Southeast Alaska Integrated Resource Plan
Summary of Black & Veatch's Responses to Public Comments on Draft Report

A. Introduction

Black & Veatch issued the Draft Southeast Alaska Integrated Resource Plan (IRP) Report in December 2011. This study was completed in response to a directive from the Alaska Legislature designating the Alaska Energy Authority (AEA) as the lead agency to develop an IRP for the Southeast region. AEA retained Black & Veatch to examine the current status of energy resources in the region and explore the options for minimizing future power supply costs and space heating costs, while maintaining or improving current levels of power supply reliability.

The Draft Southeast Alaska IRP Report accomplishes the overall goal of regional energy planning, based upon long-term forecasts of future energy requirements, to the extent possible given current circumstances. Unfortunately, as detailed in the Draft Report, the quality and inclusiveness of available information on potential hydro and other renewable energy projects makes it impossible at this time to complete a definitive assessment of which projects should be developed.

In short, the region has a significant number of potential resources that look promising but lacks the type of information required to make informed decisions regarding which generation projects should be developed at this time beyond the identified Committed Resources (discussed later).

The fundamental challenge facing the region is succinctly summarized in the following quote:

> *"Black & Veatch has done a yeoman's job in completing the study with such a large Advisory Working Group (AWG) and so many varied and contrary opinions on the Southeast energy solution. The SEIRP has addressed the situation from two critical aspects, economically, and socially, and to paraphrase the results;*
>
> 1. *Based on present available information, an interconnected Southeast is simply not economical.*
> 2. *From the social perspective, there is a wide disparity in energy costs between the region's communities.*
>
> *This is a sobering reality, as many have hoped and thought that the first statement would solve the second. It may very well be the solution of the future, but not today. DSM and migration to non-electric heat are appropriate actions and will help in the near term, but are not an overall solution to the Southeast energy crisis either."*

After the release of the Draft Report, the AEA provided a period for public comment. Over 50 sets of comments were received (please see Attachment A for the full list of comments received; all comments received are available on the AEA's web site). The extensive number and nature of comments reflect: 1) the significance of the energy issues facing the region, 2) the very significant disparities that exist between communities in terms of population, density, economic conditions, and cost of energy, 3) the challenges faced by Black & Veatch in completing the study based upon the information available, 4) the difficulties associated with the development of a regional plan while reflecting the varying viewpoints of community leaders on a variety of social- and energy-related issues, 5) the fact that Black & Veatch's conclusions and recommendations differ

significantly from what many regional stakeholders envisioned at the start of the study, and 6) misunderstandings that exist with regard to what Black & Veatch did and did not do in completing this study.

Under the direction of the AEA, Black & Veatch will address the public comments in three ways. First, we have developed this summary document which provides Black & Veatch's responses to the general "comment themes" that were common threads contained in multiple sets of comments. Second, we have revised the Executive Summary of the Report to reflect Black & Veatch's responses to the "comment themes" as discussed in this document. Third, we have provided an Errata Sheet to correct errors in the input assumptions, analyses, and narrative contained in the Draft Report.

This three-pronged approach was chosen by the AEA as the most effective way to: 1) reflect the valuable input received from regional stakeholders, 2) highlight Black & Veatch's responses in a straight-forward manner, 3) ensure that the resulting changes are not "lost in the details" contained in the 21 section, 750 page Draft Report, and 4) best position this study, and its underlying information and analysis, as a useful foundation for the region as it comes together to make the decisions necessary to secure its energy future.

This summary has been organized around the following major "comment themes":

- Southeast Alaska IRP's Objective Function, and its Link to the State Energy Policy and Local Energy-Related Policies and Resolutions
- Integrated Resource Plans (IRPs) Versus Economic Development Plans (EDPs)
- Purpose of Subregional Analysis
- Fuel Price Forecasts
- Load Forecasts
- Consideration of Potential Mines and Other Economic Development Loads
- Role of Hydroelectric Power
- Role of Biomass Space Heating Conversions
- Role of Demand-side Management and Energy Efficiency (DSM/EE)
- SE Intertie
- AK-BC Intertie
- Propane, Liquefied Natural Gas (LNG), and Natural Gas
- Impact of the Roadless Rule
- Role of the Private Sector
- Adequacy of the Public Participation Process
- The Path Forward

Each theme is addressed in a separate section. Each section begins with representative quotes that are intended to give the reader a sense of the nature of comments received relative to each theme. These quotes are then followed by Black & Veatch's responses to the issues raised.

B. What the Southeast Alaska IRP Represents

Before turning to the "comment themes," we believe that it is important to restate the objective of an IRP. As discussed in the Draft Report, an IRP is intended to be a "directional document." In this sense, the Southeast Alaska IRP identifies alternative resource paths that the region can take to meet the future energy needs of the region's citizens and businesses; in other words, it identifies the types of resources that should be developed in the future. These paths are summarized in the Preferred Resource Lists shown in this plan for each of eight subregions in Southeast Alaska. The granularity of the analysis underlying this IRP, and the quality and inclusiveness of available information on potential projects as discussed elsewhere, is not sufficient to identify the optimal combination of specific resources that should be developed.

Some of the public comments received suggest that the authors believe that fact that IRPs are intended to be directional documents is a serious deficiency. While one may hold this belief, this aspect of the Southeast Alaska IRP is consistent with standard industry practice.

As an additional note, regardless of whether one agrees or disagrees with the conclusions and recommendations included in the Draft Report, we believe that it is useful to summarize what was accomplished as a result of the collective effort to develop the first IRP for the Southeast region. The Southeast Alaska IRP accomplished a number of "firsts" for the region, including the following:

- **General**
  - 1st comprehensive look at the key drivers that affect the region's energy future.
  - 1st comprehensive effort to conduct energy planning on a regional basis.
- **Load Forecasts**
  - 1st time that long-term load forecasts have been developed for many of the communities in the region under three different scenarios (i.e., High Scenario, Reference Scenario and Low Scenario).
- **Hydro Projects**
  - 1st region-wide comparison of potential hydro projects.
  - 1st assessment of the relative risks (e.g., development level, licensing and permitting, constructability and reliability access, business and financial structure, hydrology, operating flexibility, and project line maintenance) of potential hydro projects.
- **Other Resources**
  - 1st comparative assessment of alternative resource types, albeit not definitive.
  - 1st comprehensive inclusion of DSM/EE programs, and biomass and other renewable technologies on a region-wide basis.
  - 1st assessment of the relative risks (e.g., resource potential, project development and operational, fuel supply, environmental, transmission constraints, financing, regulatory and legislative, and price stability) of alternative resource technologies.
- **Transmission**
  - Comprehensive updating of previous regional transmission studies, along with the 1st realistic loading of transmission lines based upon the regional modeling of power transfers between subregions.
  - 1st independent screening level assessment of the AK-BC Intertie.
- **Integrated Solution**
  - 1st comparison of different types of resources, based upon currently available project-specific information.
  - 1st regional plan that demonstrates the relative benefits of investments beyond hydro projects and expansion of the region's transmission network.

C. Comment Themes

Southeast Alaska IRP's Objective Function, and its Link to the State Energy Policy and Local Energy-Related Policies and Resolutions

"In reading the Executive Summary at no time did Black and Veatch establish the maximum potential load that could be created by the development of Southeast hydro electric generation capacity. In fact AEA directed Black and Veatch to examine the current status of energy resources in the region and explore options for MINIMIZING future power supply."

"In the sponsor statement to HB 306 "An act creating a state energy policy" these core fundamental principles were outlined:

- *Promote energy efficiency and conservation*
- *Promote development of renewable and non-renewable energy resources*
- *Promote economic development through cost-effective, long-term sources of energy for communities statewide*
- *Support energy research, education, and workforce development*
- *Support coordination of government functions, which promotes streamlining of regulatory processes and overall coordination of efforts by all levels of government"*

"The SEIRP does not identify, recognize and incorporate the City and Borough of Sitka (CBS) and the City and Borough of Juneau (CBJ) Assembly approved Climate Action Plans. These plans were approved by their respective elected local governments and their respective action plans that will over time provide cleaner air in their boroughs and lessen emissions."

"Any SEIRP that Kootznoowoo will support must include development and implementation strategies to provide more stable low cost sources of energy to the region on an equalized basis, between communities and large loads."

