $300K.

- Maintenance Management System. MDT is implementing a highway maintenance system, which can be used to provide highway maintenance (including winter maintenance) information in near-real time to highway users. Project value: $2M. Match Value: $2M.
• Linear referencing system: MDT is upgrading its linear referencing system statewide. The linear referencing system can be used for safety applications (for example, curve speed warnings) that link location with roadway geometry to provide travelers additional safety information. Project value: $1.5M. Match value: $1.2M.

These three initiatives bring the total match component from MDT to $3.50M.

Thank you for the opportunity to participate in this exciting project. We look forward to working with you.

Sincerely,

[Signature]

Jon Swartz
MDT Maintenance Administrator
406.444.6150

copies: Mike Bousiman, MDT Information Services Administrator
File
May 29, 2017

Steve Albert
Executive Director
Western Transportation Institute
Montana State University
2327 University Way, Suite 6
Bozeman, MT 59715

Re: U.S. Department of Transportation
Notice of Funding Opportunity Number 69J3J317NF0001
“Advanced Transportation and Congestion Management Technologies Deployment Initiative”

Dear Mr. Albert:

The PhantomALERT is pleased to serve on the Western Transportation Institute’s (WTI) team for the USDOT Funding Opportunity 69J3J317NF0001: “Advanced Transportation and Congestion Management Technologies Deployment Initiative,” specifically on the SMORES project as proposed by WTI.

PhantomALERT is willing and prepared to enter into a formal cooperative agreement or memorandum of understanding (MOU) with WTI upon award of this opportunity. We agree to fully commit the resources promised in this proposal to successfully complete our tasks in a timely and efficient manner.

PhantomALERT is happy to participate in this exciting project. PhantomALERT is providing its product in the following quantities, and is providing the following cost share:

<table>
<thead>
<tr>
<th>PhantomALERT Product</th>
<th>Quantity</th>
<th>Retail Value</th>
<th>Project Discount</th>
<th>Cost Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two-year subscription for Bozeman Residents</td>
<td>3,000</td>
<td>$29.95</td>
<td>14.95</td>
<td>$44,850</td>
</tr>
<tr>
<td>One-month subscription for SMORES / Yellowstone National Park visitors</td>
<td>16,000</td>
<td>9.95</td>
<td>4.95</td>
<td>$79,200</td>
</tr>
</tbody>
</table>

Thank you for the opportunity to participate in this exciting project. We look forward to working with you.

Sincerely,

[Signature]

Joe Scott
President & CEO

6480 New Hampshire Ave
Suite 200 Takoma Park MD 20912
Tel: 800 725 8425   Fax:   Email: Joe.Scott@phantomalert.com
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Craig Schankwitz  
Montana State University  
Western Transportation Institute  
2227 University Way 86  
Bozeman, MT 59715

Letter of Commitment for the joint project SMORES

2 June 2017

Within this letter, we, Julia Pahl and Michael Evan Goodsite, declare that in the event of the awarding the project "SMORES - Smart Mobility Optimizing Resources, Equality, and Sustainability," with the Lead Project Manager Craig Schankwitz, Western Transportation Institute, Montana State University, we commit time and resources to the project SMORES of the following detailed figures commensurate with the budget as approved by the Vice Dean of Research Michael Evan Goodsite

- 10% of Julia Pahl’s monthly time (w/ 37 hours per week) co-financed by SDU corresponding to a total of three person months hours
- A two year postdoc financed 92% by the project (corresponding to 22 person months) and 8% by SDU
- Six trips to Montana of Julia Pahl and three trips of the postdoc
- And 44% overheads where 10% are attributed to the central administration and the rest to SDU Engineering Operations Management

This gives a co-financing of SDU of USD 35,590,- that we hereby commit in the event of the awarding of the project.

