At 591,000 square miles, Alaska is as wide as the lower 48 states and larger than Texas, California, and Montana combined.
Alaska Road System
Alaska Fun Facts

- 13% of Alaska’s population is Alaska Native – greatest proportion in the U.S.

- Over 200 of 562 federally recognized tribal governments are in Alaska

- Only one reservation exists in Alaska – Metlakatla

- Alaska Native Claims Settlement Act (ANCSA) model developed 13 regional corporations as an alternative
How Alaska Households Heat Their Homes Using Various Energy Sources

Anchorage
- 84% Natural Gas
- 13% Electricity
- 3% Other

Rural Communities
- 79% Diesel
- 8% Wood
- 8% Other
- 5% Natural Gas

Source: Estimated Household Costs for Home Energy Use, May 2008 a report by ISER
Estimated Median Share of Income
Alaska Households Spend for Home Energy Use

- 2000
- 2008

20% of Households with Lowest Incomes
- Anchorage: 5.5%
- Rural Communities: 8.7%

60% of Households with Mid-range Incomes
- Anchorage: 2.4%
- Rural Communities: 3.6%

20% of Households with Highest Incomes
- Anchorage: 1.4%
- Rural Communities: 2.7%

Source: Estimated Household Costs for Home Energy Use, May 2008 a report by ISER
Koyukuk, Tank Farm 1
2 school tanks, liquid tight liner.

Koyukuk, Tank Farm 1
Shared school/city heating fuel fill line far side, city gasoline fill line near side.
Denali Commission Energy Program

Three Program Areas:

• Bulk Fuel Facilities
• Rural Power System Upgrades
• Renewable and Alternative Energy
  • Emerging Technologies
Funded 58 rural power system upgrades in rural Alaska
Alaska Sealife Center
Seawater Heat Pump

The Seawater Heat Pump
Emerging Technology That Moves Thermal Energy

Heating
- Space Heating
- Hot Water
- Ventilation Air
90 F to 120 F

Source
Alaska Seawater
With Temps Ranging From 37 F to 52 F
Solar Hot Water Heating System
Commercial Scale
Wood Pellet Fired Boiler

• Conversion from diesel to wood boiler

• Increase efficiency expected using out of state pellets

• Can this project improve in-state demand for such wood products?
Wales Wind-Diesel Hybrid Power System

- Retrofit power plant -- high penetration wind-diesel system
- Goal 50% diesel consumption in Wales
- Replication of diesel off across Alaska
- Original grant through DOE
Cordova Psychrophiles Digestor

- Cold-loving microbes (psychrophiles) found in Alaska lake water
- Coupled with feedstock (lunchroom/AC waste) = Biogas
- Cordova High School Students
- Solid waste reduction
Intergovernmental Coordination
Federal Agency Partners

- Department of Energy – National Renewable Energy Lab (NREL)
- Environmental Protection Agency (EPA)
- U.S. Coast Guard
- Housing and Urban Development (HUD)
- USDA – Rural Development
- USDA – Rural Utility Services (RUS)
- Indian Health Service (IHS)
- Bureau of Indian Affairs (BIA)
- National Environmental Protection Act (NEPA)
- Federal Energy Regulatory Commission (FERC)
An Era Ends...