Emerging Energy Technologies

An opportunity to meet Arctic energy needs, develop energy resources, and create global expertise

Jason Meyer
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Technology Development¹

• Developing and demonstrating new or unproven technology;
• The application of existing technology to new or different uses, or
• The combination of existing and proven technology to achieve a specific goal.
# Technology Development

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Alaskan Need

- Sustainable and affordable energy for rural Alaska
- Energy security
- Economic diversity
- Resource development
  - Renewable, nonrenewable
- Unique challenges
  - Size
  - Climate
  - Population Density

Alaska is #1
Energy use per capita
Energy intensity
Almost 50% of all Alaskan’s live in rural areas²
Alaskan Opportunity

- Vast energy resources
  - Renewable, Non-renewable
- Unique conditions
  - Size
  - Climate
  - Population Density
  - Substantial diversity
- High energy costs
- Support
  - Public, government, industry
- Growing world-wide demand
Projected investments in new energy supply to 2050 in 1997 US dollars\(^3\)
Exportable Expertise

- Power Distribution
  - Decentralized, isolated, or remote grids.
  - Comparable scale in supply and demand.
- Similar Energy Resources
- Implementation Challenges
  - Logistics
  - Natural challenges
  - Transportation

- Wind-diesel hybrid systems
- In-river hydrokinetics
Available Funding

- Translational research (basic → applied)
- ‘Valley of Death’
- Proof of Concept Prototype
- Licensing IP or acquisition of startup
- Full commercialization of product

Time
Emerging Energy Technology Grant

- Denali Commission, June 2009
- $4mill available
- Eligibility
  - Demonstration phase
  - Viable in 5 years
  - AK applicant
  - Potential for both widespread deployment in AK and reduced energy costs
- Sought to address:
  - Funding gap
  - Commercialization hurdle
  - Alaskan-specific energy challenges
EETG Demonstrated Benefits

- Information generation/dissemination
  - A critical element of funding emerging energy technology projects is the inclusion of a robust data collection and analysis component
- Technology development occurs in Alaskan/local environment
  - Environment is a critical aspect of tech maturity
- Development of human capital and expertise
  - Alaska Hydrokinetic Technical Conference
- Funding opportunity for technology development projects with little funding opportunity
  - In particular, projects with Arctic-specific implications
General Arctic Relevance

• Relevant to other Arctic states
• Can be tailored
  ▫ Energy sources, technology types, prioritization
  ▫ Scale and application
• Tech development in relevant environment
  ▫ Unique challenges, issues, barriers, opportunities
• Room for specialization
  ▫ Iceland, Norway
• Can be integrated into overall strategic energy planning
Emerging Energy Technology Fund

- A state permanent EET program
  - Emerging Energy Technology Fund Grant program
- Integrated into overall State energy funding programs
- Funded through legislative appropriations
  - Federal match and available to other contributions
- Focus on project information
  - Not project implementation
- Advisory committee made up of Federal, State, utility, and technology experts
  - Renewable and nonrenewable
  - Involves University of Alaska
Final Thoughts on EET in the Arctic

- Critical step in overall energy development
- Development is based on Arctic needs and conditions
- Develops opportunities to fully utilize resources
- Demonstrates commercial success of new energy technologies
- Must be a component in strategic energy planning
- Funding information generation, not solution implementation
- Accelerate industry growth, and guides future energy funding and planning decisions
Questions?

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• ACEP website:  
  www.uaf.edu/acep

• EETG information:  
  www.energy-alaska.com

• EETF information:  
  www.akenergyauthority.org

References
1  DOE G 413.3-4A “Technology Readiness Assessment Guide”, 9/15/11
2  Slide from a 5/18/09 Denali Commission presentation to NREL
3  Adapted from WEC-IIASA 1998

Photo credits to Jason Meyer, Katey Walters Anthony Research Group (UAF), Todd Paris (UAF)