Yours sincerely,

Michael Evan Goodsite  
Vice Dean of Research

Julia Pahl  
Associate Professor
June 9, 2017

Steve Albert
Executive Director
Western Transportation Institute
Montana State University
2327 University Way, Suite 6
Bozeman, MT 59715

Re: U.S. Department of Transportation
Notice of Funding Opportunity Number 603J17NFO001
“Advanced Transportation and Congestion Management Technologies Deployment Initiative”

Dear Mr. Albert,

Bozeman Health is pleased to serve on the Western Transportation Institute’s (WTI) team for the USDOT Funding Opportunity 603J17NFO001: “Advanced Transportation and Congestion Management Technologies Deployment Initiative,” specifically on the SWORES project as proposed by WTI.

Upon award of this opportunity, Bozeman Health and WTI will explore a formal cooperative agreement or memorandum of understanding (MOU) to identify necessary resources and commitments to successfully and efficiently carry out the purpose of this project.

As Bozeman Health grows alongside the City of Bozeman and the Gallatin Valley, Bozeman Health employees are affected by the consequences of growth: longer travel times, expensive travel, etc. Through the SWORES program, Bozeman Health employees benefit from greater mobility, lower transport costs, and more “in-pocket” income. Bozeman Health itself can benefit from greater ride-sharing and van-pooling, which may eliminate the need for Bozeman Health to construct a parking garage which would serve visitors, patients, and employees.

Thank you for the opportunity to participate in this exciting project. We look forward to working with you.

Sincerely,

[Signature]

[D. M. Bentson, J.D., M.B.A.
Vice President & Chief Legal Officer
BOZEMAN HEALTH
915 Highland Boulevard
Bozeman, MT 59715
Tel: 406.414.5119
dbentson@bozemanhealth.org]
City of Belgrade

June 5, 2017

Steve Albert
Executive Director
Western Transportation Institute
Montana State University
2327 University Way, Suite 6
Bozeman, MT 59715

Re: U.S. Department of Transportation
Notice of Funding Opportunity Number 693JJ317NF0001
“Advanced Transportation and Congestion Management Technologies Deployment Initiative”

Dear Mr. Albert:

The City of Belgrade is in support of the Smart Mobility Optimizing Resources, Equality, and Sustainability Consortium (SMORES) project as proposed by the Western Transportation Institute.

Belgrade is growing rapidly along with Bozeman, and new and innovative solutions to our traffic issues must be sought. Many Belgrade residents, including MSU students, commute between our two communities on a daily basis. Through the SMORES program, Belgrade residents that commute to work in Bozeman and/or to study at Montana State University and Gallatin College will benefit from greater mobility, less frustration, and cost savings. This project can help reduce congestion, increase safety, reduce environmental impacts, increase efficiency, and reduce the demand for parking on either end of the commute.

Thank you for the opportunity to support WTI in this endeavor.

Sincerely,

Belgrade City Council

Ken Smith
Deputy Mayor

www.ci.belgrade.mt.us
June 9, 2017

Mr. Steve Albert
Executive Director
Western Transportation Institute
Montana State University
2327 University Way, Suite 6
Bozeman, MT 59715

RE: U.S. Department of Transportation NOFO 693J317NF0001
“Advanced Transportation and Congestion Management Technologies Deployment Initiative”

Dear Mr. Albert:

The Big Sky Chamber of Commerce appreciates the opportunity to serve as one of the Western Transportation Institute’s (WTI) partners for the USDOT’s Funding Opportunity 693J317NF0001: “Advanced Transportation and Congestion Management Technologies Deployment Initiative,” specifically on the SMORES project as proposed by WTI.

As our local Big Sky community continues to experience exponential growth, our residents and businesses will benefit dramatically from embracing a greater Mobility Culture to include expanded ride sharing, vanpooling, and enhanced transit services. Currently 80% of our workforce lives outside of the Greater Big Sky Area and commutes daily equating to a volume of about 1,400 vehicles on our roadways. This pressure on our local infrastructure is not sustainable yet our businesses cannot survive without labor.

We thank you for the opportunity to participate in this vital transportation-related project, and look forward to working with you on it in the months ahead.

Best regards,

Candace Carr Strauss, CEO
Big Sky Chamber of Commerce
candace@bigskychamber.com