The first quote above reflects a misunderstanding of a fundamental aspect of the analysis that underlies the Southeast Alaska IRP. The AEA did not direct Black & Veatch to "explore options for MINIMIZING future power supply." The statement in the Draft Report that led to this mistaken observation, which was made by several commenters, was "AEA retained Black & Veatch to examine the current status of energy resources in the region and explore the options for minimizing future power supply and space heating costs, while maintaining or improving current levels of power supply reliability." (page 1-1). This wording was intended to convey that the objective of the Southeast Alaska IRP was to minimize total energy costs (both power supply and space heating), not minimize electric requirements.

The second quote relates to the linkage between the Southeast Alaska IRP and the State Energy Policy. It is Black & Veatch's belief that the Southeast Alaska IRP does, in fact, reflect these core elements of the State Energy Policy. It includes a substantive focus on energy efficiency and conservation. It also promotes the development of renewable and non-renewable energy resources

with the caveat that the quality of currently available information on many specific potential projects is not sufficient to make a definitive selection at this time. This limitation, as well as the speculative nature of many potential economic development loads as discussed further later in this document, led to certain near-term conclusions and related actions that are not counter to the promotion of economic development. The Southeast Alaska IRP also addresses, albeit to a limited degree, the value of supporting energy research and education, and it also includes recommendations related to coordination of utility and government activities and the streamlining of regulatory processes.

The third quote relates to the linkage between the Southeast Alaska IRP and local energy-related policies and resolutions. It should be noted that as a regional study, it is impossible for the Southeast Alaska IRP to fully reflect the significant number of sometimes conflicting local government resolutions that have been passed in recent years. As a regional directional document, the Southeast Alaska IRP helps to set a regional direction; it remains the responsibility of regional stakeholders, including local officials, to make the decisions regarding which projects to build and how to reflect local government resolutions within the regional decision-making process.

Integrated Resource Plans (IRPs) Versus Economic Development Plans (EDPs)

> *"The draft SEIRP evaluates each new or increased power demand and each proposed project independently. While individual projects, may or may not appear economically viable, this is a regional document, and it all should be evaluated in the region's cumulative whole. The net effect of this is to consider only existing uses and not make any provision for new economic drivers for Southeast. The result is the decline and demise of the region. That is the key: this is a plan for the demise of Southeast and its people."*

> *"The draft SEIRP does not correlate economic development and creation of jobs as a component of the 50 year Integrated Resource Plan."*

IRPs by their nature, and consistent with utility industry best practices, should be conservative with regard to the input assumptions used. Without such conservatism, there is a significant possibility that decisions will be made that turn out to be imprudent resulting in stranded assets. Since the costs incurred by utilities are borne by their customers, utilities need to develop plans that will meet expected load growth, while being aware of potential additional load growth that might require them to respond quickly to changed conditions. This is why Black & Veatch included a High Scenario Load Forecast in addition to the Reference Scenario Load Forecast in the Southeast Alaska IRP.

EDPs, on the other hand, tend to be more optimistic in that they are often intended to paint a "build it and they will come" picture of what could happen if certain policies are enacted and actions are taken. This is appropriate as it helps regional policy makers to look at the potential beneficial impacts of adopting new policies.

This does not mean that IRPs and EDPs are diametrically opposed; rather, they serve complimentary purposes and regional decision makers should consider both when making choices regarding how to meet the region's future energy requirements.

The following are examples of the conservative approach taken by Black & Veatch in the development of the Southeast Alaska IRP:

- Potential mining and economic development loads - Black & Veatch included the potential impact of these loads in the High Scenario Load Forecast. To put this in perspective, the High Scenario Load Forecast is 162MW (73 percent) higher in 2061 than the Reference Scenario Load Forecast; on a relative basis, this compares to the approximately 80MW for potential regional mines shown in Table 8.5 of the Draft Report.
- Black & Veatch factored in the recent trend related to the impact of electric space heating conversions in its load forecasts.
- Black & Veatch did not make a definitive selection regarding potential hydro and other renewable projects due to the lack of quality and inclusiveness of project-related cost and energy output information available upon which to make a selection.
- With regard to wood pellets, Black & Veatch used cost assumptions based upon importing the pellets from Canada or the lower-48 states as opposed to assuming that the wood pellets are sourced locally, which would likely be at a lower cost.
- In the evaluation of potential DSM/EE programs, Black & Veatch used the Ratepayer Impact Measure (RIM) cost-effectiveness test as one of the criteria in its screening process. As discussed in the Draft Report, this is a very conservative approach and, had the RIM Test not been used, the number of DSM/EE programs that passed the economic screen, and the resulting impacts, would have been greater.

Purpose of Subregional Analysis

> *"The draft IRP breaks the Southeast region into isolated energy sub-regions and therefore neglects to consider mutual overlapping benefits of energy security, energy independence, lower costs, and creating a renewable energy industry that are perhaps only possible of achievement by integrating the region in a holistic perspective by creating a super region for energy development purposes. Instead, the SEIRP actually breaks down the region into sub-regions to create a disaggregated and "insular" resource plan that separates and decreases energy collaboration and efficiencies rather than an integrated plan that provides efficiencies and lower cost through projects built at higher utilization rates and at economies of scale."*

A number of public comments received indicate a misunderstanding of the subregional analysis completed by Black & Veatch. From a modeling perspective, it was necessary to divide the Southeast region into subregions that are not currently interconnected. This was required to evaluate the economic benefit of specific transmission connections, and is consistent with standard industry practice as it relates to the evaluation of potential transmission interconnections. Completing the modeling in this manner does not mean that the modeling was done on a subregional basis as opposed to a regional basis. Rather, the modeling (using Strategist®) was completed on a regional basis (i.e., electric costs were minimized on a regional basis) using the subregions to evaluate the cost-effectiveness of building transmission interconnections between the various subregions as part of the regional solution.

Fuel Price Forecasts

> *"The IRP states that oil is going back to normal or lower prices in eight different places in the SEIRP. This 'low oil' premise materially flaws the entire study with a universally unaccepted assumption and therefore negatively impacts the credibility of the SEIRP and invalidates its controversial recommendations that if implemented, could have harmful effects by providing Barmecidal promises to Southeast Alaska citizens. To further this point, the SEIRP premise that the region will return to low oil is contrary to and defies State of Alaska Dept. of Revenue predictions …"*

To begin, we believe that it is useful to discuss how the fuel price projections used in the Southeast Alaska IRP were developed. Under direction from the AEA, Black & Veatch used fuel price projections developed by the Institute of Social and Economic Research (ISER) at the University of Alaska Anchorage. ISER developed a spreadsheet model based on projections from the Energy Information Administration's (EIA) *Annual Energy Outlook 2010* (AEO 2010) to create fuel price forecasts for the communities that participate in the Power Cost Equalization (PCE) program, and home heating oil purchased in Anchorage, Fairbanks, Juneau, Kenai, Ketchikan, Palmer, and Wasilla. Black & Veatch then used the forecasts to develop forecasts for each of the communities included in the Southeast Alaska IRP.

ISER developed heating oil price projections using historical heating oil prices, imported crude oil prices from the AEO, and the CORAC. Prices also include a CO_2 adder based on low and high projections published in a 2007 study by MIT.

ISER performed regression analysis using the average historical price for No. 1 and No. 2 heating oil and developed prices for Anchorage, Fairbanks, Juneau, Kenai, Ketchikan, Palmer and Wasilla. The Southeast Alaska IRP used the projections for Juneau and Ketchikan to develop low, medium, and high heating oil prices in the region. Black & Veatch developed heating oil prices for the other communities by multiplying the Ketchikan heating oil price by the ratio of the community's diesel price to the Ketchikan diesel price. Black & Veatch converted the price forecasts to nominal dollars using the general inflation rate of 3.0 percent and extrapolated beyond 2030 price using the average real escalation rate for the last 10 years of ISER's projections plus the general inflation rate of 3.0 percent to create a forecast in nominal dollars from 2012 through 2061.

Predicting fuel prices is fraught with peril, and the variation in fuel prices and the related risks are addressed in the Draft Report. The first quote above identifies a common misunderstanding of the fuel oil projections that were used in the Southeast Alaska IRP. The references in the Draft Report to "oil prices returning to normal or lower prices" relate to how the load forecasts were developed for a number of communities with access to low-cost hydro power. For those communities, Black & Veatch noted that the fact that recent oil prices were higher that the ISER projections had been factored into the predictions of the number of electric space heating conversions within the load forecasts; we went on to note that the number of electric space heating conversion are expected to decline as oil prices return to normal or lower prices, as defined within the ISER fuel price projections.

