

## SOLAR ENERGY POWER CONVERSION SYSTEM

(RFT 637)

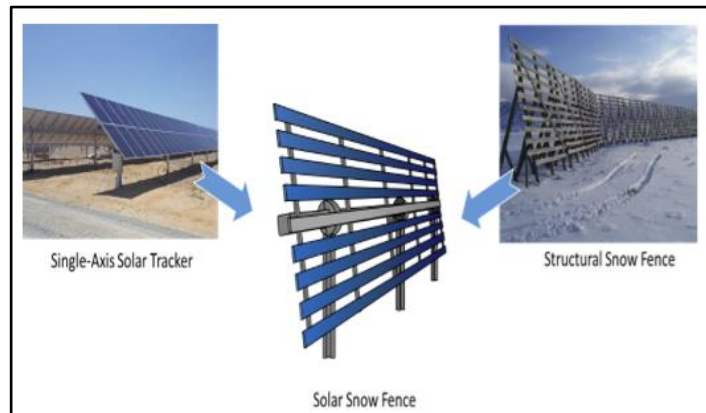
### Invention Summary:

There is a growing interest in clean energy generation to reduce greenhouse gas emissions. Photovoltaic panels are gaining popularity due to their cost-effectiveness and versatility in installation. However, a significant obstacle to widespread adoption of solar power is the opposition faced from local communities, who may be concerned about aesthetics and the impact on farmland, among other reasons. To address this challenge, researchers at North Dakota State University have developed an innovative solar energy power conversion system.

This novel system takes advantage of existing public infrastructure such as noise barriers and snow fences located along roads, eliminating the need for large-scale solar installations that require extensive land use. The system is designed to be easily connected to the power grid through a series of inverters and controllers, facilitating the utilization of the electrical energy produced. Within this system, a circuit is employed to convert the direct current (DC) generated by the solar panels into a stable output voltage, which is then converted to alternating current (AC). Additionally, when installed on a snow fence, the system serves as an energy harvesting solution and offers improved snow control capabilities compared to traditional snow fences.



**Figure a:** Testing of the single panel system under ambient sunlight



**Figure b:** Solar Snow Fence Prototype

### Benefits:

- Self-implementing power system
- Sustainable electricity production for self-use
- Ability to withstand harsh weather conditions
- Adjustable solar stripe blades
- Preventative controls on voltage exposure to prevent accidents
- Space and cost-effective

#### **NDSU Research Foundation**

1735 NDSU Research Park Drive Dept. 4400 PO Box 6080 Fargo, ND 58108-6050  
701.231.8173 or 701.231.6659 Fax 701.231.6661 [www.ndsuresearchfoundation.org](http://www.ndsuresearchfoundation.org)

**Applications:**

- Snow drift control:
  - a. Private residences and commercial properties
  - b. Highways
  - c. Recreational spaces and natural preserves
- Solar Energy Harvesting
  - a. Utility companies
  - b. Power and Energy distributors
- Miscellaneous solar based applications
  - a. Traffic lights for rural regions
  - b. Noise barriers
  - c. Irrigation systems

**Phase of Development:**

This technology has successfully completed laboratory and field testing with reproducible results.

**Patents:**

This technology is [patent pending](#) in the U.S. and is available for licensing/partnering opportunities.

**Contact:**

NDSU Research Foundation

[info@ndsurf.org](mailto:info@ndsurf.org)

<http://www.ndsuresearchfoundation.org/>

701-231-8173

**NDSU Research Foundation**

1735 NDSU Research Park Drive Dept. 4400 PO Box 6080 Fargo, ND 58108-6050  
701.231.8173 or 701.231.6659 Fax 701.231.6661 [www.ndsuresearchfoundation.org](http://www.ndsuresearchfoundation.org)