



THE
NORTH AMERICAN
NAMI INSTITUTE

*ENERGY INDEPENDENCE FOR NORTH AMERICA:
AN ALTERNATIVE FUTURE*

2007 Speakers & Conference
Summary



Promising New Developments in Alternative Energy

- Dr. Tatro - Today's system is full of losses and is an open cycle. 50% of energy is lost in conversion and use.
 - “Hydrocarbon intermediary” that combines carbon waste and heat with other elements to create additional energy, such as methanol, and also by using intermittent sources like wind.
- Dr. Michal C. Moore - How to make alternative energy make sense?
 - The energy system: Demand; supply chain for fuels; technology supply chain; dispatch mechanism to match supply to load in real time; a market for clearing exchanges; regulatory mechanism.
 - Understand the source of limits and range of alternatives.
 - “Firm with fossil.”



Promising New Developments in Alternative Energy

- Dr. Delore Zimmerman – Heartland alternative developments.
 - NA second only to ME for oil reserves. Bakken Oil Formation 413B bbls potential reserves.
 - Barriers & Bottlenecks are: uncertainty about future; wind is attractive; liquid coal is not attractive as plants are too expensive; materials shortage for construction now.
- Martin (Mike) Pasqualetti - Many environmental benefits for wind power.
 - Status: TX is leading US state and CA is second in wind power. Canada and Mexico also have potential areas good for wind power.
 - Problems: Obstruction and radar interference; aesthetics.
 - Solutions: NIMBY to PIMBY; wind is the way to save the family farm; emphasize offshore sites; adopt compatibility rankings. Identify where not to put farms;
 - “Morality” of wind energy landscapes links energy.



Keynote: Dr. Lloyd Axworthy

- There is such a thing as a NA community and it is worth thinking about ways to make it work. 1990s thrust us into the post-Cold War world where the old polarities did not apply. 9-11 has created new polarities.
 - At some point, you have to transcend ad-hoc solutions and look to a larger framework for policy and cooperation.
 - Tielhard Chardin: something tremendous is happening in the world, but what is it? What is its name? The current paradigm doesn't fit the reality.
 - 200 +/- treaties between the NA nations do not conform to any framework. How do you manage cross-border resources, such as water, and involve people who are affected (hunters, fishermen, indigenous).
- “Community” as a place where people prevail (Alinsky). Can we do this in a way that doesn't violate culture and history?
 - Danger of the NA community being defined by business and policy elites and people left out of the equation.
- Left us with two images:
 - **“Minerva's Owl”** that takes flight at dusk as a metaphor for a civilization in decline, its knowledge taking flight, needed solutions coming too late.
 - **“Radical Hope”** – the opportunity created when facing an uncertain future that might even include calamity.



Energy Efficiency, Conservation, & Climate Change

- DOE - President's vision. Vehicles & battery technologies moving to hydrogen by 2020; ethanol fuels; homes. Solar energy to make PV competitive by 2015. 5GW available by 2015. 2030 70GW of solar available.
 - Buildings consume 40% of energy. Can make them a source of grid energy. Zero energy homes (ZEH) by 2020.
 - Building America Teams in DOE consult and work with home builders as advisors.
- BECC created under NAFTA. Mission is to promote environmental initiatives to be financed by the NADB to border communities: Air quality, waste water, public transportation, hazmat, waste reduction, planning, etc. Serves 22M pop on border. Many projects underway.
- Since 1970s the US energy productivity has risen, but not so much as GDP. For 30 years, energy efficiency has been the largest US energy resource: 40 quads!
 - Efficiency is still the lowest cost resource compared to wind, coal, nuclear and gas sources. Not high capital investment, more labor intensive.