As noted above, the ISER fuel price projections were based upon the EIA AEO 2010, which predicts that crude oil prices will be approximately $95/barrel in 2015 and $108/barrel in 2020. Currently, oil prices are in the $90-95/barrel range. Therefore, it would be a mistake to conclude that the

wording regarding the return of oil prices to normal or below levels means a return to "the good old days" when oil prices were much lower.

Load Forecasts

> *"The Integrated Resource Plan presumes Southeast Alaska to be a region in decline and we fundamentally object to that premise as a basis to develop this document upon."*

> *"The SEIRP artificially creates energy fire walls against industrial development loads and this negatively impacts the SEIRP analysis. In the Juneau market, the Kensington Mine energy consumption is disaggregated from the Juneau energy market to camouflage the fact that the Juneau market is already undersold and out of hydropower capacity. Adding the Kensington the Juneau market analysis could add an additional deficit of Juneau hydropower capacity by 60,000 MWh."*

> *"Juneau firm rate payers are converting oil to electric heating at an unprecedented rate. According to AEL&P Regulatory Commission of Alaska (RCA) filings in December 2011, Juneau's firm rate kilowatt hour sales increased 5.66% in the 12 month period, while interruptible customers such as the Hecla Greens Creek Mine were cut off from their interruptible power sales by -35.43% in the same 12 month period. The SEIRP failed to incorporate 2010 and 2011 data and therefore understates the unprecedented electrical growth rate occurring in Juneau …"*

> *"The SEIRP makes numerous references to the declining population in Southeast Alaska and uses population projections from the Alaska Department of Labor (ADL). According to the ADL website, new population projections will be released in spring 2012. These projections may well reflect more optimism about population trends in Southeast."*

In the development of the load forecasts used in the Southeast Alaska IRP, Black & Veatch contacted communities and utilities to gather available information. The data requested included historical sales, and customer and generation data from 2000 to 2010 for the electric utility systems. Black & Veatch supplemented this information with data from the EIA Form 861 filings when data was not provided by the utilities.

Black & Veatch also collected data for each of the communities to assess the historical trends in population and housing from the published U.S. Census Data for 2000 and 2010 and the American Community Survey (ACS) data for 2005 to 2009.

Black & Veatch also reviewed the long-term population forecast (available through 2030) developed by the Alaska Department of Labor (ADL) and used the forecast to estimate population growth or decline in the different communities until 2030.

Black & Veatch also requested information on known new loads and trends from each utility and, where appropriate, modified the forecasts to reflect this specific load information from the utilities.

Black & Veatch then developed the following three alternative load forecasts based on the historical trends of the region and the expectations of the community.

- The **Reference Scenario Load Forecast**, which represents a business-as-usual case and, in general, reflects continued operation without outside intervention. The Reference Scenario reflects the current trend in conversion to electric heat for those communities with low-cost hydroelectric generation.
- The **High Scenario Load Forecast** reflects higher load growth and is built upon the following two different factors. As previously stated, the High Scenario Load Forecast is 162MW (73 percent) higher in 2061 than the Reference Scenario Load Forecast; on a relative basis.
    - Load growth due to market penetration of plug-in hybrid electric vehicles (PHEVs).
    - Greater load growth related to higher economic growth and development, which could include increased population growth, increased mine and cruise ship loads, and or other economic development-driven loads.
- The **Low Scenario Load Forecast**, which is based on implementing the DSM/EE programs described in the Draft Report.

This approach is consistent with standard industry practices for the development of IRPs. Black & Veatch: 1) used the best publicly available information including population forecasts from the ADL; 2) based the Reference Scenario Load Forecast upon expected growth in the region, and 3) developed a higher load forecast that included potential additional load growth that might require utilities to respond quickly to changed conditions.

In the development of the Reference Scenario Load Forecast, Black & Veatch had to make certain judgment calls regarding which potential loads to include. These judgment calls, as with all judgment calls, certainly are open to question by others. However, without taking a conservative approach (which again is consistent with standard industry practice), there is a significant possibility that decisions will be made that turn out to be imprudent resulting in stranded assets. Since the costs incurred by utilities are borne by their customers, they need to develop plans that will meet expected load growth, while being aware of potential additional load growth that might require utilities to respond quickly to changed conditions. This is why Black & Veatch included a High Scenario Load Forecast in addition to the Reference Scenario Load Forecast in the Southeast Alaska IRP.

Black & Veatch believes that this is the most prudent approach to take and disagrees that this approach "presumes Southeast Alaska to be a region in decline." Nor do we believe that this approach created "energy fire walls" against industrial development loads.

Consideration of Potential Mines and Other Economic Development Loads

> *"We agree with statements in the draft SEIRP that efforts to quantify the amount and timing of the energy demands of mining projects like Niblack are speculative and in all likelihood this and other projects will proceed with the burden of providing their own energy, just as Greens Creek and Kensington have done before them. However, long term forecasts are speculative by their very nature so it would be appropriate to include informed assumptions about mining projects and other potential industrial users in the modeled future high load forecasts. This would allow the SEIRP to properly evaluate potential generation and transmission resources that could benefit the region as a whole."*

As discussed in the Draft Report, potential mine loads are considered under the High Scenario Load Forecast, which combines the potential for increased loads from unspecified sources (e.g., population growth, mines, and other economic development loads) with projected loads from electric vehicles. As previously stated, the High Scenario Load Forecast is about 73 percent higher than the Reference Scenario Load Forecast by the end of the 50 year planning period.

Currently there are two operating mines in the Southeast. The first is the Greens Creek mine served on an interruptible basis by Alaska Electric Light & Power (AEL&P), and this load has been included in AEL&P's Reference Scenario Load Forecast. The other operating mine in the Southeast is the Kensington mine. It is not connected to the utility grid in the Southeast and, therefore, is not included in the Reference Scenario Load Forecast. To interconnect the Kensington mine to AEL&P's transmission system would require approximately 30 miles of new transmission line and approximately 5 miles of submarine cable. The Kensington mine is not included in the Reference Scenario Load Forecast, but could be considered as part of the unspecified load in the High Scenario Load Forecast. Table 8-5 in the Draft Report represents potential mine development provided by Mike Satre, Executive Director of the Council of Alaska Producers.

Table 8-5 lists two other mines that potentially could be in operation by 2020. These are the Niblack and Bokan Mountain projects. Both projects are located on Prince of Wales but neither is located where they could be readily connected to the utility grid. While both mines have received significant publicity lately and may actually be developed, history has indicated that mine development is very slow in Southeast Alaska. Mine development faces significant uncertainty and is very difficult to plan for electric generation additions without the risk of having stranded investment. This is especially true in planning for hydro generation which also faces significant uncertainty. Developing an accurate load forecast including potential mine development is very difficult. Once mines develop to a point where there is a high level of certainty of operation and load requirements, plans can be developed to serve them. Further difficulty results from the fact that a mine's lifetime can be significantly less than power plant lifetimes, especially in the case of hydro projects. Generation to serve mines should be developed as part of the mine development process. When the loads are certain enough and can be interconnected for a reasonable cost, they can be integrated into the utility system.

In the Southeast, there are several hydro projects that are being developed specifically to serve mine loads. These projects are listed in the Draft Report in Table 10-3.

Given the uncertainties associated with the development of potential mines, their inclusion as part of the unspecified loads in the High Scenario Load Forecast is a prudent method of addressing them.

Consistent with other IRPs, the Southeast Alaska IRP is not a barrier to good economic projects moving forward. It provides a baseline to help define what would be a good project deserving of support. Should a specific potential mine (or any other economic development load) becomes viable, then local or regional transmission and hydro (or other technologies) projects should be specifically considered and incorporated into future regional IRPs. Additionally, it should be remembered that other programs (e.g., the AIDEA's public private partnerships) exist to provide State assistance to help cost-effective projects to move forward.

Role of Hydroelectric Power

> *"The SEIRP perhaps leaves the reader with the conclusion that tried and proven hydroelectric development and localized interties that currently provide the lowest cost per kilowatt hour rates within the entire State of Alaska are perhaps not in the best interest of our Southeast residents for their future energy needs."*

> *"During a legislative committee hearing Mr. Harper of Black & Veatch described in detail why hydropower was not cost effective."*

> *"We are disappointed that the SEIRP does not contain a list of tiered projects other than the committed projects and the screened projects. … The SEIRP does nothing to assist us in sorting the 20+ proposed hydroelectric projects that are not committed resources."*

> *"The SEIRP rated and evaluated recommended future hydropower projects on an unsubstantiated and unverifiable risk analysis that failed to consider resulting cost per kWh delivered to the ratepayer in the screening process. Further, some project sizes and expected power output does not correlate with public documents filed with the Federal Energy Regulatory Commission."*

The original goal of the Southeast Alaska IRP with regard to potential hydro projects was to complete a comprehensive economic assessment and create an ordered list of projects to be developed and identify the timing of that development. Unfortunately, as stated throughout the Draft Report, the quality and inclusiveness of currently available information on the majority of the hydro projects that passed through our initial screening, and included in the Refined Screened Potential Hydro Project List (Table 1-2 in the Draft Report), was not sufficient to make a definitive selection of which projects to develop.

