Energy Efficiency/Conservation

From a utility perspective

By

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President and General Manager

Alaska Electric Light and Power Company
Why Manage Load Growth?

• AELP Corporate Goals
  – Provide safe and reliable electric service from renewable resources
  – Provide among the lowest average electric rates for regulated utilities within Alaska over the long run while maintaining financial integrity
  – Use electric resources efficiently
New management position at AELP

• Energy Services Specialist
  Assist customers with energy investment decisions
  • Heating systems
  • Insulation and building efficiency
  • Lighting
  • Appliances
  • Electric Vehicles
  Provide information on Federal, State and Local funding
Manage AELP’s DSM program
Trouble shoot customer energy usage problems
Teach electrical safety in schools

Goal: To postpone as long as possible the need for new base-load generation
Approach

- Promote electrical efficiency measures as a way to generate bandwidth for loads that will shift from petroleum-based fuels to hydropower.

- Encourage biomass and heat pumps as alternatives to fuel oil for space heating.
Utility Rate Structure

- Line maintenance
- Generator maintenance
- Admin – Billing, purchasing, Accounting, payroll, regulatory compliance, etc.
- Interest on debt
- Cost of Capital
- Depreciation
- Metering
- Computer systems & security
- System operations
- Vehicle costs
- Fuel
- Taxes
- other

Cost per kWh = Total costs/Total KWh’s
Fuel Cost Comparison (\$/MMBTU/Year)

- Electricity ($0.1144/kWh, 0.99E)
- Heating Oil ($3.82/gal, 0.86E)
- Pellets ($320/ton, 0.85E)
Electric Vehicles

• In Juneau, electric vehicles use about as much oil as space heating

• Only a fraction of the hydro capacity is required to displace the oil used for transportation
Corporate Goal: Use Resources Efficiently

Heating
Oil used for space heating is efficient, around 86%, and comparable in cost to Juneau’s current electric rates using old low-cost hydro projects.

Diesel generation at 30% efficiency or constructing new hydro for space heating will inflate electric rates.

Vehicles
Vehicles use fuel inefficiently, typically around 20%.

Very little new hydro is necessary to displace vehicle fuel.
## Alaska’s hydro projects
Indexed to 2012 $

<table>
<thead>
<tr>
<th>Project</th>
<th>Completion Year</th>
<th>Actual Cost</th>
<th>Indexed Cost (2012 $)</th>
<th>avg MWh (2012 $)</th>
<th>$/MWh</th>
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<tr>
<td>Terror Lake</td>
<td>1984</td>
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<td>Solomon Gulch</td>
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<td>Tyee</td>
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Summary

• Energy conservation and efficiency is the least cost alternative to acquire additional energy capacity

• Low cost hydro electricity is a limited resource and space heating is not the best use of those resources

• Vehicles are an efficient use of electric resources and usage is projected to grow substantially over the next twenty years.

• Questions?