MONTANA-DAKOTA
UTILITIES CO.
A Subsidiary of MDU Resources Group, Inc.

400 North Fourth Street
Bismarck, ND 58501
701-222-7900

November 3, 2020

Executive Secretary
North Dakota Public Service Commission
State Capitol Building
Bismarck, ND 58505-0480

Re: Case Nos. PU-15-592, PU-17-192
and PU-20-417
Light Mitigation Time Extension

Montana-Dakota Utilities Co. (Montana-Dakota) herewith electronically submits information requested at the Informal Hearing held October 21, 2020. The Company requested information regarding Light Intensity Dimming Solution (LIDS) technology from the vendor. The information is included as Attachment A. A second fact sheet summarizing LIDS technology is included as Attachment B.

In addition, the Company is providing a link for a video containing additional information. Please see https://lidsinfo.com/en/video. The video demonstrates the lighting intensity differences.

Montana-Dakota also provides the recent operating results for hours of operations under each lighting intensity for the Mont Saint Marguerite Wind Farm, a Canadian operation, that utilizes LIDS technology as summarized in the table below.

100% Intensity	38%
30% Intensity	3%
10% Intensity	59%
	100%

The Company requested information regarding software maintenance. The Aircraft Detection Lighting Systems (ADLS) annual maintenance fee includes a component for software maintenance. LIDS technology does not require software maintenance.

If you have any questions regarding this filing, please contact me at (701) 222-7855 or travis.jacobson@mdu.com.

Sincerely,

/s/ *Travis R. Jacobson*

Travis R. Jacobson
Director of Regulatory Affairs

Attachments

Attachment A

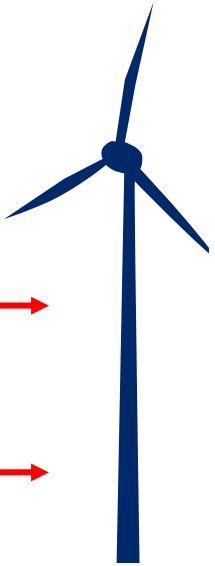
TECHNO STROBE™

Never alone in the dark.

technostrobe.com

WHY DO WE NEED LIGHTS?

FAA & TC justification for 2,000 cd
Worse Case Scenario



Design Speed
165 knots (190 mph)

Aircraft Turning Lag
1.3 km (4,265 ft)

Required Avoidance Distance
0.6 km (2,000 ft)

L-864 (Red Beacon)
2,000cd

Acquisition Distance
1.9 km (6,234 ft)

CL-810 (Red Marker)
32cd

Acquisition Distance
1 km (3,280 ft)

Aircraft Turning Lag
1.3 km (4,265 ft)

TECHNO STROBE™

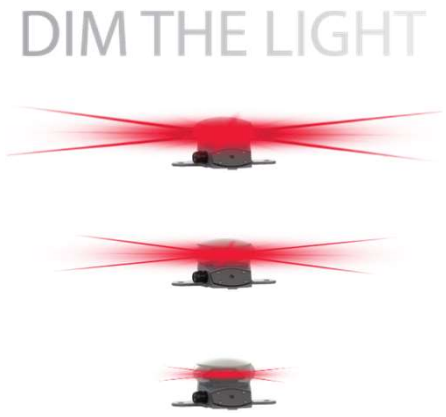
LIDS™ Technology
Light Intensity Dimming Solution

LIDS™ (Lighting Intensity Dimming Solution)

LIDS™ Technology
Light Intensity Dimming Solution

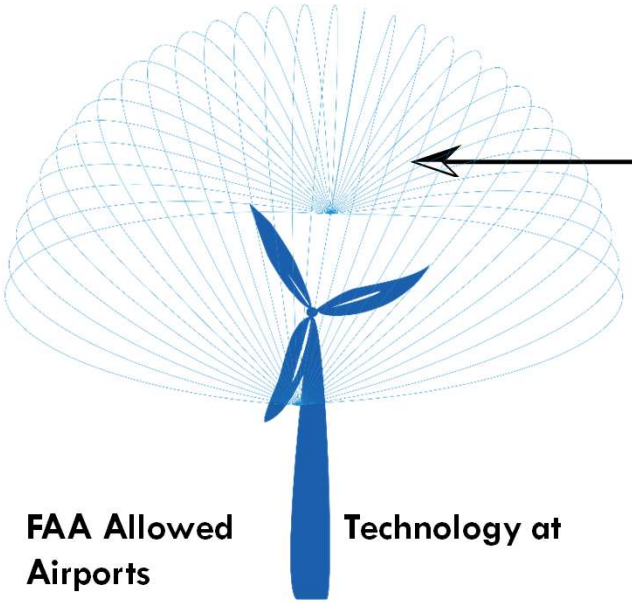
- Light Intensity Dimming Solution LIDS

Visibility	Light
1.6km	2,000 cd
5km	600 cd
10km	200 cd



LIDS™ Technology
Light Intensity Dimming Solution

- What is the technology – how does it work?