It is the opinion of Black & Veatch (and its subcontractor, HDR Alaska, Inc., which assisted in the evaluation of hydro projects) that the capital cost and or energy output estimates are in the plus or minus 50 percent range for many of the most promising hydro projects. The resulting cost of power for a project with such wide variation in both cost and output estimates can vary by almost an order of magnitude (i.e., the cost of power resulting from a hydro project with an actual capital cost at the high end of the range and actual energy output at the low end of the range would be

almost 10 times higher than the cost of power if the same project had an actual capital cost at the low end of the range and actual energy output at the high end of the range).

In completing the assessment of potential hydro projects, Black & Veatch/HDR conducted an exhaustive search of the information available on the projects (including Federal Energy Regulatory Commission, or FERC, filings, information provided by project proponents, previous engineering studies, and so forth) to identify what, in our opinion, was the best information available on specific projects. It was only after this extensive data gathering that Black & Veatch, HDR, and the AEA came to the conclusion that it would be impossible to make a definitive selection of which hydro projects should be developed due to the lack of adequate information on the majority of the hydro projects.

Black & Veatch and HDR firmly believe that hydroelectric power plays, and probably will play, a critical role in meeting the region's energy needs. However, making decisions based on the currently available information would be akin to a college basketball program offering a full-ride scholarship to a promising basketball prospect in the ninth grade; that player may have great promise but a lot of things could happen that would prevent that player from being a successful player at the college level. Nowhere in the Draft Report will one find a statement that Black & Veatch, or HDR, believes that hydroelectric power cannot be cost-effective; nor did Mr. Harper state so during his testimony before the Alaska State House Energy Committee.

The Draft Report includes the five hydro projects contained in the List of Committed Resources for development in the near-term (referred to as Phase 1, 2012-2016). Also during Phase 1, Black & Veatch recommends that the State fund high-level reconnaissance studies to further evaluate the promising potential hydro projects in order to develop the capital cost and energy output estimates required for the region to make an informed selection of the hydro projects to be developed in the next round of capital projects.

With regard to the quote above that recommends that the cost per kWh be shown for each project in the Southeast Alaska IRP Report (in Tables 1-2 and 10-4, Refined Screened Potential Hydro Project List, and Table 10-7, Results of Economic and Risk Screening), nothing would be gained by doing so given the lack of quality data on the majority of potential projects. Therefore, Black & Veatch, with the concurrence of the AEA, does not include this information in the Southeast Alaska IRP Report. Once the quality of project-specific capital cost and energy output information is improved, Black & Veatch would fully agree with the recommendation that this information be provided.

Two final comments. First, despite being characterized as such by some, the Southeast Alaska IRP is not a "no hydro" plan. The Committed Resources hydro projects total approximately 19MW. An additional 50MW of hydro projects are added in subsequent years in the Optimal DSM/EE, Biomass and Other Renewables Integrated Case; this total addition of 69MW of hydro is significant when compared to the region's total current load requirements of about 170MW.

Second, the DSM/EE and biomass conversion programs recommended by Black & Veatch represent a transition strategy that will deliver significant energy cost savings to the region's citizens and businesses until the quality of project-specific information is improved so that decisions regarding the next round of hydro investments can be made.

"However, Camp #70 is concerned and dismayed that the State of Alaska's Energy Authority (AEA) would release a draft report that otherwise discourages investment and development of Alaska's abundant resources, especially energy resources that would significantly improve the quality of life of so many local businesses, families and elders. At this time the high cost of energy is impacting the health of some of our most "at risk" elders and children. Additionally, the high cost of energy is the primary deterrent to the economic development of smaller communities in Southeast Alaska. This report, if adopted would permanently impoverish many communities in our region and ensure the need for public energy subsidies until those communities cease to exist."

"The IRP is overly optimistic in its prediction that wood heating can supply 80% of the region's heating load. There are simply too many existing buildings that will not be converted because: a) the owner cannot afford the conversion cost; b) the owner does not want the burden of maintaining a wood heating system, c) the system does not fit the building or site, d) electric conversions are less expensive and can be made without removing an oil-fired backup system or e) heat pumps with their higher efficiency are simply a better heating option."

"In all the respects above, the draft IRP has utterly failed to evaluate heat pump options and to assure that its recommendations will lead to minimum energy costs and reliable power systems. By concealing the fact that heat pumps outperform wood pellet stoves on an operating cost basis and failing to give heat pumps the same kind of economic evaluation as was done for biomass, the draft IRP failed to fulfill its mission. An 'optimal case' alternative (sensu 1-36) was not developed for this least-cost technology, which is a broad and fatal flaw in the foundation of the draft IRP that invalidates the conclusions (Ch. 20) and recommendations (id.) that are built on that foundation."

"A primary concern over biomass CO_2 emissions is about the atmospheric burden that will exist from the present time through the next few decades. This is the time window available for humanity to avert the worse effects of climate change and ocean acidification, and in particular the earlier emissions are made in the window the more harmful they are because they have more time to act on the climate before society is able to make deep reductions in annual emissions."

"As stated above, the report recommended an aggressive DSM/EE and Biomass implementation program. This will be a significant effort that could take decades and will require, as the report states, tens of millions of dollars. The probability of success is very uncertain at this point. This is a massive undertaking and if this is to be successful, the public must become involved as they are being asked to change their 'behavior' with respect to energy consumption and choice of fuels for space heating."

" … it would seem like the State should be interested in subsidizing the development of pellet mills in Southeast similar to its support for hydro and transmission projects. Unfortunately, the recommendation in the report for biomass conversion is support for a conversion program that is aimed at the end user, not support for development of pellet mills that would in turn create new jobs for SE Alaska."

This element of the Southeast Alaska IRP resulted in more public comment than any other issue. Issues raised include: 1) the reasonableness of the 80 percent conversion assumption, 2) the economics of biomass relative to heat pumps, and 3) the environmental impact of biomass.

Before addressing these specific issues, it is important to note that space heating represents between 60-75 percent of the total average monthly bills for residences and businesses in the region. This reality is one of the reasons why the Southeast Alaska IRP was focused on both electricity and space heating. It is also important to put this issue in the context of the rest of the Southeast Alaska IRP. Black & Veatch's mission per the contract was to "develop least cost options for the provision of electricity, space heating and transportation for the long run, to enhance economic development." Additional transmission interconnections are shown not to be cost effective, leaving non-electric space heating conversion as the best alternative to reduce costs for many of the communities.

In the Draft Report, Black & Veatch shows the economic impact if 80 percent of the region's existing residential and business fuel oil space heating equipment was converted to biomass. This conversion level assumption is not based upon any detailed market studies as was discussed in the Draft Report; in fact, Black & Veatch identified a number of uncertainties that exist with regard to what conversion levels are achievable. The 80 percent conversion level was used to demonstrate the impact if a comprehensive, serious program was implemented throughout the region; the actual conversion level will most likely be less but the bottom line conclusion still applies - biomass conversions would result in significant savings which can bring real relief to the region now. Clearly, we did a poor job of putting the 80 percent conversion rate in the proper context within the Draft Report.

Therefore, we have evaluated the capital costs and savings that would result from a more realistic conversion level. Table 1 is similar to Table 15-3 in the Draft Report, but reflects a conversion of 30 percent of the estimated oil space heating over a 10 year period beginning in 2012 compared to the 80 percent estimated conversion rate shown in the Draft Report.

