A Balanced Energy Plan for Alaska's Railbelt

Opportunities for End-Use Efficiency/Conservation and Renewable Energy

2008-2040

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Overview

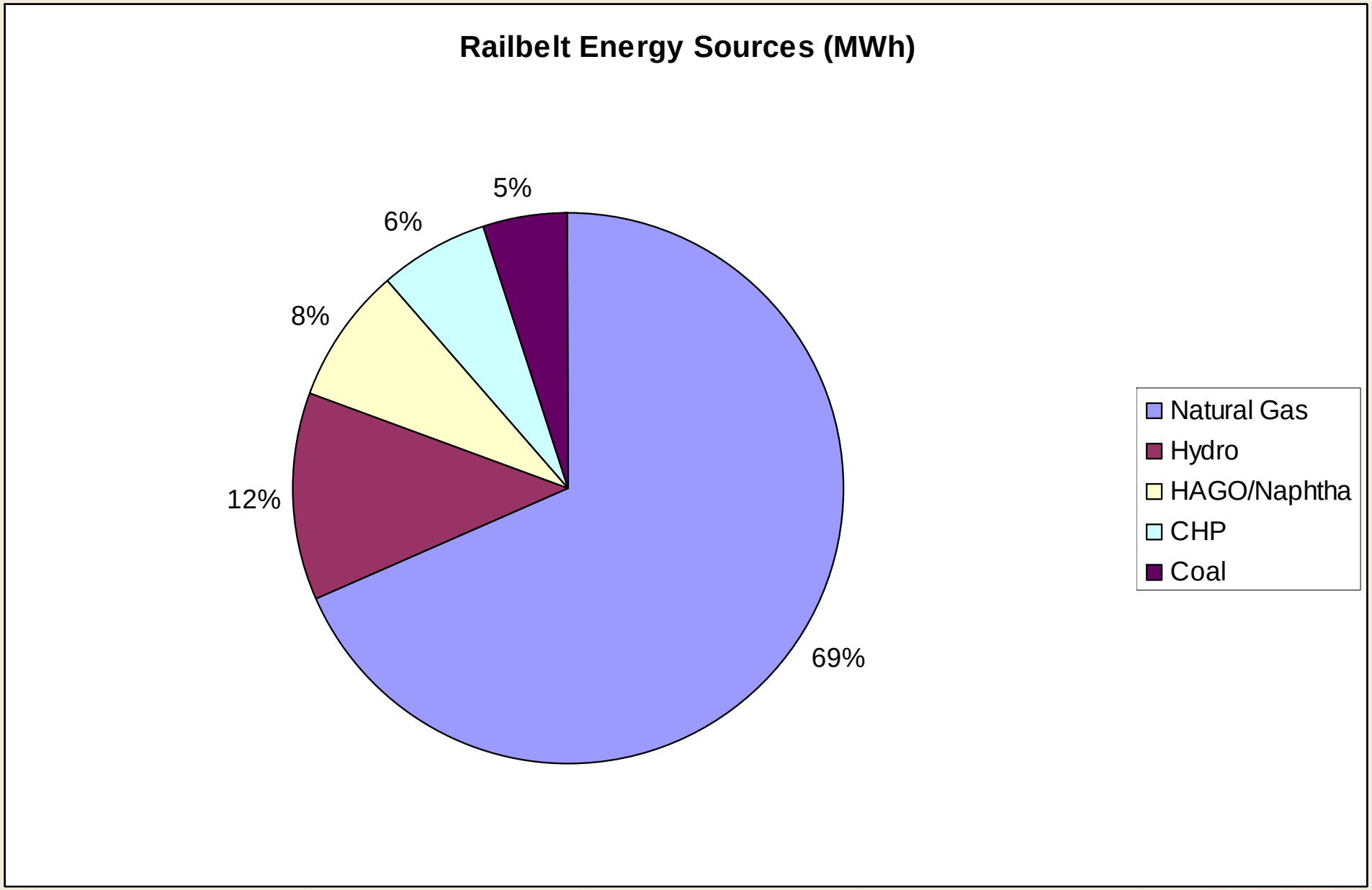
- Global Warming Legislation
- The Need for a Balanced Energy Plan
- The Potential for Clean Energy
- Economics of BAU v. BEP
- Implementing the BEP