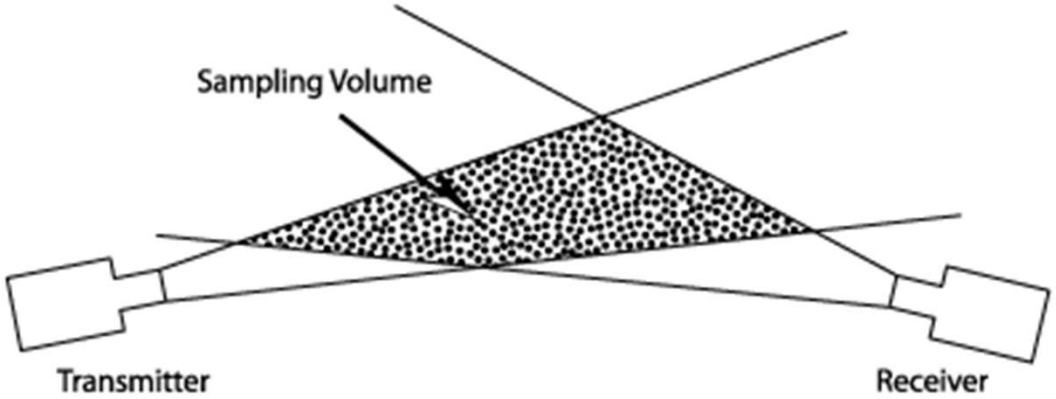
FAA Allowed Technology at Airports

(Used to establish visual range)

FAA-E-2772B 3.1.2.2 Visibility Sensor (VS)