Table 1 Savings from Pellet Conversion Program - 30 percent (Cumulative Present Worth Costs, $1,000)

REGION	EXISTING OIL SPACE HEATING COSTS (A)	OIL COSTS (B)	PELLET COSTS (C)	COST OF PELLET SPACE HEATING EQUIPMENT (D)	TOTAL PELLET PROGRAM COSTS (E)=(B)+(C)+(D)	SAVINGS (F)=(A)-(E)
SEAPA	977,320	688,029	89,415	23,203	800,647	176,673
Admiralty Island	22,334	18,213	1,769	448	20,430	1,904
Baranof Island	460,426	324,653	36,855	8,871	370,379	90,047
Chichagof Island	58,459	36,675	4,481	1,052	42,208	16,251
Juneau	2,120,883	1,444,691	183,865	41,473	1,670,079	450,854
Northern	147,786	104,237	8,972	2,568	115,777	32,009
Prince of Whales	366,725	251,477	29,051	5,594	286,122	80,603
Upper Lynn Canal	347,271	240,731	25,470	6,108	272,309	74,962
Total Southeast Region	**4,501,204**	**3,108,707**	**379,878**	**89,317**	**3,577,902**	**923,302**

Several comments addressed the issue of whether the wood pellets should be imported. As stated in the Draft Report, to be conservative, we assumed that the wood pellets would be imported from either Canada or the lower-48 states. The development of one or more regional manufacturing plants has the potential to lower costs but significant additional feasibility work is required to evaluate this option. Therefore, we used imported prices in our economic analysis to be conservative. If economically justified, State financial assistance for the development of one or more pellet plants would be beneficial.

The Draft Report never states that the energy cost for pellets is lower than the energy cost for heat pumps; however, we did not emphasize that point enough. In addition, at least one commenter was confused by Table 16-9 in the Draft Report which presents that the energy cost of heat pumps is lower in some instances than the energy cost of pellets. While the presentation in Table 16-9 of the Draft Report is the same as used in "*Ground-Source Heat Pumps in Cold Climates, The Current State of the Alaska Industry, a Review of the Literature, a Preliminary Economic Assessment, and Recommendations for the Research*," prepared by Alaska Center for Energy and Power Cold Climate Housing Research Center, we have replaced Table 16-9 (in the Errata Sheet) in an attempt to reduce the confusion. In addition, we have revised Section 16.3.3 (in the Errata Sheet) to include greater detail on heat pumps. The conclusions, however, remain the same. On an energy cost only basis, heat pumps can be lower in cost than pellets for communities with low cost hydro generation. Even though the cost of energy for heat pumps is less than half that of resistance heating, nearly all of the conversions have been and continue to be to resistance heating because of the significant higher capital cost of conversion with heat pumps. A conversion program to heat pumps would have significantly higher capital costs than a conversion program to pellets and the conversion program to heat pumps would still add nearly half the electric load per conversion that resistance heating does. Such a program could only be conducted for communities with low cost hydro generation. High electric cost communities would still need to convert space heating to pellets. The detailed

market analysis and program development proposed in the Draft Report will likely result in a limited role for heat pump conversions especially for conversion of existing electric resistance heat to heat pumps.

The encouragement of heat pumps would increase the use of electricity. The region's excess hydro capacity is rapidly disappearing due to the recent trend toward electric space heating conversions. As a result, without the development of new hydroelectric or other generation projects, or restrictions on future conversions to electric space heating, all customers in these communities will pay higher rates for electricity as a result of higher future use of diesel for electric generation, and communities will be denied new economic development opportunities. This reality raises the question, what is the highest value use of current and future hydroelectric power? An important element of this question is the alternative energy sources that can be used to meet specific end-uses. For example, in the case of lighting, there is no practical alternative to electricity that provides the same level of quality of life. However, in the case of space heating, there are alternatives such as biomass, including the use of wood pellets, which for all intents and purposes do not use local electricity.

Given the fact that the region's transmission network is very limited in terms of the number of communities connected, and the size of loads within the region adversely affect the direct economics of additional transmission segments, hydroelectric power within the region will remain a limited resource. Therefore, the region should carefully consider the best use of this limited resource. As noted in the Draft Report, biomass is a particularly good option given the local and abundant nature of this solution, and the relative economics and availability of supplies within the region, both as a short-term solution for the region as well as a long-term solution for certain communities.

Another issue raised is the environmental impact of biomass, particularly with regard to CO_2 emissions. We acknowledge that there is no consensus on this issue. Furthermore, there is uncertainty with regard to whether or not the Federal and State government will pass additional legislation and regulations related to climate change that could impact this issue. Regardless of whether one believes that biomass is or is not "carbon neutral", it will result in significant reduction in emission levels relative to existing fuel oil equipment, at least on a long-term basis.

Biomass space heating conversions will accomplish three very important benefits: 1) they will help preserve the region's available hydro resources for higher value end-uses, 2) they will provide significant cost savings for residences and businesses throughout the region, and 3) these savings are achievable now, and are not dependent upon multi-year construction periods that exist with hydro and transmission projects.

As noted in the Draft Report, the region should conduct a number to studies, and address certain issues, if it chooses to implement a biomass conversion program, including:

- Identifying the total market potential for biomass conversion in each subregion.
- Identifying the ability of the region, and subregions, to implement an aggressive biomass conversion program.
- Determining the most effective way to leverage existing biomass conversion programs in the region (e.g., biomass programs being implemented by the U.S. Coast Guard, USDA Forest Service, and Sealaska).
- Determining the most effective way to deliver these programs (e.g., individual utilities, a regional entity, and/or public-private partnerships).
- Determining the actual receptiveness of residential and commercial customers.

In conclusion, Black & Veatch continues to recommend that the region consider the implementation of a region-wide biomass conversion program for a number of reasons:

- Biomass conversion is an appropriately scaled solution given the size of the region.
- A regional program can be implemented throughout the region in a manner that ensures equity among all communities.
- The region can begin implementing the program now, with the resulting savings.

One final note on pellets. In addressing the comments Black & Veatch found that the capital cost for pellet conversion for the Southeast Alaska Power Agency (SEAPA) region had been incorrectly shown in Table 15-4. The correct estimated capital cost for pellet conversion for the Southeast Region is $227 million instead of $532 million, but still a very sizable amount.

Role of Demand-Side Management/Energy Efficiency (DSM/EE)

> *"It is our understanding that the disparate investments recommended under the plan reflect the failure of most efficiency programs to pass a ratepayer impact measure screening (RIM) in areas with high cost utilities. The RIM test is designed to assess the rate impact on non-participants and looks at whether electricity rates will increase or decrease as the result of program implementation. Black and Veatch determined that energy savings of most programs would lead to significant revenue losses for rural utilities, and that these losses would be recovered by rate increases. As a result, only one cost-effective efficiency measure is identified for residential application in rural communities. … Although we recognize that the RIM test is a conservative screen, we have concerns with its implications in regards to how energy efficiency will be perceived in the region. Due to its nature, the test often precludes energy efficiency investments and many other states have lately rejected the test as a primary program determinant and are instead opting to use broader tests. … We are concerned that B&V's screening analysis gives a negative signal to utilities, the state and Southeast communities in regards to future investment opportunities in efficiency and demand side management in rural areas."*

> *"Communities with the highest utility and energy rates should be prioritized to receive the DSM, EE, and weatherization services and training first."*

As described in the Draft Report, Black & Veatch completed a cost-effectiveness screening of a large number of residential and commercial DSM/EE measures using the three industry-standard DSM/EE cost-effectiveness tests: the Total Resource Cost (TRC) Test, RIM Test, and Participant Test. Furthermore, Black & Veatch conducted the standard cost-effectiveness tests for three categories of communities, including high-cost utilities (those communities who are dependent upon high-cost diesel generation), mid-cost utilities (those communities who have access to some low cost hydro generation but have higher costs due to economies of scale), and low-cost utilities (those communities who have sufficient low-cost hydro generation to meet almost all of their electric demand).

For the cost-effectiveness screening, Black & Veatch established the criterion that a DSM/EE measure had to pass all three of the standard DSM/EE cost-effectiveness tests. This criterion is both conservative and restrictive: conservative in that this requirement helps ensure that the specific DSM/EE measures will prove to be cost-effective, and restrictive in that more measures would have passed the cost-effectiveness screen if Black & Veatch had not required a measure to pass all three cost-effectiveness tests. Black & Veatch believes that this is the most appropriate approach given the limited end-use and vendor DSM/EE-related information available at this time and the region's limited experience with these types of programs.

Black & Veatch is in agreement with the statement in the first quote above that the RIM Test is restrictive. Furthermore, we agree with the comment that a number of states do not require DSM/EE measures to pass the RIM Test to be deemed cost-effective. Therefore, we are not philosophical opposed to the region deciding to not use the RIM Test as a cost-effective screening criterion, nor are we opposed to the suggestion that high-cost communities with the highest utility and energy rates should receive priority for the implementation of DSM/EE programs, as long as the implications of those decisions are understood. We still believe, however, that this was the most appropriate approach to the screening of the DSM/EE measures at this time for the reasons stated above.

