Introducing the

Remote Energy Security Technologies Collaborative

-- RESTCo --

Why?

"The Inuit are struggling to cope with erosion, melting permafrost, thinning sea ice, receding glaciers, and an invasion of new animals, many of which we don't even have names for."

> *Sheila Watt-Cloutier, Nobel Peace Prize nominee in 2007, at the Fifth Science Centre World Congress, June 2008*

Climate change appears to be having more dramatic impacts in the polar regions than elsewhere in the world. While we don't have a long-standing human population in the Antarctic to tell us about the changes in the climate there, in the Arctic we do have such populations, including the Inuit.

When we compare the warnings of community leaders like Watt-Cloutier to the lack of action by the Canadian government, it seems clear that their message is not being heard. If we continue on our current track, we run the risk of losing this community completely, conscious and deliberate collateral damage sacrificed to the South's insatiable appetite for energy and mineral resources. Already, governments and corporations are mapping out their stakeclaims to oil, natural gas and methane hydrate deposits in the Arctic. Currently, these deposits are difficult to access, but as climate change claims more and more Arctic ice, the expectation is that these resources will become more accessible in years to come. The Tar Sands are already impacting the health of the Dene, and the wildlife that supports their traditional lifestyle.

While climate change is a global issue, the impacts on the Arctic are felt locally and personally.

Arctic Ice Pack 1979-2009

Current concerns about the true extent of global reserves of conventional (light) oil have resulted in the U.S. military seriously considering options other than oil in order to maintain the security of their energy supply. If the world's most powerful military is concerned about their ability to secure a supply of oil in the short to medium term, then surely civilian populations should also be taking action to reduce their exposure to that risk.

Those communities most dependent on oil (e.g., remote communities which generate electricity from diesel), should be in the vanguard of reducing this vulnerability. If they are successful, their message that they can master their oil addiction to protect their communities should carry great weight in the South. So long as northern communities continue to rely heavily on oil for their mundane daily operations, their calls to the South to use less oil and coal ring hollow.

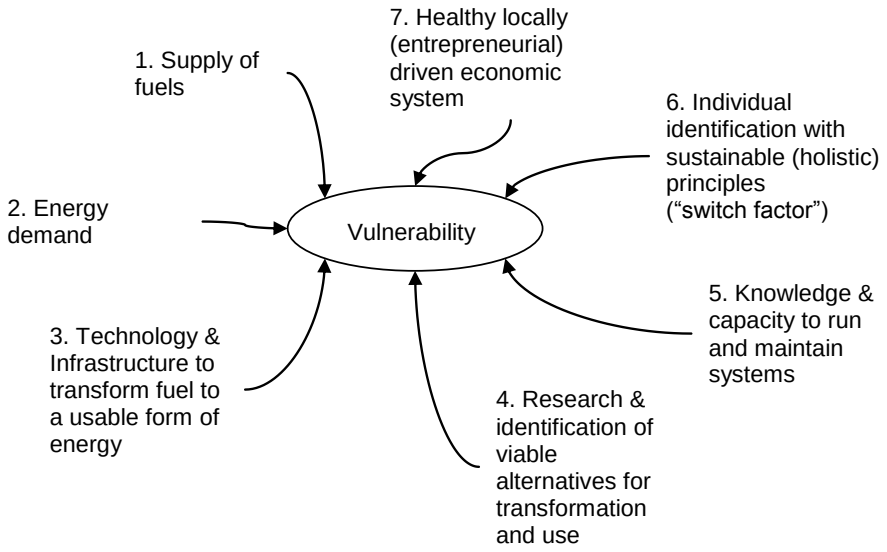
RESTCo Primary Objective

To work together with remote (off-grid) communities in the Canadian Arctic and Boreal regions to reduce the vulnerability of their energy systems.

Secondary Objectives

- To provide the communities and their residents with the ability to operate independently
- To enhance education / training / knowledge transfer to residents via our activities
- To extend life of existing infrastructure by reducing run-time on an annual basis
- To facilitate north-south connections (because self-sufficiency is not the same as isolation)

Factors affecting their vulnerability



Specific Areas for Action

- Demand and generation side energy monitoring
- Reducing demand for imported fossil fuels by conservation, efficiency and substitution in the areas of:
    - fuel for electrical generation,
    - fuel for space heating,
    - fuel for water heating,
    - fuel for direct transportation use, and
    - the provision of potable water and waste management,

  each of which are dependent on a reliable and affordable supply of energy, and consume a significant amount of energy
- Healthy and energy efficient housing design or retrofit
- Training / education on climate change and adaptation
- Improved local transportation efficiency

Expected Results (Results will vary by community and measures implemented)

- Diesel fuel consumption will be reduced by a measurable and financially significant fraction
- Residents are empowered and able to operate independently
- The life of existing infrastructure has be extended by years due to the effect of reduced run-time on an annual basis
- Local air and water quality will be improved
- The amount of greenhouse gases produced will be reduced
- Financial savings from diesel fuel not consumed (purchased, transported, stored)

Membership

Dr. William (Bill) A. Adams, Ph.D.
José Maria Gonzalez
Christopher (Chris) Ives
Darryl McMahon, B.Comm.
Peter Russell, B.Sc., M.Sc., P.Eng.

Membership competencies and strengths (short version)

Dr. William (Bill) A. Adams

General knowledge of energy storage and conversion technologies
Deeper knowledge of battery and fuel cell technologies
Good general knowledge of climate change science especially as related to the north
Specialized knowledge of ice science and glaciology
Security and defence policy related to the north

José Maria Gonzalez

Energy Monitoring
Sustainability Indicators
Renewable energy project evaluation (solar, biomass, wind, biogas)
Demand side measure implementation
Waste management (composting, diversion strategies)

Christopher (Chris) Ives, M.A. Cantab (Mechanical Sciences)

Integrated Design, RD&D, and Project Management Systems
Engineering in energy-transportation-buildings
Delivered 4 demo Solar/Healthy houses 1976-2000
Electric cars exchanging power with our homes (hV2G)
Self-Sufficient First Nations Healthier Housing (Eframe.ca)
Land use & infrastructure choices that respect our Ecosystems

Darryl McMahon, B.Comm.

Author, *The Emperor's New Hydrogen Economy*
Extensive experience with on-road and off-road electric vehicles and other alternate fuels
Personal experience with solar thermal technology at the residential scale
Long experience in the information technology field (including years in telecom sector)
Background in economics
Knowledge of the nuclear fission generation industry and energy sector in general
Project management, writing, organizational, logistics and presentation skills

Peter Russell, B.Sc., M.Sc., P.Eng.

Innovative design of construction and mechanical system components with manufacturability in mind
Integration of housing service needs with infrastructure
Manufacturing systems configuration
Arctic housing
Housing and community design for long term sustainability