Accuracy is 90%
Vertically and Horizontally

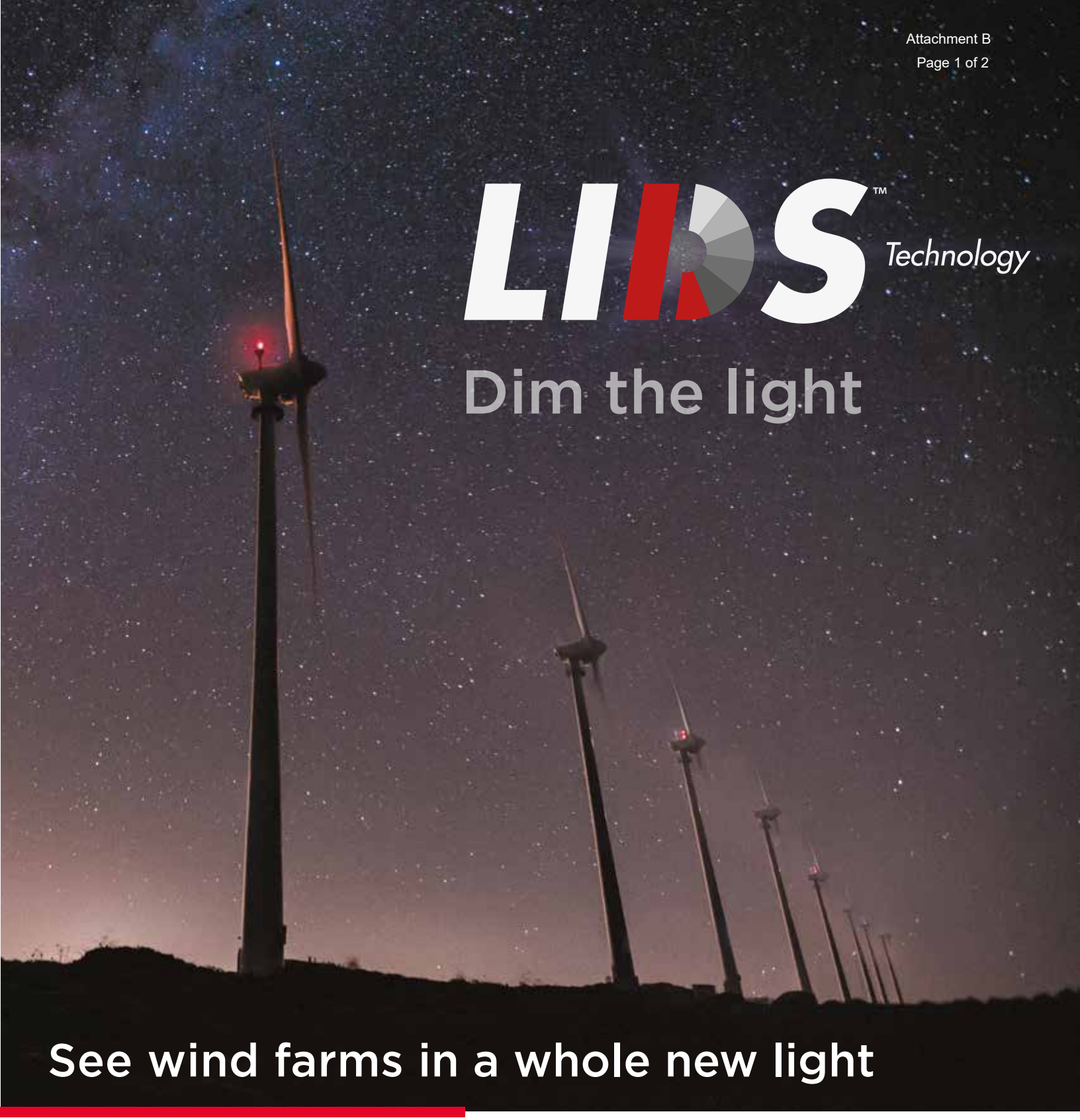
600 m to 1500 m Radius



The science involved in determining visibility with the sensor we are using is the **Forward Scatter Principle.**

TECHNOSTROBE™

Attachment B



See wind farms in a whole new light

Obstruction lights on wind farms are necessary for the safety of pilots and travelers. When at maximum intensity, the lights facilitate navigation during the worst visibility conditions. However, under clear skies, the lights can be too bright for the purpose they serve. Thanks to LIDS™ Technology, light intensity can now be tailored to suit the surrounding visibility. And that's good news for everyone. In the air, and on the ground.

TECHNOSTROBE™ See the Light

technostrobe.com

LIDS™ Technology

LIDS™ (Lighting Intensity Dimming Solution)

Combines visibility measuring devices with LED lighting equipment.

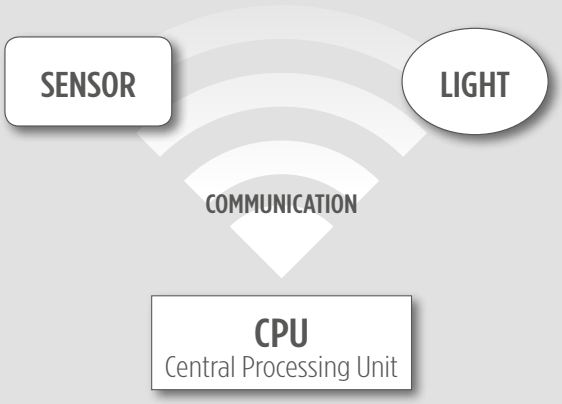
LIDS™ Technology. Community-friendly dimming solutions.

The Context. The presence of obstruction lights on tall towers is necessary for the safety of both pilots and travelers. These lights are set to flash at a maximum intensity to provide pilots with the necessary guidance when navigating through the worst possible visibility conditions - all night, all year round.

The Solution. LIDS™ Technology now provides a means of tailoring the intensity level of the lights on a wind farm in accordance with the surrounding visibility. The purpose of the solution is to dim the lights under clear sky conditions. In fact, under great visibility conditions (10 km of visibility or more), the intensity of the lights is reduced by 90 percent.

The Result. Using this leading-edge technology can help developers obtain a greater level of community acceptance for their projects.

LIDS™ Technology



Features

- Safe, simple, effective and cost efficient
- Proven technology
- Manufactured by wind industry experts in lighting and meteorology
- Web interface can provide feedback to the community in real time

Constructed by

TECHNOSTROBE™ *See the Light*

technostrobe.com

Printed in Canada.