SE Intertie

> *"On page 1-6, I disagree with the Black & Veatch (B&V) findings stating that the implementation of a backbone transmission system is not economic and the AK-BC is not a viable project given current conditions. The Draft SEIRP repeatedly stresses that its analysis is based on incomplete information. (Page 10-1 states, 'To get all projects to a comparable level of data quality requires a significant amount of further study that is outside of the scope of this effort; consequently, it is impossible at this time to make a definitive selection of which hydro projects should be developed within each subregion to meet future electric requirements.')"*

> *"We believe there is an opportunity to increase the trade and prosperity of both Alaska and Yukon and that this should be a serious option for consideration in the SE Alaska IRP."*

As part of its analysis, Black & Veatch reviewed the numerous previous studies regarding transmission in the Southeast region including the *Southeast Alaska Intertie Study Phases 1 and 2*, conducted by D. Hittle & Associates in December 2003. We also updated the capital cost estimates for each of the following transmission segments to reflect current costs and our own transmission-related experience:

- SEI-1A: Hawk Inlet - Hoonah
- SEI-2: Kake - Petersburg
- SEI-3: Ketchikan - Metlakatla
- SEI-4: Ketchikan – Prince of Wales
- SEI-5: Kake – Sitka
- SEI-6: Hawk Inlet – Angoon – Sitka
- SEI-6 Alternate: Hoonah – Tenakee Springs – Angoon – Sitka

- SEI -5 and SEI-6: North - South
- SEI-7: Hoonah – Gustavus
- SEI- 8: Juneau – Haines
- SEI-9: Pelican - Hoonah

The Southeast Alaska IRP significantly differs from the D. Hittle transmission study in that it focuses on integrated solutions for communities in the Southeast with equal emphasis on generation, transmission, conservation and energy efficiency, as well as space heating. This integrated approach provides more robust solutions to meeting the communities' energy requirements.

The AEA directed Black & Veatch to consider transmission from the perspective of a "public benefit investment" as part of its evaluation of potential transmission segments. As a result of this directive, Black & Veatch analyzed the economics of potential transmission investments in two ways.

First, Black & Veatch, examined the best information available (modified where appropriate based upon Black & Veatch's transmission construction and operating experience) regarding the capital and operations and maintenance (O&M) costs of the specific transmission segments listed above. An economic screening was then conducted to compare the annual capital carrying costs and O&M expenses of transmission segments to the value of the diesel power displaced. None of these transmission segments passed the economic screening of having lower transmission costs on a $/MWh basis than diesel generation.

Additionally, Black & Veatch evaluated the economics of potential transmission segments assuming that: 1) the State provided financial assistance in the form of a grant equal to 100 percent of the construction capital costs, and 2) the local utility would be responsible for covering the annual O&M expenses, as well as an annual contribution to a repair and replacement (R&R) fund to ensure adequate monies for future major repairs and replacement investments to keep the transmission system in good shape for decades. This was referred to as the "Public Benefit Case".

In this case, the cumulative present worth costs were determined by modeling the subregions with Strategist® using the generic hydroelectric projects, as described in Section 10.0, with and without the subject interconnection. The cumulative present worth savings from the interconnected operation, minus the O&M and R&R costs for the interconnection, are compared to the estimated capital cost of the proposed interconnections to determine the estimated benefit-cost ratio for each interconnection. As indicated in Table 12-13, the benefit-cost ratios are low (ranging from 0.10 to 0.32), indicating that there are not enough savings from the interconnection to offset the capital cost of the interconnection.

In considering the results of this analysis, it is important to note that the "SE Intertie" (with the exception of two segments: the Kake – Petersburg Intertie and the Ketchikan – Metlakatla Intertie) was not designated by the Advisory Work Group (AWG) as a "Committed Resource." Second, the economic results are driven by the small loads that exist in the region, and demonstrate the economic difficultly of following a "go big" strategy to meeting the region's future energy needs. Third, it should be noted that the results are not significantly affected by the capital cost assumptions used; for example, even if the capital costs were 50 percent less than those used in the Southeast Alaska IRP, the resulting benefit-cost ratios under the Public Benefit Case would still be well below 1.00 (i.e., 0.2 to 0.64).

Finally, it should be noted that an interconnection from Skagway to Whitehorse could also support mining loads that might develop in Canada. The interconnection might be economical if the loads

were large enough and they could be supplied by low-cost hydro projects developed in the Southeast. However, there is uncertainty associated with both the mine development and the hydro project development.

Therefore, the issue of whether the region should build (presumably with State funding) additional transmission segments beyond the transmission interties included in the list of Committed Resources is a matter of public policy and a function of the target return on investment that the State establishes; such policy decisions are outside of the scope of the Southeast Alaska IRP. Having said that, it should be noted that other State investment alternatives considered in the Southeast Alaska IRP had benefit-cost ratios greater than 1.0, including the DSM/EE and biomass conversion programs included in the Preferred Resource Plan; furthermore, Black & Veatch expects that a number of potential hydro projects will ultimately prove to be cost-effective (i.e., benefit-cost ratios greater than 1.0) once better cost and operating information is available. One way of looking at this issue is to ask the question, "if the State was to make a $300 - $500 million investment (note: the estimated capital cost of all of the transmission segments evaluated in the Southeast Alaska IRP totals more than $900 million) in the development of the region's energy infrastructure, what would be the best use of that investment? As one regional stakeholder noted at the Southeast Conference Mid-Session Summit, "State money may seem to be free, but it is limited." Certainly, the Governor, Legislature, and regional stakeholders will ultimately make the decision whether to build the SE Intertie.

AK-BC Intertie

> *"The first assumption we would challenge is the implied concept that the AK-BC Intertie would be either a purely 'export' line, or a purely 'import' line. We believe that NO analysis was done of the most obvious scenario of a 'combined load' operation of this transmission line, with energy and therefore revenue flowing both directions."*

> *"The draft SEIRP discounts the possibility of an AK/BC intertie. Even if we accept the premise that mineral development in Southeast Alaska is too speculative to investigate, we cannot ignore the modern day mining boom in British Columbia and Yukon. Alaska should be looking at these projects as a means to an end to develop our hydro-electric resources in Southeast Alaska and to discount this opportunity is very short-sighted."*

As discussed in the Draft Report, Black & Veatch completed a high-level economic screening of the proposed AK-BC Intertie, which would connect the Southeast region to the BC Hydro transmission network in British Columbia, allowing for the export and or import of power to or from British Columbia and the lower-48 states. Black & Veatch conducted a screening analysis for two cases: 1) the "export scenario" and 2) the "import scenario," and concluded that it was not a viable resource under current market conditions.

For the export scenario, Black & Veatch estimated a net back price of $21 - $77/MWh. The net back price represents the resulting revenue generated based upon the competitive market price for the power sold, minus the wheeling costs and losses incurred to move power to the market as well as the impact of the annual AK-BC Intertie costs that would need to be recovered.

With regard to market prices, we used the California Renewables Market Price Referent Value as the basis for establishing a market price for this analysis because it represents a benchmark for long-term, firm, renewable power sold in a high-cost market that has an aggressive Renewables Portfolio Standard (RPS); as a result, the Referent Value is significantly higher than average California spot market prices in recent years. It is impossible to conclude that there is a better market price to use for this screening evaluation than the California Renewables Market Price Referent Value without a more detailed prediction of future market prices, and without a detailed assessment of both term and spot market price mechanics for imports into the Western Electricity Coordinating Council (WECC) control area, to determine the most appropriate export strategy to maximize revenues.

The large range in the net back price is driven by the amount of power actually transmitted over the AK-BC Intertie. The low end of the range is based upon the transfer level estimate (65,000 MWh) developed by Hatch Acres in its report, "*AK-BC Intertie Feasibility Study SE Alaska,"* completed in September 2007. This is the most recent and comprehensive of the previous studies of the AK-BC Intertie. The high end of the range is based upon a power transfer estimate (325,000 MWh) that is five (5) times greater than the level assumed by Hatch Acres. A transfer level of 325,000 MWH is equivalent to 74MW of power at a 50 percent load factor.

This net back price is lower than the projected cost of potential hydro projects in the region. For example, Whitman Lake is now projected at around $110/MWh and Cascade Creek showed a 50 year levelized energy cost of $103/MWh in Exhibit D of its Draft FERC License Application).

Black & Veatch completed a similar analysis for the import scenario and estimated the price of power delivered to the SEAPA system to be between $137-141/MWh.

