Montana Department of Transportation
Research Programs
December 2006

EXPERIMENTAL PROJECT WORK PLAN

EVALUATION OF A TOWER-MOUNTED WIND TURBINE FOR THE GENERATION OF SUPPLEMENTAL POWER FOR THE ANACONDA INTERCHANGE REST AREA

Location:	Interstate 90, Approximate Mile-Point 208; Butte District, Deer Lodge County.
Project Name:	Anaconda Interchange Rest Area
Project Number:	IM 90-4(48)208 CN 4296
Type of Project:	Experimental trial of tower-mounted 10 kW wind turbine for supplemental power supply
Principal Investigators:	Craig Abernathy, Experimental Project Manager

Objective

Determine the cost-effectiveness in the reduction of grid-line power service in the installation of a tower-mounted utility grid interconnected wind turbine to provide supplemental power to an interstate rest area.

Experimental Design

Deployment of a 30 meter (98 ft.) in height, free-standing lattice tower supporting a 3 blade, 6.7 meter (22 ft.) rotor diameter, Bergey Windpower model 10 kW wind turbine. Draft electrical schematic attached.

Evaluation Procedures

Document the initial construction and installation of the turbine unit. Once the unit is in service the Department will record the power usage of the Anaconda Interchange rest area to determine the ratio of grid service to wind generated power. In addition the rest areas located in Mineral County; Dena Mora on Interstate 90, and one in Garfield County; Mosby on highway MT 200 is of the same design and size will also be compared to the Anaconda site in regards to overall power consumption. A benefit to cost analysis will be performed once enough data has been collected to ascertain performance of the unit. Ongoing data collection will also include annual maintenance and/or any mechanical or electrical problems that may occur.

Estimated Cost

$72,000.00

Evaluation Schedule

The data collection and analysis reporting of this effort will be a combined effort of the MDT Building Maintenance and Research staff. An initial construction report will be published. Research will monitor performance for a period of five years annually, with every year up to *ten years (informally). This is in accordance with the Department's 'Experimental Project Procedures'. Delivery of a construction/installation report, interim, annual or semi-annual reports is required as well as a final project report (responsibility of Research).

2008:	Fall Installation	Research Installation Report
2009-2011:	Annual Evaluation	Annual Reports (initial B/C analysis)
2012:	Final Evaluation	Final Report
*2012-2016:	Annual Evaluation	Annual Reports (Informal) – if device is still in use