Minnesota’s Experience with Deer Warning Systems

Jon Jackels – MnDOT ITS Program Engineer
NRITS National Rural ITS Conference
August, 2011
Minnesota’s Experience with Deer Warning Systems

- MN Deer/Vehicle Crash Statistics
- Past Detection Systems
- System Impacts
- Current/Future Systems
- System Costs
Minnesota’s Experience with Deer Warning Systems

- MN Deer/Vehicle Crash Statistics
- Past Detection Systems
- System Impacts
- Current/Future Systems
- System Costs
Deer/Vehicle Crashes (DVC) in Minnesota

- MN insurance industry estimates 35,000 DVC yearly
- 3 to 11 Fatal Crashes per year
- Over 400 B and C Injury Crashes per year
- Roughly 4,000 Property Damage Crashes per year
- Average Cost of a DVC is $1,840
Minnesota’s Experience with Deer Warning Systems

- MN Deer/Vehicle Crash Statistics
- Past Detection Systems
- System Impacts
- Current/Future Systems
- System Costs
Deer Warning System on TH 23 in Marshall, MN
2001 Marshall Original System

**Design**
- Break Beam Detectors
- Rotating Beacon mounted above typical static sign
- AC Power

**Problems**
- High Power Consumption from Rotating Light
2007 Marshall Phase I System

Design

- Break Beam Detectors
- 8-inch flashing LED mounted above typical static sign
- 10 and 20 Watt Solar Panels
- Wireless communication

Problems

- Reliability of wireless communication batteries
- Necessary maintenance
Minnesota’s Experience with Deer Warning Systems

- MN Deer/Vehicle Crash Statistics
- Past Detection Systems
- System Impacts
- Current/Future Systems
- System Costs
Marshall Phase I Results

- 57% Reduction in DVC in 2007
- 33% Reduction in DVC in the first 6 months of 2008

*2008 Data was only collected May through Oct.
Marshall Phase I Results

- 57% Reduction in DVC in 2007
- 33% Reduction in DVC in the first 6 months of 2008

*2008 Data was only collected May through Oct.*
Minnesota’s Experience with Deer Warning Systems

- MN Deer/Vehicle Crash Statistics
- Past Detection Systems
- System Impacts
- Current/Future Systems
- System Costs
2011 Marshall Phase II System

Upgrades to Phase I

- New wireless communication devices
- Detectors and solar panels realigned
- Weed barriers added to posts
- Vehicle crash damage repaired
Deer Warning System on CSAH 121 in Dayton, MN
2011 Dayton System

Utilizes Marshall Design with Further Upgrades

- U-Channel Posts for Detectors
- One Passive Infrared (PIR) Device will be used to demonstrate new technology
- Inductive Loops will detect vehicles accessing the Elm Creek Park entrance
- Remote Terminal Unit and Programmable Logic Controller
Minnesota’s Experience with Deer Warning Systems

- MN Deer/Vehicle Crash Statistics
- Past Detection Systems
- System Impacts
- Current/Future Systems
- System Costs
Dayton System Costs

- **Costs:**
  - **Equipment** $76,000
  - **Installation and Testing** $20,000
  - **Estimated Total** $96,000

- **Equipment Costs include:**
  - 2 signs nodes
  - 14 detectors nodes
  - 1 Remote Terminal Unit/Programmable Logic Controller
  - 2 loop detectors
  - 1 PIR
Contact Information:

Jon Jackels  
Mn/DOT Office of Traffic Safety and Technology  
ITS Program Engineer  
Jon.Jackels@state.mn.us  
(651)234-7377

Ken Hansen  
Mn/DOT Office of Traffic Safety and Technology  
ITS Project Manager  
Kenneth.Hansen@state.mn.us  
(651)234-7064
Marshall Phase I Results

DVC Along Marshall Deer Warning System

• 57% Reduction in DVC in 2007
• 33% Reduction in DVC in the first 6 months of 2008

*2008 Data was only collected May through Oct.