Global Warming Legislation

- Climate Security Act: Senate debate next week!
  - Cap and trade system for carbon
  - Energy cost assistance
  - Adaptation funds
  - Major investment in clean energy

The Need for a Balanced Energy Plan

- Rising costs of historically inexpensive natural gas
- Uncertain future fuel supply
- Rising capital construction costs
- Imminent pollution regulations



Existing Railbelt Generation Mix

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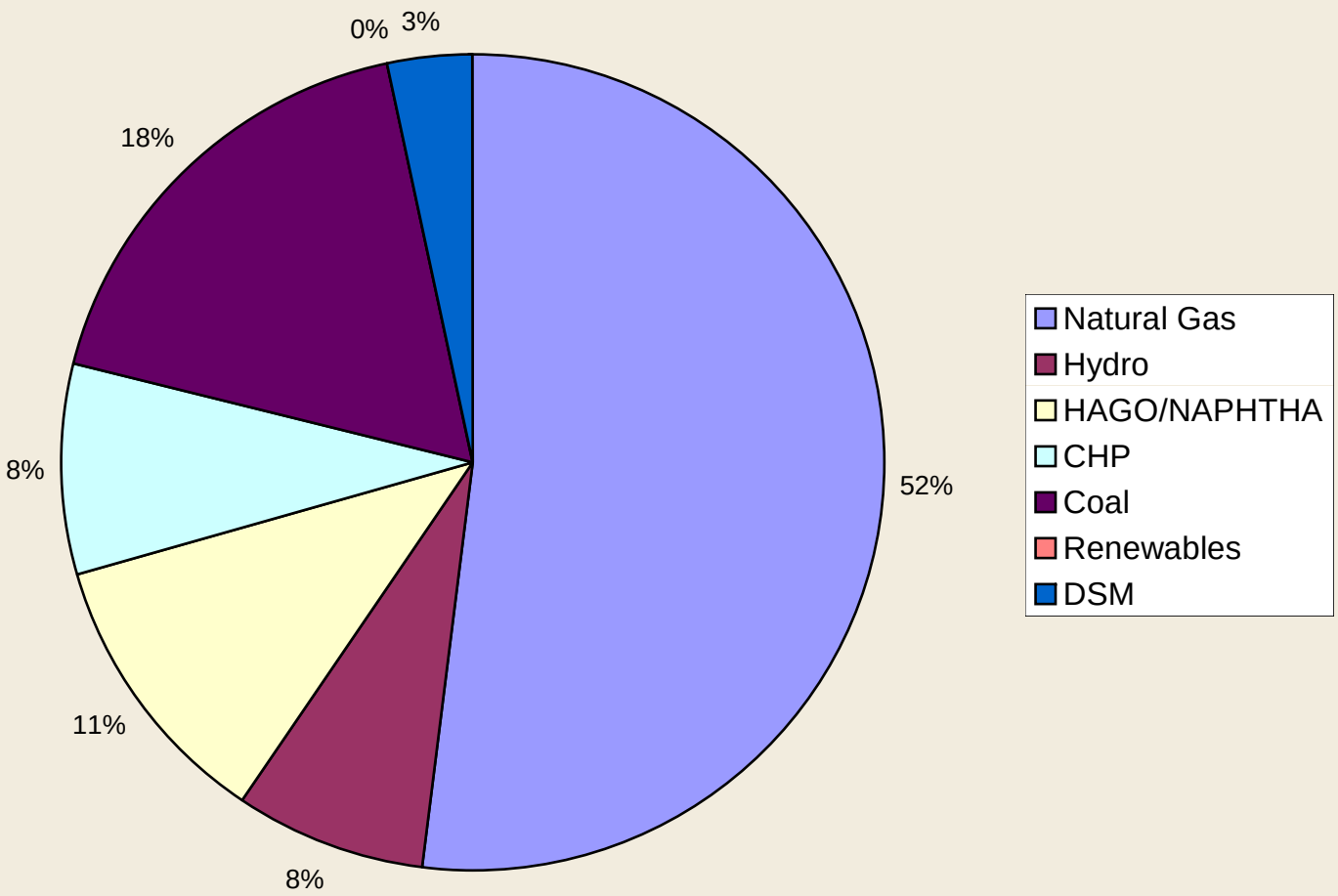
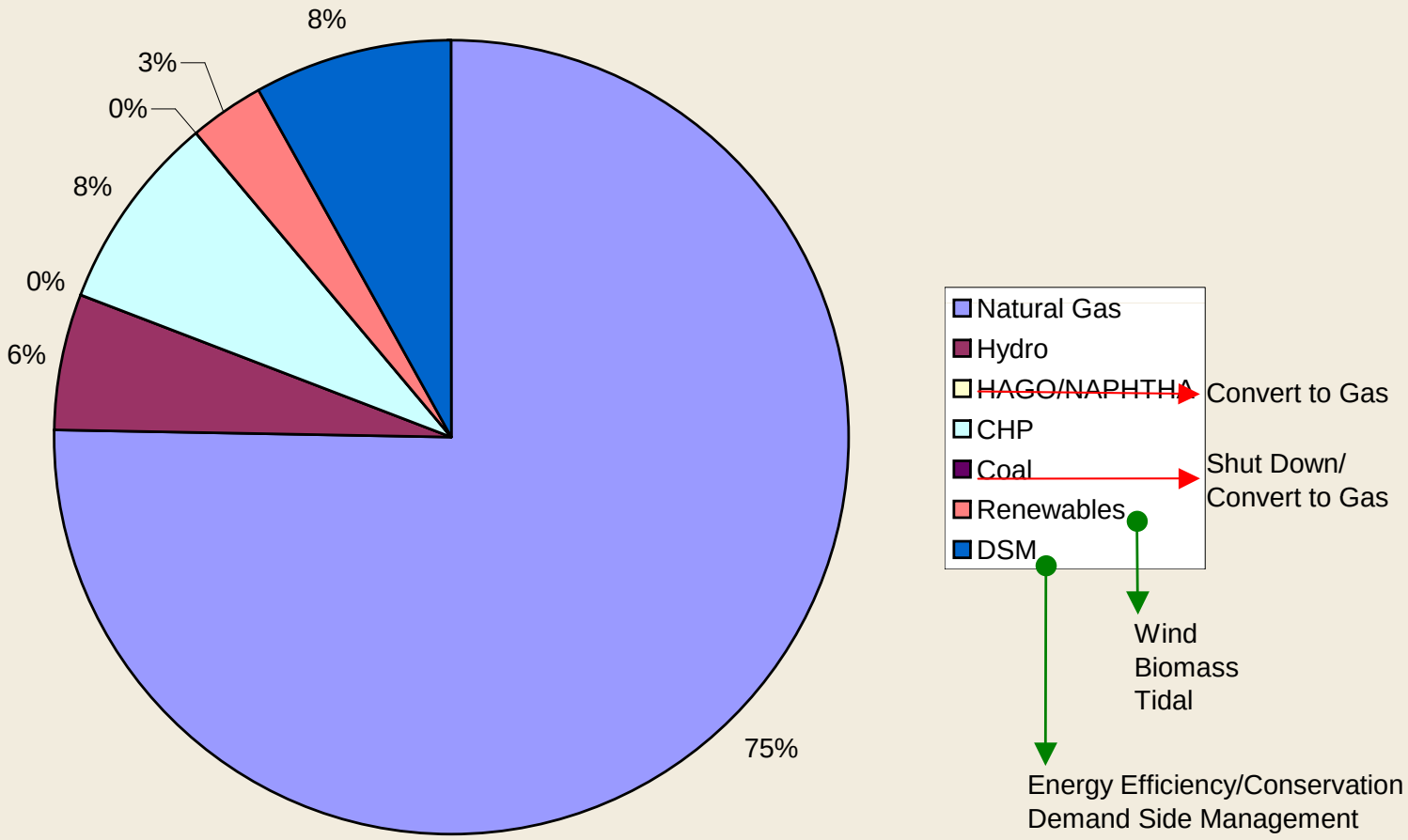


Business as Usual Scenario

Business as Usual: Considerations

- Fossil fuel price risk
- Regulatory risk
- Capital Cost Escalation risk
- Air pollution impacts
- But it’s familiar . . .