Producing, Selling, & Using Energy Tri-Nationally

- Five elements of any energy framework: feedstocks; manufacture; use; transport; by-products.
 - Regulation. National regulation frequently includes an element of protectionism. How do we harmonize tri-national interests and standards around energy? Blending standards for ethanol fuel?
- Political dimension. Political solutions rarely have a big picture and tend to be as hoc.
 - Politicians hate risk. Need to have a “story value” to get them hooked. Idea to action requires partnering with people who can do this.
 - Deal with the low-hanging fruit; get the system “pregnant.”
- Effect that nuclear has on other energy options.
 - 16% of global power is generated by nuclear; 441 total reactors. Nuclear power produces base load energy clean, reliable and safe.
 - Oil sands extraction requires steam to separate oil from sand. Steam Assisted Gravity Drainage (SADG).
 - Technology to use nuclear rather than natural gas to produce steam for SADG. Will extend the life of natural gas reserves.



- Energy Efficiency and Renewable Energy Programs. Vision is energy sustainability: Security/environment/economic development.
- CONAE under Ministry of Energy with managerial autonomy. Regulation, assistance to local government, promotion.
- Policy instruments: public buildings; efficiency; assistance; public vehicles.
- Local government programs: Lighting, buildings, pumping, renewables.
- In 2005 renewables are 10.6% of national supply. Solar, mini-hydro, biomass.
- Approach: Policy, financial mechanisms, technical development.
- Trilateral cooperation. NA Energy Working Group.
- There is a need for a turning point in energy policy. Initiatives and tax incentives are not enough yet.



Trans-Border Energy Markets

- NADB bi-national organization established 1995 after NAFTA. Focus us environmental infrastructure finance. Can finance public and private sector projects. Works with BECC.
 - General Terms: lend up to 85% of total project costs; up to 25 years; dollars or pesos market rates; equity participation in private sector projects; risk coverage for FX. \$48M USD loan cap.
 - Have done 98 projects totaling \$2.54B with \$844M from NADB. Current lending \$270M.
- Alberta oil sand development.
 - Oil sands vision: process integration and eco-industrial siting. Alberta the emerging oil super power in NA. Hydrocarbon upgrading.
 - Oil sands market is US mostly to displace imports.
 - NA cooperation. Streamline regulation; expand supply chains; skilled workers.
- Mexican cross-border power and gas transactions.
 - Border power interconnections not always technically compatible. Mexican electricity prices usually higher than in US and not competitive, hence imports.
 - “Power Maquiladoras” combined cycle gas-fired plants lead the cross border exchange.
 - Regulatory issues: permitting; real estate; back-up; tariff.
 - Technical: additional infrastructure; compatibility.
 - Financing issues: additional transactional costs; higher interest rates; fewer options to secure loans; market uncertainty.
 - Environmental issues: different technical standards; public opposition; no equivalent methods to assess environmental impact; distrust in oversight of project.



Resolving Energy Challenges Through Regional Leadership

- Hydrogen. “Hydrogen is the fuel of the future and always will be.”
 - Represents significant potential for an alternative source in many uses. It is an energy carrier, not a source.
 - Obstacles. Fuel-cell cars are hugely expensive. Entrenched oil and gas delivery infrastructure doesn’t move hydrogen. Uniform standards not established yet. Iconic image of the Hindenburg Disaster.
 - Opportunities. Stationary power production; transportation; portable power; renewable utilization.
- CONACyT reminded us of the intrinsic value of communities, human and non-human, and the importance of sustainability.
- Canada’s extraordinary energy reserves with the US as its main customer.
 - Need to drive transformational technology.
 - Opportunity to sequester CO₂ in geologic formations.
- New Mexico initiatives include 400MW of wind online now; renewable transmission energy authority established and tax-credit extended; biodiesel standards sold in NM.



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What is the Overall Message of NAMI 2007?

- There is a NA community, even if the idea isn't always popular. But a "community" vision involves people and even the non-human community, not just corporations and policy elites.
- A systemic vision for NA includes common areas of interest on many dimension, of which energy independence is just one. Climate change, migration, first peoples, natural resource protection, economics...
- We have an opportunity now to ask our respective governments to begin a NA dialog on these matters, but also a responsibility to not let bureaucracy stop us from our own dialog using our own venues, like NAMI!