

## **Grant Application: Strengthening Mobility and Revolutionizing Transportation (SMART) Discretionary Grant Program**

**Applicant:** Alaska Department of Transportation & Public Facilities (DOT&PF)

**Project Title:** Alaska Data Bike Program: Enhancing Active Transportation Facility Condition Monitoring and Safety

**Executive Summary:** The Alaska Department of Transportation & Public Facilities (DOT&PF) proposes the implementation of the Alaska Data Bike Program, inspired by the successful Iowa Data Bike initiative. This innovative program aims to leverage data collection technology on bicycles to monitor active transportation conditions, improve maintenance, and enhance safety across Alaska's extensive active transportation facility network. By adopting this cost-effective and environmentally friendly approach, the Alaska Data Bike Program will ensure timely and accurate condition assessments, ultimately leading to safer and more efficient transportation for all Alaskans.

### **1. Project Justification:**

**1.1 Need for the Project:** Alaska's unique geographical and climatic challenges result in rapid road deterioration, especially during freeze-thaw cycles. Additionally, many of our rural active transportation facilities are not paved and consist of gravel or boardwalks. Therefore, traditional road condition monitoring methods can't be applied to many of rural communities. Additionally, traditional condition monitoring is often limited by high costs, extensive manpower requirements, and accessibility issues in remote areas. The Alaska Data Bike Program addresses these challenges by providing a scalable, efficient, and sustainable solution for comprehensive facility condition assessment. Currently, Alaska DOT&PF doesn't have any way of collecting pavement condition data for active transportation facilities and all of our current pavement condition data for active transportation is anecdotal.

### **1.2 Benefits of the Project:**

- **Improved Safety:** Timely identification of defects will enable quicker repairs, reducing the risk of accidents caused by poor facility conditions.
- **Cost Efficiency:** Utilizing bicycles equipped with data collection technology is significantly less expensive than deploying traditional road inspection vehicles.
- **Environmental Sustainability:** The program promotes the use of eco-friendly transportation methods, reducing the carbon footprint associated with road monitoring.
- **Data-Driven Decision-Making:** High-quality data will support informed decision-making regarding facility maintenance priorities and resource allocation.

### **2. Project Description:**

#### **2.1 Objectives:**

- To implement a statewide active transportation facility condition monitoring system using data-equipped bicycles, institutionalize the data collection processes, and integrate the information into our statewide pavement assessment policies, programs, and projects.
- To collect, analyze, and utilize facility condition data to enhance infrastructure maintenance and safety.
- To foster collaboration with local communities, advocates, and technology partners.

#### **2.2 Scope of Work:**

- **Phase 1: Planning and Preparation**
  - Identify key routes and regions for initial deployment.
  - Partner with technology providers to equip bicycles with necessary data collection tools (e.g., GPS, cameras, sensors).
  - Develop a centralized data management system for storing and analyzing collected data.
- **Phase 2: Pilot Deployment**
  - Launch pilot programs in diverse regions (urban, rural, and remote areas) to test and refine the data collection process.

- Engage with local cycling communities and organizations to support data collection efforts.
- **Phase 3: Full Implementation**
  - Expand the program statewide based on pilot results and feedback.
  - Continuously monitor and assess facility conditions, updating the data management system in real-time.
  - Provide regular reports to maintenance teams for prompt repairs and improvements.

### 2.3 Technology and Innovation:

- The Data Bike will be equipped with advanced sensors to detect surface irregularities, cameras for visual documentation, and GPS for precise location tracking.
- Data collected will be processed using machine learning algorithms to identify and prioritize maintenance needs.

### 3. Project Management:

**3.1 Project Team:** The project will be managed by the Alaska DOT&PF in collaboration with local cycling groups, technology providers, and data analysts. Key team members include:

- **Project Manager:** Oversee project implementation and coordination.
- **Technical Lead:** Ensure proper functioning and integration of data collection technology.
- **Data Analyst:** Analyze collected data and generate actionable insights.
- **Community Liaison:** Engage with local communities and stakeholders.

### 3.2 Timeline:

- **Phase 1:** 6 months
- **Phase 2:** 12 months
- **Phase 3:** 18 months

### 4. Evaluation and Sustainability:

#### 4.1 Performance Metrics:

- Number of miles monitored.
- Frequency and severity of facility defects detected.
- Time taken to repair identified defects.
- Reduction in facility-related accidents and incidents.

**4.2 Long-term Sustainability:** The Alaska Data Bike Program will be integrated into the DOT&PF's regular maintenance schedule, ensuring continuous monitoring and improvement of facility conditions. Partnerships with local communities and ongoing data analysis will support the program's long-term success and sustainability.

**5. Conclusion:** The Alaska Data Bike Program represents a transformative approach to measuring active transportation condition monitoring, leveraging innovative technology and community engagement to enhance safety and efficiency across the state's transportation network. Additionally, traditional road condition monitoring methods can't be applied to many of our rural communities and therefore, novel technology conditions would have to be implemented. With support from the SMART Discretionary Grant Program, Alaska DOT&PF is committed to pioneering this forward-thinking initiative, ensuring safer and more reliable active transportation facilities for all Alaskans.