Railbelt Annual Energy (GWh) By Source
Balanced Energy Plan - Assuming Alaska North Slope Gas Delivered to Railbelt (2020)



Assuming North Slope Natural Gas is delivered to Railbelt

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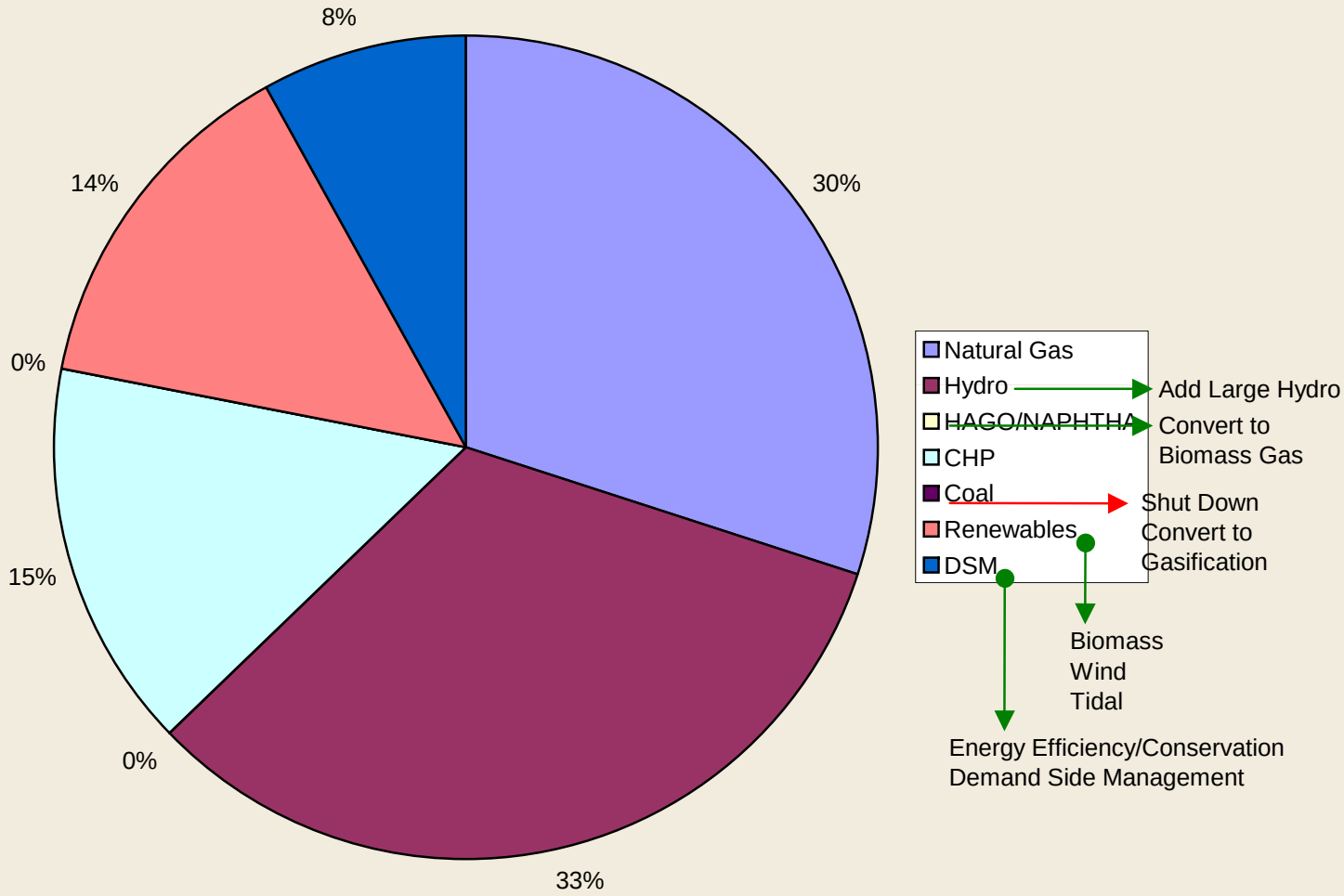
Railbelt Annual Energy (GWh) by Source
Balanced Energy Plan - Without Alaska North Slope Gas Delivered to the Railbelt (2020)