It should be noted that Black & Veatch's analysis of the export and import scenarios did not include: 1) any costs associated with the interconnection of hydroelectric projects to the AK-BC Intertie (applicable to the export scenario) or to move power from the SEAPA system to a local load center (applicable to the import scenario), 2) the costs associated with any required SEAPA system improvements, 3) any costs related to the Canadian transmission segment between the Canadian border and BC Hydro's transmission system, some of which may need to borne by the AK-BC Intertie developer, or 4) any costs associated with the marketing and dynamic scheduling of power for export. As noted in the Draft Report, the additional costs associated with these unknowns could be significant; in fact, the combined cost impact of these unknowns could be greater than the Annual AK-BC Intertie Costs.

It is for these reasons that Black & Veatch concluded the AK-BC Intertie was not a viable resource under current conditions.

The first quote above suggests that the screening results would be different if Black & Veatch had included a scenario that included both the exporting and importing of power. The flaw with this logic is that the "combined load" scenario occurs only if power can be sold into a competitive export market at a net back price that is greater than the cost of generating the power and the results of the export scenario indicate that this condition cannot be met even under an optimistic assumption regarding the amount of power that could be exported.

However, in the Draft Report, Black & Veatch acknowledges that given the 50 year time horizon for this study, and the volatility of North American power market dynamics and other factors that affect the economic viability of the AK-BC Intertie, it is impossible to conclude with absolute certainty that the AK-BC Intertie would not, under any set of conditions, become a viable project.

Therefore, we identified various conditions under which the AK-BC Intertie might become economical, including:

- The expected monthly profile of electric sales (or purchases) and whether those sales (or purchases) would be under the terms of a long-term firm contract or on the spot market is clearly defined.
- Prices in potential export markets in North America (principally British Columbia, Pacific Northwest, and or the Southwestern region of the United States) increase significantly due to capacity and energy shortages, continued increases in applicable RPSs, and or increased environmental regulations that cause existing generation facilities to be retired or prohibit planned facilities from being built.
- For potential import, costs for new generation will have to increase substantially over the costs for potential hydroelectric projects capable of meeting Southeast Alaska's energy requirements. This could be the result of large project cost increases or significant load increases that exceed the availability of lower cost regional hydroelectric projects.
- State energy policy decisions lead to the consideration of the AK-BC Intertie as a "public good" investment, whereby justification of the project is made on public good grounds, as opposed to fundamental economics.

Black & Veatch also discussed in the Draft Report the need for a detailed business plan to be developed prior to the AK-BC Intertie being considered a viable project in the future. The development of this business plan needs to include: 1) technical studies, 2) market assessment, 3) risk assessment, and 4) operational assessment (additional details of the nature of studies that need to be completed in each of these four categories are provided in Section 12.8.5 of the Draft Report). In the lower-48 states, it is typically the responsibility of project proponents to complete and or fund these studies.

Propane, Liquefied Natural Gas (LNG), and Natural Gas

> *"Coastal communities should look to Alaska's glut of natural gas and existing LNG plant. The conversion of existing diesel generating plants to use LNG would be relatively inexpensive and straight forward – and would not result in a large O&M cost. It was a disappointment to find no reference to LNG in the draft."*

> *"Curiously, there is an excellent remedy here which has not been objectively examined. That remedy is to convert the rural community's existing diesel powered engines to run on natural gas, which is the cleanest form of fossil fuel with the lowest rate of carbon emissions and virtually no impacts on air quality. Alaska's natural gas resources are world class. Our distribution system of barges supplying diesel and other liquid fuels to rural communities are easily converted to also deliver natural gas or LNG. Unfortunately, LNG was given short shrift in the Draft IRP."*

As discussed in Section 16 of the Draft Report, another potential heating option for communities in Southeast Alaska is the utilization of propane from the Alaska's North Slope. This could especially be cost effective for remote communities that can pay from $4 to $8 per gallon currently for diesel delivery. Table 16-7 shows that the cost of propane would need to be to $1.43/gallon in order to compete with wood pellets costing $250/ton on a fuel cost per MBtu basis ($19.53/MBtu for wood pellets from the table). This break even figure is for the fuel only and does not account for differentials in fuel delivery and handling infrastructure that may be needed for each option.

There have been multiple studies evaluating the feasibility of a more developed delivery system of propane to the coastal and river communities in Alaska in the past six years and the economic results look potentially promising. Additionally, there is much activity regarding the near-term development of markets for propane being produced on the North Slope and there is the potential that North Slope propane supplies could be provided at a substantially lower cost than the current cost of propane supplies from Canada. Depending on the future activities surrounding the development of additional propane supplies and transportation networks, based from either the North Slope or the Cook Inlet, an increased role for propane could be cost effective for Southeast Alaska and these developments should be monitored.

Although not specifically addressed in the Draft Report, Black & Veatch also considered the LNG and natural gas options. These options were not evaluated in detail because of the very high costs that would be incurred to build the necessary infrastructure, including: 1) in the case of LNG, the re-gasification facilities necessary to convert LNG into natural gas, 2) the pipeline infrastructure to move the natural gas from the receipt point to communities throughout the region, and 3) the pipeline infrastructure required to move gas within a community from the point of receipt (i.e., city gate) to homes and businesses.

Impact of the Roadless Rule

> *"The Roadless Rule does not circumscribe the ability of developers of energy projects to seek roads for dams, power plants, transmission lines to the grid and other facilities under the authority of the Federal Power Act (FPA), and need not restrict intertie development either. 16 U.S.C. 823d(a). The rule recognizes that statutes, like the FPA, may permit roads that it otherwise bars and includes an express exception for a 'road needed pursuant to reserved or outstanding rights, or as provided by statute or treaty'. See 36 C.F.R. 294.12 (b)(3). The FPA further empowers the Forest Service to grant or deny such requests based on their impact and necessity regardless of whether they are in or outside of roadless areas."*

As noted in the Draft Report, the largest consideration related to use of Federal lands is perhaps the Forest Service 2001 Roadless Area Conservation Rule (the Roadless Rule) that limits road construction on designated areas of public land, called "inventoried roadless areas." The rule was passed in 1991 to help prevent erosion, pollution, and species loss in National Forest areas. The restricted access to the Tongass National Forest has impacted the timber industry and, to an extent, the mining and other industries.

As is well known to regional stakeholders, the Roadless Rule has been subject to several court actions since 2001 and the ultimate outcome is uncertain at this time. While the quotes above suggest optimism, Black & Veatch heard many regional stakeholders express less optimistic viewpoints regarding the impact that the Roadless Rule will have on the development of hydro and transmission projects in the region. Black & Veatch is not in a position to render an opinion regarding the ultimate outcome and impact of the Roadless Rule and, hence, believes that it is still appropriate to identify it as an important land use issue that could have an impact on the region's energy future.

Role of the Private Sector

> *"Removing the road blocks to private capital participating achieves the end goal of the State of Alaska not having to fund all infrastructure costs and allows for the best projects to move forward first. Importantly it also creates an incentive to remove subsidies of all form from the State of Alaska to the region in the context of a 50 year plan."*

> *"Specifically, the SEIRP casually mentions the Federal Energy Regulatory Commission's Open Access Tariff Reform (OATT). But the SEIRP fails to describe and inform the public what and how OATT successfully works in the lower 48; how OATT would reduce the cost of power to Alaskans; identify and discuss the advantages that adopting OATT would bring to Alaska and how adoption of Open Access Transmission Tariff would compliment State Energy policy in providing non-discriminatory access to private and public power developers."*

> *"Make no mistake; the developing our renewable energy of Southeast Alaska is a Southeast Alaska development of resources and its development is consistent with the public interest. There are three things that the State of Alaska and the Alaska Energy Authority must do to encourage private investment and private development of Alaska's renewable energy resources: Encourage and provide non-discriminatory access to markets; Encourage and provide access to transmission line infrastructure under Open Access Transmission Tariff reform (OATT); and take steps to reduce and eliminate State of Alaska governmental barriers that regulate and restrict independent power producers from investing in power generation that will result in lower energy costs to Alaska consumers."*

> *"OATT – Open Access Transmission Tariffs … mentioned, but not explained or explored making this an impotent statement."*

Black & Veatch firmly believes that the private sector plays an important role in securing the region's energy future. In the Draft Report, Black & Veatch included the following recommendations aimed at making the Southeast region a more attractive market for private investment:

- **Develop Standard Power Sales Agreement (PSA)** that could be used by project proponents and the potential purchasers (e.g., utilities) of a project's power as the starting point for negotiations. Financing for potential projects will not occur without a clear identification of who will buy that power, and the terms and conditions associated with the sale. The existence of a standard PSA will quicken the time required to negotiate an agreement and lower the related costs.
- **Consider Development of Open Access Policy and Related Tariff** (commonly referred to as an Open Access Transmission Tariff [OATT]). Over a number of years, and as a result of thousands of hours of negotiation and litigation among industry stakeholders, the FERC has developed and implemented a standard OATT which governs the terms and conditions of service for transmission service in the lower-48 states. While transmission service in Alaska is not under the jurisdiction of the FERC, Black & Veatch believes that the FERC OATT should be the starting point for the development of a transmission open access policy for the region and State.

