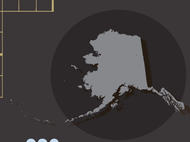
ARCTIC RENEWABLE ENERGY

SOLAR ENERGY

as a replacement for diesel



IN NORTH AMERICA'S ARCTIC DIESEL IS KING

Of **280** remote villages in ALASKA, **200** rely exclusively on diesel.

79 towns in the CANADIAN ARCTIC rely exclusively on diesel and **67%** of all diesel fuel use in CANADA occurs in Yukon, Northwest Territories, and Nunavut.

THE IMPACT OF DIESEL

ENERGY MIGRANTS

The high cost of diesel fuel forces some American citizens to leave their ancestral homes.

BUDGET STRAIN

The Government of Nunavut spends 1/5 of its annual budget on energy, limiting other funds.

BLACK CARBON

Diesel generators create black carbon, which melts ice and snow, causing global warming.

AIR POLLUTION

Air pollution from diesel generators has been linked to higher rates of asthma and respiratory issues.

$ ALASKANS PAY NEARLY DOUBLE THE NATIONAL AVERAGE FOR ENERGY.

ONE DIESEL REPLACEMENT IS SOLAR ENERGY

power collected from the sun's rays

SOLAR THERMAL

energy from the sun converted to heat through solar panel piping

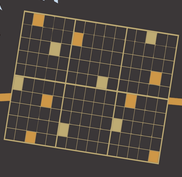
SOLAR POWER

energy from the sun converted to electricity through solar panels

LOW ARCTIC TEMPERATURES improve solar cell efficiency

DRY ARCTIC AIR allows more sun energy to reach solar cells

ARCTIC SUMMERS INCLUDE 24-HOURS OF SUNLIGHT



IN ALASKA

In 2015, Alaska ranked **45th** in the United States for installed solar.

Alaska's solar energy potential is comparable to Germany, the **global leader** in solar power.

Solar panels in **11** Northwest Arctic Borough communities save each household **$10-$15** on monthly water bills.

Solar panels on BSNC offices displace **1000 gallons of diesel fuel per year.**

IN CANADA

Colville Lake's solar system has **132.5 kW** AC solar generation capacity with a remote monitoring system.

Lutsel K'e created a solar farm that generates **20 percent** of the community's energy.

HOW TO IMPROVE THE USE OF SOLAR IN THE ARCTIC

PLANNING & POLICY

Understand **local economics** and context

Invest in **regulatory government policies**

Plan **community-level** integration first

Develop plans based on **feasibility** studies

COMMUNITY ENGAGEMENT

Educate many different groups

Provide opportunities for **discussion**

Include **training** alongside new solar projects

Build solar integration into the **community vision**

MORE CAN BE DONE

to use solar power alongside renewable energy sources

FINANCING & TECHNOLOGY

Integrate with other renewable energy

Strive for **100% community ownership**

Create **business models** of savings & sustainability

Take advantage of **grants** for solar development

BOTTOM LINE: WHAT IS NEEDED?

PUBLIC FUNDING so smaller communities can access available grant money.

A **CLEARING HOUSE** to centrally locate technology developments, information, and funding resources.

Access to **LOWER COST STORAGE SOLUTIONS** for solar electricity and heat in remote communities.

OPTIMIZATION OF CURRENT SYSTEMS to make room for solar energy in the existing infrastructure.

THE ARCTIC INSTITUTE
CENTER FOR CIRCUMPOLAR SECURITY STUDIES
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