Assuming North Slope Natural Gas is NOT delivered to Railbelt

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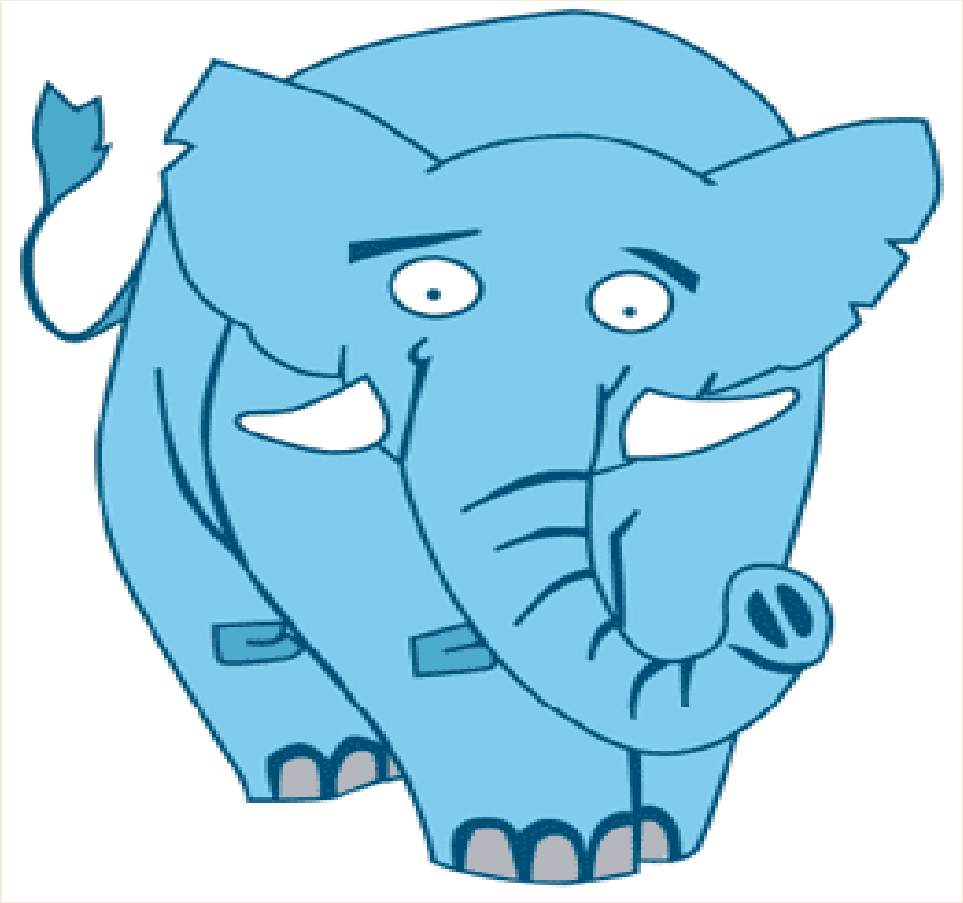
North Slope Gas is the . . .



The Balanced Energy Plan: Modeled Renewable Energy Components

- Wind (e.g., Fire Island) 50 MW
- Biomass (e.g., FBK co-firing) 4 MW
- Landfill Gas (e.g., Anch) 3 MW
- Tidal (e.g., Knik Arm) 0-5 MW
- Hydro (e.g., Lake Chakachamna) 330 MW

New Fuel Price Estimates

- Goldman Sachs: up to $200/barrel oil within two years
- This scenario may make a more aggressive renewable portfolio competitive . . . Stay tuned!

Kotzebue Electric Association

Four 66 kW Integrity wind turbines that make up part of Kotzebue Electric Association's 957 kW wind farm. By the end of 2006 Kotzebue will have 1155 kW of installed wind capacity. In a typical year the wind farm displaces over 100,000 gallons of diesel fuel.

