SCOPE OF WORK

The Missoula Urban Transportation District (MUTD) has outlined a long-term vision for expanding service in Missoula. That vision includes more effective and efficient service to The University of Montana (UM). The November referendum to increase late evening service to the University is an important step towards improving customer comfort and safety. When properly implemented, this type of investment typically results in increased transit mode share and fewer auto trips.

Since September of 1990, University of Montana (UM) has contracted with MUTD to provide subsidized (fare free with ID) transportation on all services to students, faculty, and staff. In addition to using Mountain Line services, the Associated Students of the University of Montana (ASUM) provides its own shuttle service to park and ride lots, College of Technology (COT), dorms, and an evening shuttle to downtown.

Recent and proposed improvements to Mountain Line Routes 1, 6, and 8 will have an impact on travel patterns to the University of Montana. MUTD, along with the City of Missoula, UM, and ASUM have a joint interest in improving mobility and minimizing congestion in a cost-effective manner. These shared goals warrant an evaluation of all bus service in and adjacent to the University of Montana.

Tasks 1-4 describe the bus service evaluation process. The tasks will also document bus shuttle needs necessary to connect the new Missoula College campus on East Broadway. Tasks 5-9 describe the steps necessary to evaluate existing transportation demand at the University of Montana, and steps to implement a TDM plan that includes bicycle, bus, and carshare elements.

TASK 1 PROJECT INITIATION

1.1 Document Review

Nelson\Nygaard staff will review pertinent planning documents prior to initiating a project kickoff. While our existing knowledge of Missoula and recent work for MUTD provide a strong background, it is anticipated that additional transportation, land use neighborhood, and development plans will provide a better sense of community goals, priorities and issues. In particular, the expansion plans for the new Missoula College campus will be assessed.

1.2 Project Kickoff

Nelson\Nygaard staff will meet with MUTD, City of Missoula, ASUM, and University of Montana staff and representatives to evaluate the current goals and services related to transportation options in and adjacent to the University.

1.3 Committee Meetings

Nelson\Nygaard staff will meet with the Quality of Life Advocacy Committee to discuss issues and potential solutions specific to transit operations within the university district.

A second meeting will be held to present service recommendations related to transit operations within the university district.
TASK 2 BUS SERVICE PLANNING

2.1 ASUM Service Evaluation

Nelson\Nygaard staff will conduct an evaluation of existing ASUM services and facilities. This evaluation will include a field review of each ASUM route, bus stop, and park & ride facility. We will ask ASUM to collect ridership data by trip in the fall 2013 semester. This data along with recent ridership trends will be analyzed to better understand travel patterns in and around the university district.

2.2 Short-Term Service Recommendations

Taking into consideration the knowledge and feedback obtained during Task 1 (Project initiation), and 2.1, Nelson\Nygaard staff will make short-range recommendations on the appropriate level of bus service in and adjacent to the university. These recommendations will be based on existing and projected demand and will therefore be made irrespective of service provider. We are very cognizant that some ASUM and MUTD federal funding is dependent on both providers being able to hit performance targets, and any recommendations will reflect that.

Short-range recommendations will include, at a minimum, the following service characteristics:

- Route alignments
- Headways
- Service span
- Service calendar
- Vehicle requirements
  - Vehicle type
  - Vehicle count
  - Revenue hours and miles

2.3 Missoula College Service Recommendations

The opening of a new Missoula College campus introduces both challenges and opportunities. The East Broadway location is closer to the main UM campus, but it is further away from most student residential areas. ASUM provides service between the East Broadway site and main campus, but the service is designed for park-and-ride purposes, not all-day access to an educational facility.

To determine the potential transit market, the existing travel patterns from Missoula College will be examined for size. Also, the amount of parking and size of the new Missoula College will be accounted for in determining market potential.

Recommendations will be developed for the following:

- Level of service between downtown Missoula and Missoula College
Level of service between Missoula College and Main Campus, with an option to extend into more student residential area.

For either option, alignments, span, frequency, bus requirements, and costs will be developed.

2.4 Long-Term Service Recommendations

Building on the short-range recommendations, Nelson\Nygaard staff will provide long-range recommendations for increasing service and transit capacity in the future. These recommendations will include indicators and prioritization for implementing service improvements. Long-range recommendations should focus on attracting new customers, improving livability, and enhancing system sustainability to meet community and UM goals.

TASK 3 CAPITAL PLANNING

3.1 Future Facility Assessment

Nelson\Nygaard staff will determine if future facilities are necessary to accommodate recommended transit enhancements and projected ridership. If so, they will be conceptually identified and conceptual costs will be developed.

3.2 Fleet Plan

ASUM’s bus fleet consists primarily of buses that have been surplussed by another agencies. While this reduces the initial capital outlay, the on-going maintenance costs and perceptions of older buses are issues. More important, however, is the need to maintain a capital reserve fund to continue to obtain new vehicles, whether used or newer.

