Southeast Alaska Integrated Resource Plan (SEIRP)

Kevin Harper - Black & Veatch
Agenda

• Integrated Resource Planning
• Project Objectives and Scope
• Project Team Overview
• Approach to Specific Issues
• Final Report Content
• Questions and Answers
Integrated Resource Planning

• Plan that economically schedules what, when, and where to build, based on available energy supplies

• Long-term time horizon

• Competes generation, transmission, fuel supply and DSM/energy efficiency options

• Includes renewable energy projects (including hydro)

• Arrives at a plan to build future infrastructure for minimum long-run cost to ratepayers

• Considers risks

• Considers of financing options
Integrated Resource Planning

**Objective Function:**

2012 Cumulative Present Value Costs

With consideration of:

- Regional issues and differences
- Energy security
- Environmental impacts
- Risks
Integrated Resource Planning - Limitations

• Does not set State energy policy
• Directional
• Identified/generic/actual projects
• Agnostic to owner/developer of projects
Strategist™ Modeling
Least cost assessment of generation, transmission, and conservation/DSM resources

Detailed Results
- Economic
- Environmental

Risk Assessment
- Resource potential
- Project development and operational (e.g., "dry year")
- Fuel supply
- Environmental
- Transmission constraints
- Financing
- Regulatory/legislative
- Price stability

Prioritized List of Capital Projects – Generation and Transmission

Analysis of Financing Alternatives

Public Participation Process
Project Team Overview

- **Alaska Energy Authority** – Sponsoring Agency
- **Black & Veatch** – Primary Contractor
- **HDR, Inc.** – Subcontractor
- **Southeast Conference**
- **Sealaska**
- **Advisory Working Group**
- **Regional Utilities**
- **Regional Communities**

Extensive public participation is key element of project.
Situational Assessment – Outside Drivers

- Energy policy legislation
  - Federal
  - State
    - House Bill 306
    - House Bill 220
- Fossil fuel price and availability
- Environmental and land use regulations
- Roadless Rule
- CI RICE
- Natural resources
Situational Assessment – Issues

- Conversion to electric space heating
- Declining populations in communities
- Declining economies in communities
- High cost of space heating
- Rapidly declining excess hydro
- Difficulty in developing new hydro and transmission interconnection projects
- High cost of electricity
- Low levels of weatherization and energy efficiency
- Availability and cost of cost
Approach to Specific Issues – Load Forecast

- Sources of information include:
  - Historical loads/existing load forecasts from utilities
  - Department of Labor population forecast
  - Census
  - Information from utilities
- B&V analysis and development of load forecast
  - Reference Load Forecast – continuing existing trends
- Scenarios
  - High Load Forecast – economic development and EVs
  - Low Load Forecast – DSM/EE and policies to discourage heating conversion
Approach to Specific Issues – Regional Transmission

- Review previous studies
- Identify sub-regions
- Identify potential transmission segments
- Develop cost estimates and operating parameters
- Economic screening based on:
  - Energy requirements of each sub-region, including reserve
  - Determine transmission costs on a $/MWh basis
  - Compare to threshold cost of diesel generation
- Detailed evaluation
  - Identify potentially viable generation projects and associated interconnections
  - Strategist™ will select economic combination of generation projects and regional transmission segments
Approach to Specific Issues – Regional Transmission

Transmission Planning Regions
Approach to Specific Issues – AK-BC Intertie

- Review existing studies and other documentation
- Complete economic screening of import and export scenarios to determine if Intertie should be included in detailed modeling, including:
  - Export market demand and wheeling charges
  - SE Alaska factors that affect project feasibility
  - Other external factors (outside Alaska) that affect project feasibility
Approach to Specific Issues – Hydro

• Develop comprehensive list of potential hydro projects
• Develop screened list based upon specific criteria
• Identify 2061 energy requirements by sub-region
• Identify desired profile of local hydro projects by sub-region
• Identify potential hydro projects that match desired profile and prioritize by tiers
Approach to Specific Issues – Alternative Technologies

- Consider alternative technologies, including biomass, wind, solar, and tidal
- Fuel switching options
- Consider commercial status
- Modeling
  - Identify specific projects, and develop cost and operating assumptions
  - Include generic resources where appropriate
Approach to Specific Issues – Conservation/Demand-Side Management (DSM)

• Analysis done at community level – strategies to reduce energy use
• Existing conservation/DSM programs included in Reference Load Forecast
• Additional conservation/DSM programs – include in Low Load Forecast
  • Screen using standard cost-effectiveness tests for each of three groups of communities (high, intermediate and low cost)
  • Develop potential programs based upon screened measures
  • Add enough conservation/DSM programs that pass the Total Resource Cost (TRC) Test to achieve 20% load reduction target by 2020
• Implementation Issues
  • Potential resource - need to gather baseline information
  • Funding alternatives – State, system benefit charge, participants, etc.
  • Delivery mechanisms – AHFC, AEA, regional entity, individual utilities

Analytical approach consistent with other states.
Approach to Specific Issues – Financial Model

- Selection of preferred resources (Strategist™)
  - Include project costs and annual energy
  - Calculate 50-year fixed charge rate
  - Develop list of preferred resources
- Key issues – ability to finance the future and rate impacts
- Evaluate various financing alternatives to levelize/lower costs to Ratepayers, including:
  - State financial assistance (e.g., Bradley Lake model)
    - Repayment flexibility
    - Credit support/risk mitigation
    - Potential interest cost benefit
Final Report

- Content
  - Summary of Results
  - Implementation Risks and Issues
  - Conclusions and Recommendations
  - Near-term Implementation Plan
- Important Dates
  - Draft Report – November 2
  - Final Report – January 16
Building a world of difference.

For more information:

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