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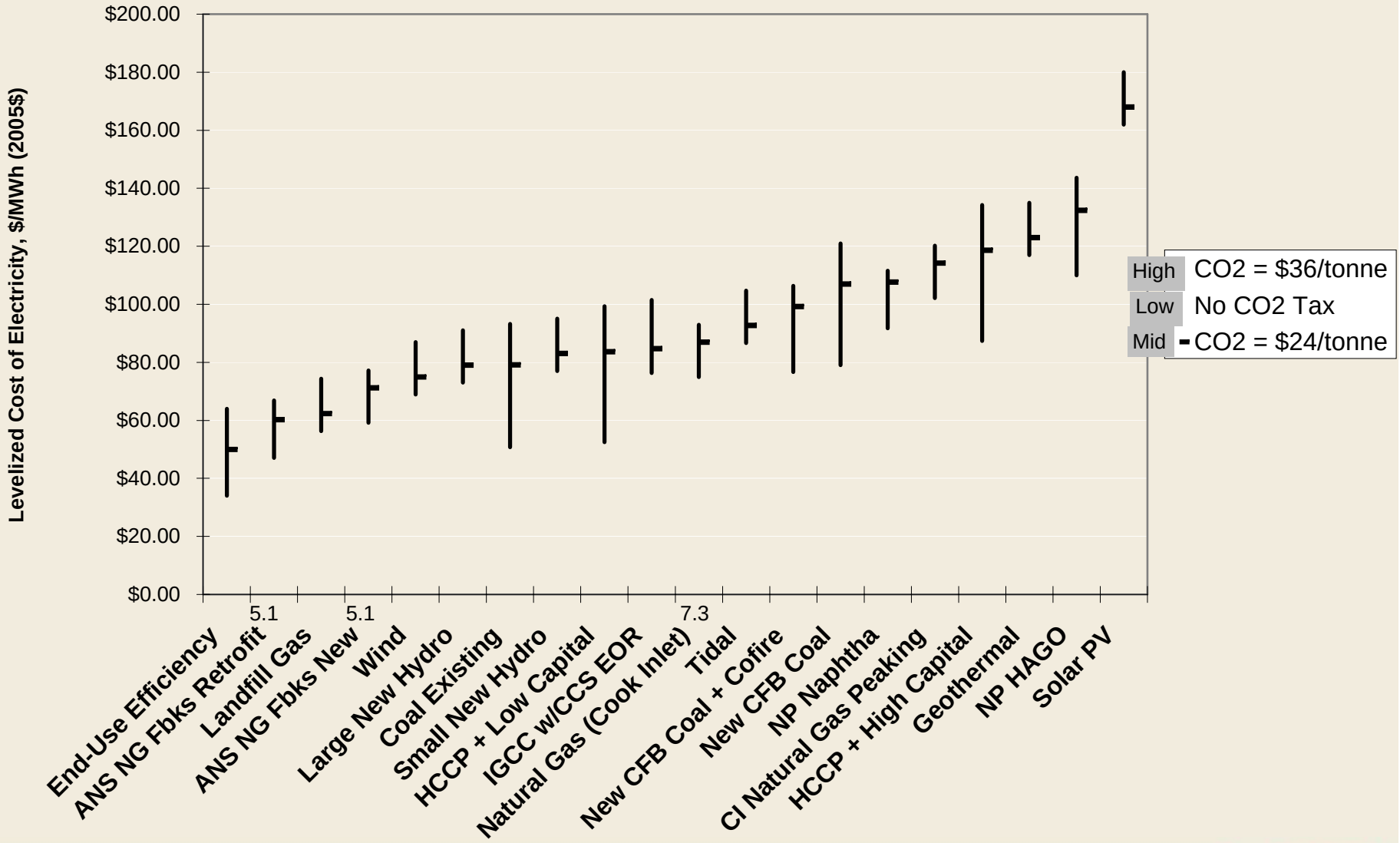
The Balanced Energy Plan: Advantages