Nelson\Nygaard staff will also develop a fleet plan that outlines required capital investments based on service recommendations. It will also include a funding strategy on obtaining alternative funding sources and steps necessary to obtain said funds.

TASK 4 SERVICE COORDINATION/INTEGRATION

4.1 Service Coordination/Integration Scenarios

Nelson\Nygaard staff will develop no more than three (3) service coordination and/or integration scenarios that result in improved overall efficiency, effectiveness, or customer convenience.

4.2 Funding Options

Nelson\Nygaard staff will provide a high level assessment of funding options for each coordination and/or integration scenario. This will not include an extensive financial plan, but rather identify potential funding arrangements that could be explored in more detail in a later study.

Deliverables: Draft and Final Service Integration Strategies Report
**TASK 5 BEST MOBILITY PRACTICES AT UNIVERSITIES**

The Nelson\Nygaard team will summarize a set of best practices currently in place at other relevant universities. We have extensive on-the-ground experience on campuses across the country and will draw on our past work along with additional research to identify what parking and TDM strategies have proven successful. This peer review will investigate a number of questions applicable to the University of Montana, particularly in terms of introducing cost-effective measures given constrained financial and land resources, and how other universities fund TDM strategies and incentives to use alternative modes.

We will document various strategies’ effectiveness in terms of reduced SOV travel, participation by students, staff and faculty, and costs to the University—both monetary and in terms of staff resources. These best practices will be used to inform the strategy development in Task 7.

**TASK 6: EXISTING CONDITIONS REVIEW**

This task will review the existing multimodal conditions and focus on those related to TDM and parking before suggesting possible changes to campus transportation infrastructure, programs, or policies. The Nelson\Nygaard team will execute the following major subtasks to carry out the existing conditions review.

### 6.1 Parking Occupancy Data Collection & Analysis

We will work with the client to develop survey instruments in order for University staff to conduct a complete survey of parking inventory and occupancy. It is anticipated that this survey will include all on- and off-street campus facilities, including those used by campus housing, and will likely be conducted either hourly or during three time points (e.g. 10 am, 12 pm, and 2 pm) over a single day (either a Tuesday, Wednesday, or Thursday). Once University staff has collected the necessary information and electronically inputted it in Excel format, the project team will analyze the data to identify utilization trends to help shape TDM recommendations. We will summarize the available parking data and present the results in a series of tables, charts, and maps in Geographic Information System (GIS) format.

### 6.2 Plan and Policy Review

We will summarize any recommendations and findings set forth in applicable ASUM, local, and state government plans and policies.

### 6.3 Current TDM and Parking Program Evaluation

We will document existing TDM programs and efforts on campus, and summarize their effectiveness in terms of the use of alternative modes at each of the campus locations. This evaluation will examine participation levels, attributable mode shifts, costs to the University, and impact on academic and support functions. The Nelson\Nygaard team will quantify the costs and impacts of each of these measures, in order to evaluate their effectiveness and to provide key inputs into our Economic Model that will be utilized in Task 7.2—an important tool for revealing the trade-offs and informing decisions related to access and mobility investment options. Feedback from University staff to better understand the campus-specific opportunities and constraints for TDM and parking management strategies will also be included in the analysis.
6.4  Travel Demand Analysis

For this task, we will identify UM student, faculty, and staff travel patterns that will identify potential markets for transit, ridesharing, cycling, and walking. It will help answer questions such as:

- Where are there gaps in transit and shuttle provision?
- Are there significant concentrations of students, faculty, and staff residing within cycling or transit distance of each campus?
- How many are within walking distance of a campus?
- What is the market for the transit pass subsidies?
- What are the markets for staff and faculty vanpools?
- What are the markets for carpooling and other ridesharing measures?

This analysis will require a list of all student, faculty, and staff home addresses (without names or any other identification to protect each individual’s privacy). We will then geocode this database in GIS for the spatial analysis and produce maps for visualization.

As part of the travel demand analysis, the Nelson\Nygaard team will work with University staff to develop an online survey instrument in order to gauge current travel patterns and effectiveness of current TDM programs by students, staff, and faculty. We will examine factors such as:

- Frequency of travel to/from the UM campus locations
- Mode choices
- Opportunities for taking alternative modes
- Demographic information
- Needs to chain trips as part of campus commute
- Home/work locations at other end of travel
- Sensitivity to parking and transportation costs

Additionally, the survey will be able to inform the effectiveness of the University’s current services and TDM programs. The project team will work closely with University staff to get a high rate of response for this survey to work with the most accurate data possible.

