

# Deer/Vehicle Collision Avoidance System

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# Why Did the Deer Cross the Road?

- To Get to the Other Side



**But, what happens if the deer doesn't make it across the road?**



# How Serious are Deer/Vehicle Crashes (DVC) Nationally?

- More than one million DVC/year
- More than 200 deaths/year
- More than 29,000 people injured/year
- More than \$1.2 billion dollars in just property damage/year
- In some eastern states about 25% of all crashes are animal/vehicle crashes (moose, deer, bear)
- Figures continue to rise

## How Serious are Deer/Vehicle Crashes within Minnesota?

- Between 3 and 11 deaths/year
- About 475 injuries/year
- Officially about 4,500 DVC/year- Only reported if there is a personal injury or more than \$1,000 in property damage. State Farm Insurance estimates there are about 35,000 DVC /year in MN
- Large increase in injuries to motorcyclists

# Reasons for Increasing Deer/Vehicle Crashes

- Deer herd increasing
- Vehicle miles traveled increasing
- Semi-rural/exurban development
- Longer commutes
- Increasing speeds
- Downward trend in hunting

# Preventive Measures to Reduce Deer/Vehicle Crashes

- **Advanced warning signs**
- **Roadside reflectors**
- **Noise/Sound/Whistle devices**
- **Fencing**
- **Wildlife crossings**
- **Vegetation control**
- **Reduced speed limits**
- **Herd reduction**
- **Smell pots**
- **Motion detector/light beam systems**

# Background on the Deer Detection and Avoidance System

- **Approached by a private inventor in 2000 with plan for reducing the number of DVC**
- **Selection of site for installation was conducted on a statewide basis**
- **Original system installed in 2001**
- **System shut down two months later due to excessive battery drain**
- **Funding for modifications to the system became available in 2006 and a contract was signed with SRF Consultant**
- **System was activated on April 27, 2007**

# Original System Characteristics

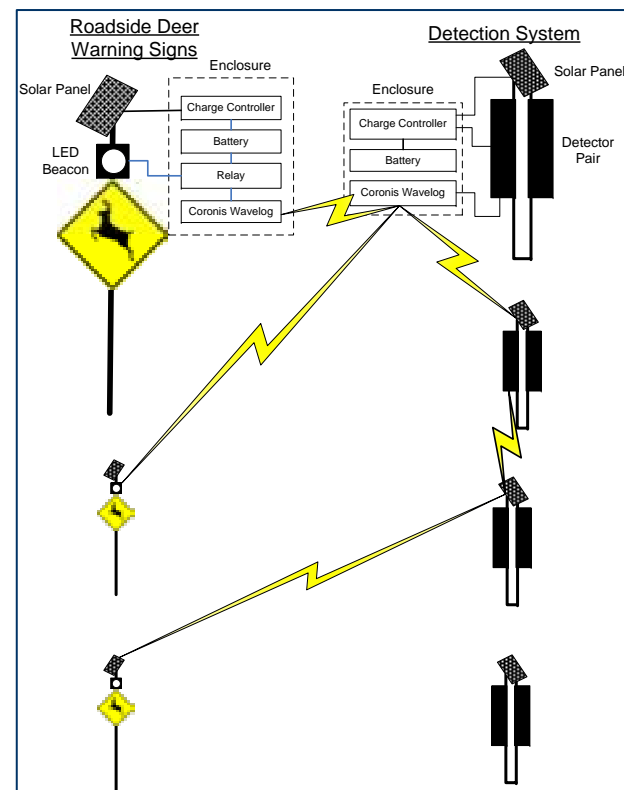
- Detection used LASER beam interruption
- Beacons were incandescent lamps with rotating reflectors
- Power supplied by rechargeable batteries
- Detector outputs hardwired to beacon relays
- System did not include a recharging system for batteries
- No mechanism for activating opposing direction traffic

# New System Characteristics

- Reduced power consumption- detectors have very low power draw and the incandescent lamps were replaced with LED beacons resulting in an 85% reduction in power demand
- Sustained power supply- solar panels were fitted on each sign and detector, and more powerful batteries were installed
- Two direction notification- signs now flash on both sides of highway

# System Schematic

- Simple installation uses existing structures
- Low power devices powered by solar/battery system
- Mesh network eliminates need for cabling
- Low cost makes system suitable for large areas



# Evaluation

- System to be monitored to compare carcass count with previous year total
- Continued monitoring to check the complacency factor
- Reliability of equipment
- Durability of equipment

## Results Thus Far

- There was a 57% reduction in the carcass count during the first year of operation (May 2007-April 2008).
- The carcass count for the first four months of the second year displayed the same success as the same period of the first year.

# Carcass Count Along Camden State Park on TH23 Within the Test Zone

	Monthly Totals 2006-7	Monthly Totals 2007-8	Months 13-16
May	1	1	0
June	3	0	1
July	0	1	1
August	0	0	0
September	0	1	
October	2	1	
November	3	3	
December	3	2	
January	6	0	
February	1	1	
March	3	0	
<u>April</u>	<u>1</u>	<u>0</u>	
Totals	23	10	

## Results Thus Far

- Major problem with equipment in heavy fog and/or numerous consecutive cloudy days. As a result new detection devices, larger solar panels and more powerful batteries will replace present equipment.
- Equipment has been shown to be very durable

# Future Considerations

- Continue monitoring the carcass count through December of this year to determine the long term effectiveness of system
- Testing of alternate types of detection
- If system proves effective the possible installation in other locations

# Questions?

- Thank you!