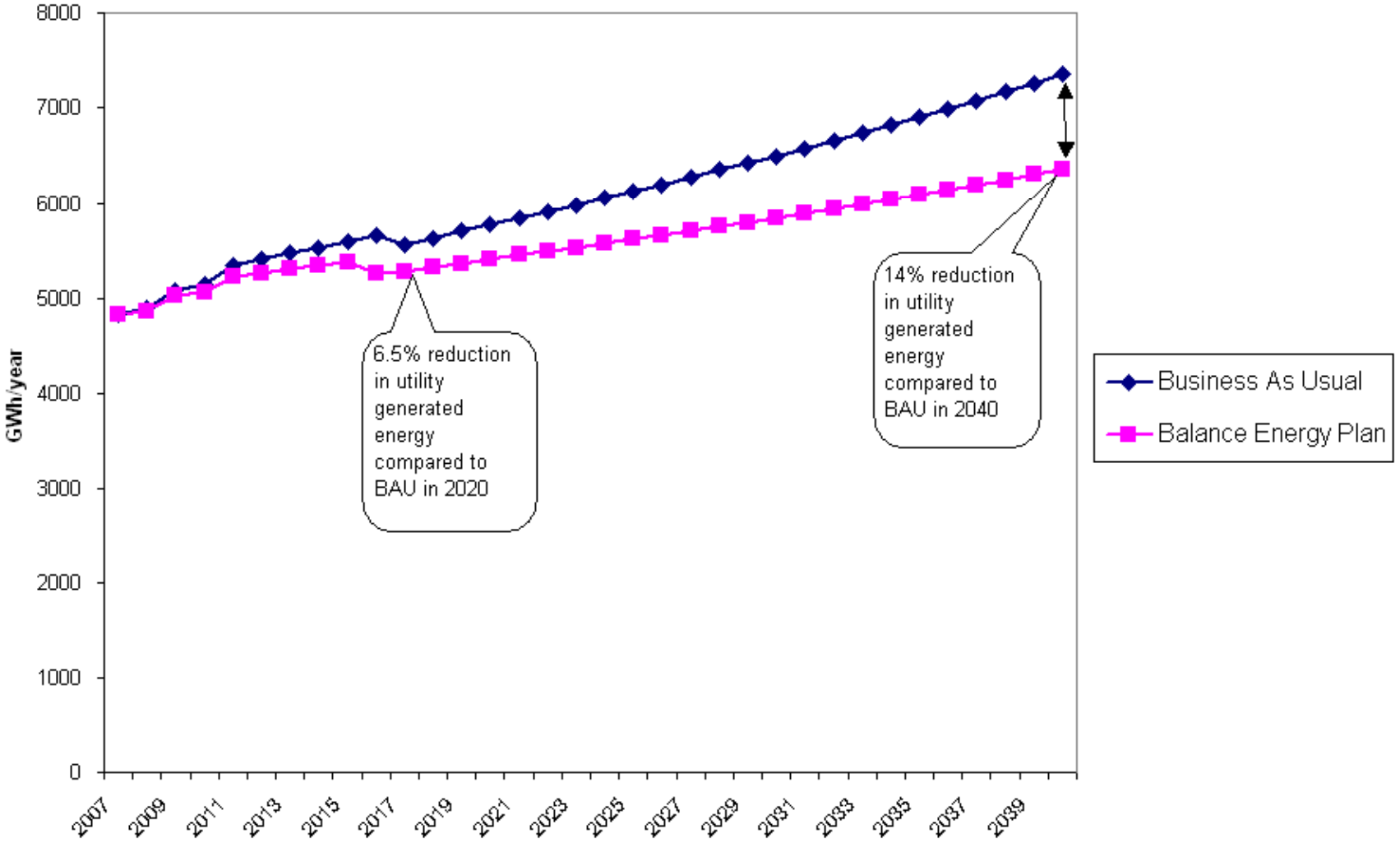
- Decreased fuel price risk
- Decreased regulatory risk
- Decreased air pollution
- Increased energy efficiency
- But development sometimes uncertain, e.g. Mount Spurr megasite

Railbelt Levelized Cost of Electricity (2015-2040)



Railbelt Electrical Energy Requirements (GWh)