6.5  Multi-Modal Infrastructure Assessment

In collaboration with the client, our team will conduct a thorough assessment of transportation conditions by all modes on, and adjacent to, the UM’s main campus and the proposed Missoula College on East Broadway. In this task, we will provide a quantified inventory and analysis of existing conditions, addressing the capacity, description, and condition of physical elements. We will identify patterns of service, regulatory context, and identification of issues that will likely include, but not be limited to the following:

Vehicle Traffic

- Identify vehicle level-of-service (LOS) at key intersections by movement and for overall intersection
- Review daily traffic counts to determine peak hour of the transportation network and its percent of daily volume
- Identify intra-campus patterns of vehicular travel, traffic conflicts, and capacity concerns
Pedestrian and Bicycle

- Identify pedestrian and bicycle volumes across campus and at key intersections and nodes
- Identify pedestrian and bicycle facilities, including connections to local and regional bicycling facilities (paths, bicycle lanes, designated bicycle routes)
- Identify gaps in the existing bicycle and pedestrian network, with a particular emphasis on connections to the proposed Missoula College site.

Parking

- Identify amount, type and condition of spaces available by regulation or user group
- Document existing pricing structures for parking facilities and university parking programs
- Strategically conduct parking assessments to identify use patterns of parking facilities, shortages and spare capacity by location and time
- Understand current University plans for providing additional parking

Transit

- Document existing transit and shuttle service, including routes and headways
- Document existing transit and shuttle facilities

Deliverables: Existing Condition Memorandum summarizing Task 6

TASK 7 MULTI-MODAL STRATEGY DEVELOPMENT AND EVALUATION

7.1 Strategy Development

The Nelson\Nygaard team will identify a set of investments in various alternative modes of transportation and determine their potential effectiveness, in terms of improving the quality of campus access and mobility. Our existing conditions analysis will point towards TDM and Parking Management strategies that hold potential for improving access to the UM’s main campus and Missoula College’s proposed East Broadway campus and parking management. We will be considering options tailored to the UM student/staff demographics and consider:

- Land Use/Housing mix
- Transit Improvements
- Bicycle and pedestrian improvements
- Bikesharing
- Carsharing
- Parking policies
- Parking pricing
- Parking cash-out
- Transit passes
- Improved vanpool/carpool programs
- Prohibited parking for certain students housed on-campus
- Other TDM strategies
Strategies will be grouped into different “packages” for analysis and vetted with University staff during both in-person meetings and conference calls. The result will be a preferred set of measures to be integrated into the draft TDM plan.

7.2 Economic Modeling

Using the Nelson\Nygaard Parking and TDM Model that has been successfully used at a number of university campuses, we will develop a spreadsheet-based model to analyze the financial impacts of TDM strategies coupled with parking operations. The team will analyze current use trends and parking demand and will develop future-demand projections to a set horizon academic year, taking into account the impacts of anticipated growth.

Demand projections based on these variables will be developed through an iterative process within the Parking and TDM Model, based on three scenarios, each containing a unique set of demand-mitigation factors to be input into the model. Each model will consider the parking needs of students, staff, and faculty.

- **No Change**—A continuation of existing policy conditions, existing policies, and an assumption that user behavior remains unchanged. Demand is projected based solely upon anticipated demographic changes.

- **Moderate Demand Management**—A moderate expansion of existing transportation management policies. UM expands upon current management efforts with new pricing and supply strategies, but does not seek to significantly shift modal balances in local or regional transportation.

- **Accelerated Demand Management**—An aggressive expansion of parking price and supply management strategies combined with increased transportation demand management strategies. UM implements a comprehensive parking management plan that seeks a significant mode shift away from automobiles toward pedestrian, bicycle, and transit use.

Using this model, we will also determine the ultimate number of spaces necessary to meet future demand given any required parking price increases. The model will allow us to forecast the number of parking spaces required. For example, we will begin with a preliminary estimate of the number of parking spaces required, estimate the cost of building that number of parking spaces, and the increase in parking permit prices required to fund that many parking spaces. We will then use the model to estimate the effect that a parking price increase of that magnitude would have in reducing parking demand, and adjust the quantity of parking spaces required accordingly. The model can then be run again, through several iterations, to arrive at refined estimates of the number of parking spaces required, construction costs and parking price schedules. Once appropriate calculations have been made, discussions with the University will result in a “preferred” alternative. The model assumptions will be established in a clear, straightforward and easily interpretable manner.

**TASK 8: TDM PLAN**

The Nelson\Nygaard team will prepare a draft TDM Plan to summarize the findings from the previous tasks and to detail a set of recommendations. The recommendations will include a comprehensive TDM policy and program. The policies will include those strategies developed in
Task 3 and vetted with the University. Upon receiving a single set of non-conflicting comments from the University, the Nelson\Nygaard team will revise and submit a final TDM Plan.

**Deliverables:** Draft and Final TDM Plans

### TASK 9: MEETINGS

Input from University staff will be vital to the success of the project. In addition to the kick-off meeting in Task 1, our proposed scope of work includes three other in-person meetings with staff. These meetings will allow for a thorough discussion of user perceptions and experiences with TDM programs to facilitate strategy development.

In addition, this scope of work includes a monthly conference call meeting with staff in order to ensure that the University is kept abreast of the project’s ongoing process and to allow an opportunity for input between in-person meetings.

### BUDGET SUMMARY

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<td>5 – Best Practices at University</td>
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