BAU vs. Balanced Energy Plan with End-Use Efficiency/Conservation Initiatives



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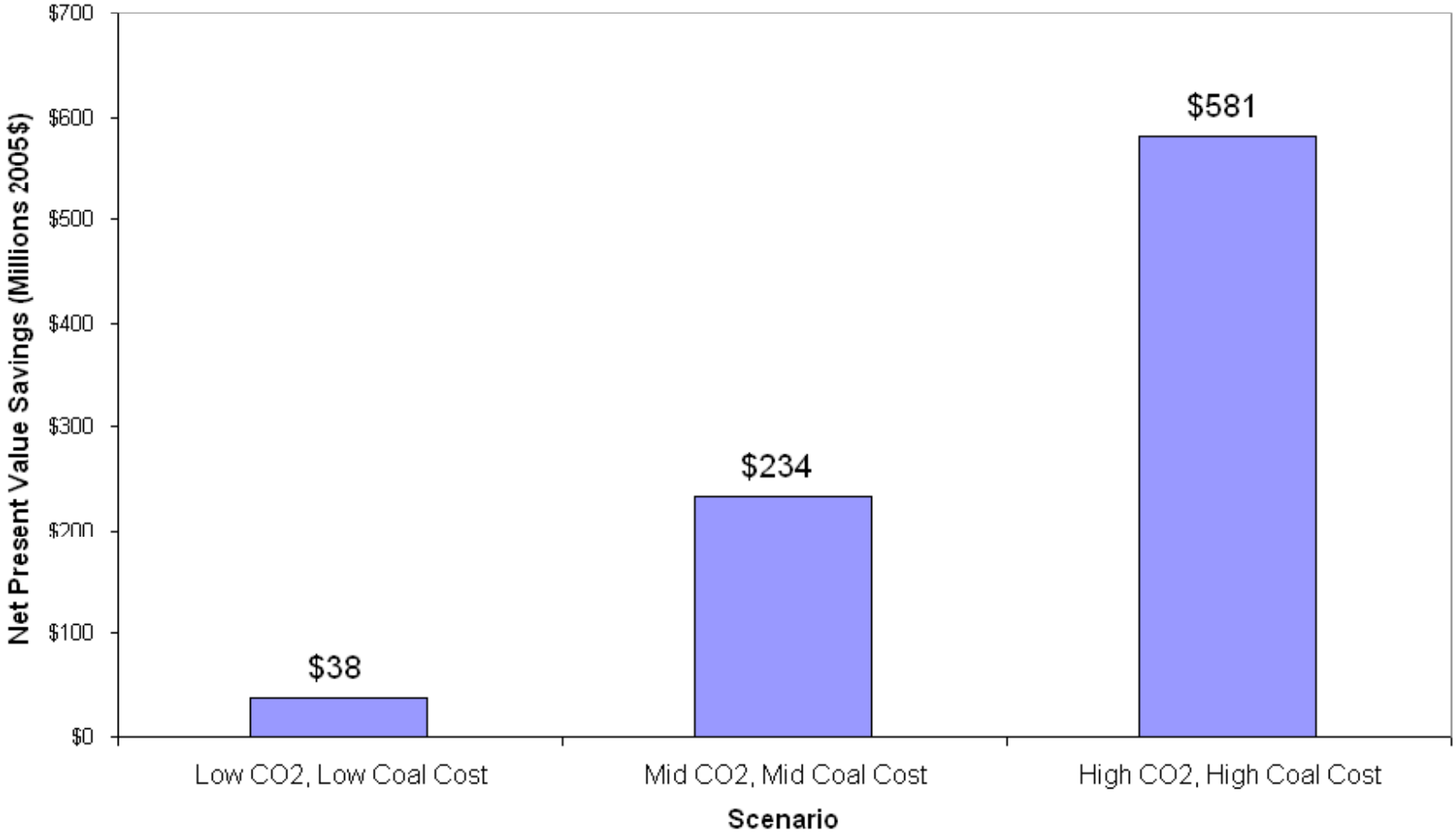
Evaluating the Plan

- Energy savings under all projected scenarios ranging from $38-581 million (2015-2040):
- Equivalent levels of electric system reliability
- Reduce CO2 emissions by roughly 25% for the Railbelt as a whole

Balanced Energy Plan vs. Business As Usual (2015-2040)

(Including MEA 100MW Coal-Fired Power Plant)



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Implementing the Plan
State Policies and Programs Underway

- Renewable Energy Fund
- Expanded Residential Energy Efficiency Program
- AEA Developing State Energy Plan

Implementing the Plan
State Policies and Programs Needed

- Clear energy vision maximizing RE/EE
  - E.g., 20% RPS, 20% use reduction by 2020
- Broad public awareness campaign re benefits of RE/EE
- Workforce development/job training

Implementing the Plan: State Policies and Programs Needed

- Commercial Building Code
- Expand EE Program to Commercial Audits, loans for improvements
- Pay As You Save loans for commercial ratepayers (Utilities/RCA)

Implementing the Plan:
State Policies and Programs Needed

- Residential Building Code (BEES)
- Smart Meter Program
- Net Metering

Implementing the Plan: Federal Policy

- Renewable Energy Tax Credits
- Renewable Portfolio Standard
- Global Warming Legislation w/ large investment in clean technologies