Black & Veatch acknowledges that the Draft Report does not identify all of the barriers, including regulatory barriers, which have a negative impact on the participation of the private sector in the region and the State.

Adequacy of the Public Participation Process

> *"The discussion of the stakeholder input process in Section 2.4 is inadequate. Residents deserve to know how and when input was gathered from each community. As a minimum, please include a list of all communities visited, dates, number of attendees, and a brief description of the meeting type, e.g., met with utility company and city officials or held a public meeting."*

As discussed in the Draft Report, one of the AEA's directives to Black & Veatch was to proactively solicit input from a broad cross-section of the Southeast region's stakeholders. As part of the stakeholder involvement process, the AEA assembled the AWG, which provided input on a number of project-related issues, including the following:

- Project objectives, scope, and approach.
- General and project-specific input assumptions.
- Potential projects to be treated as Committed Resources.
- Preliminary results, conclusions, and recommendations.
- Draft report.

This Group included the following members:

- Rick Harris, Sealaska Corporation, Chairman
- Chris Brewton, City of Sitka Electric
- Paul Bryant, Metlakatla Power & Light
- Dave Carlson, Southeast Alaska Power Agency
- Bill Corbus, Alaska Electric Light and Power
- Tom Crafford, Alaska Department of Natural Resources
- Russell Dick, Huna Totem
- Bob Grimm, Alaska Power and Telephone Company
- Steve Henson/Clay Hammer, Wrangell Light & Power
- Henrich Kadake, City of Kake
- Mike Kline/Tim McConnell, Ketchikan Public Utilities
- Dan Lesh/Angel Drobnica, SEACC
- Richard Levitt, Gustavus Electric
- Jeremy Maxand, City and Borough of Wrangell
- Tim McLeod, Alaska Electric Light and Power
- Jodi Mitchell, Inside Passage Electric Cooperative
- Joe Nelson, Petersburg Municipal Power & Light
- Scott Newlun, Yakutat Power
- Merrill Sanford, Assembly Member, Juneau
- Paul Southland, ACE Coalition
- Barbara Stanley/Larry Dunham, USDA Forest Service
- Robert Venables, Southeast Conference

In assembling the AWG, the AEA tried to balance the desire to have as broad of a representation of regional stakeholders as possible while keeping the size of the AWG manageable. Going forward, this AWG may be expanded to include representation from other stakeholder groups.

In addition to working with the AWG, Black & Veatch took the following actions to increase the level of public input into the process of developing the Southeast Alaska IRP:

- Participated in two technical conferences. The first technical conference was at the beginning of the project to discuss the objectives, process and schedule to be followed, as well as to receive initial input from regional stakeholder regarding issues that need to be addressed. The second technical conference occurred after the Draft Report was issued at the Southeast Conference Mid-Session Summit.
- Participated in approximately 50 stakeholder meetings that were held during the course of the project (Attachment B includes a list of these meetings).
- Participated in eight AWG meetings to which the general public was invited.
- Conducted other discussions with utilities and community leaders to gather information (e.g., input data required for the development of the three load forecast scenarios) and to better understand specific issues faced by each utility or community.

It should be noted that the level of public participation that occurred during the development of the Southeast Alaska IRP was greater than what typically occurs, even in the development of regional IRPs. For example, the public participation used during the development of the Railbelt Regional Integrated Resource Plan (RIRP) did not include meetings with individual communities as was the case for this project.

"Define 'transmission': do not limit to electricity via wires and cables. We probably cannot supply all a community's, or a region's, energy needs via electricity alone, so we should not try, or pretend that we can. Attractive alternatives may be available. Options to electricity for gathering, transmission, firming storage, distribution, and end-use may be technically and economically attractive for SE AK. Anhydrous ammonia (NH3) looks attractive, but we need a new synthesis process to improve upon the electrolysis plus Haber-Bosch process."

"This analysis looks 50 years into the future. I find it hard to believe that other significant sources of electricity such as tidal, which we are rich in, will not be online, yet the focus of the report seems to be hydropower. It is important to remember that we are a community of islands in Southeast, and we each have our own issues and resources. While making us all one happy interconnected family sounds like a nice goal, that probably is not realistic economically, nor in some areas desirable."

"*Consider this however, the RIRP [Railbelt Integrated resource Plan] completed by Black and Veatch, stated in unequivocal terms, 'It is Black and Veatch's belief that the formation of a regional entity is critical.' And in fact, the effort was made to form a regional entity and for a variety of reasons it failed. But that doesn't mean the concept doesn't work. It does."*

"We are heartened that the AEA is willing to create an ongoing dialogue with the mining sector and the interconnection between mining and energy. We believe that the tourism sector, particularly as it relates to cruise ship plug ins, needs the same type of dialogue created. We feel a helpful relationship has been further forged to facilitate targeted planning of energy production, transmission, and consumption and will need to be nurtured as the region moves forward. We view the next steps as an extremely valuable and mutually beneficial opportunity for open communications and planning."

"In summary, the report clearly recommends DSM/EE and Biomass programs as a preferred path forward for most of Southeast Alaska's subregions. This is a monumental paradigm shift for the region and will require a very significant and intense effort if this recommendation has any chance of being successful. The State of Alaska must indicate its support or non-support of the report's recommendations as well as the report's recommendations for implementing the program. The region's utilities (including SEAPA) simply cannot 'hang in limbo.'"

"Page 10-2, Need to Develop Standardized Decision Package for Potential Hydro Projects and Linkage to Renewable Energy Grant Fund. This is a good discussion and methodology. The requirement to have a business plan including power sales or power purchase agreements in place makes good sense and leads to the best uses for State capital."

"Challenges presented with the DSM/EE/Biomass Recommendations. The successful implementation of these programs will require a high level of collaboration between the State and the region's communities and utilities. The State must take the lead role and provide the necessary funding, which will be substantial. Public education will take intensive community involvement. In spite of this, there may be long-term benefits by implementing a successful program."

"Table 17-18 (and the later Table 21-9) shows a recommendation for 20 recon-level studies of hydroelectric projects in the 2012-2013 time frame. It would seem like studies of all of the refined screened potential hydro projects might be warranted, but no others. … I believe it would be more valuable to have a single contractor review all of those projects and attempt to bring the cost and generation estimates to a common basis as input to the nest SEIRP iteration."

As discussed in the Draft Report, Black & Veatch believes that it is important for the region to think about the future in two phases with regard to long-term resource decisions, as shown in the following table and discussed below:

- **Phase 1** - the next five years (2012-2016)
- **Phase 2** - beyond the next five years (2017 and beyond)

RESOURCES	PHASE 1 (2012-2016)	PHASE 2 (2017 AND BEYOND)
Committed Resources	√	
DSM/EE Programs	√	√
Biomass Conversion Programs	√	√
Next Increment of Hydro and Other Renewable Projects		√

In **Phase 1**, the regional emphasis should be on adding the Committed Resources, and aggressively pursuing the implementation of DSM/EE and biomass space heating conversion programs.

In parallel, the region should complete reconnaissance and feasibility studies of all potential hydro projects listed in the Refined Screened Potential Hydro Project List (see Table 1-2 of the Draft Report). These reconnaissance and feasibility studies should be completed consistent with the AEA-proposed process and standards.

Finally, as part of Phase 1, the Southeast Alaska IRP should be updated in the 2014-2015 time frame to make the longer-term resource selections that would be implemented in Phase 2. By updating the Southeast Alaska IRP in 2014 or 2015, the region will have 1) better project-specific information to make a definitive selection among specific alternative hydro and other renewable projects, and 2) actual experience with the implementation of DSM/EE and biomass conversion

programs to better determine the level to which the region, and individual subregions, can rely on these programs over the long term.

In **Phase 2**, the region would develop the selected hydro and other renewable projects, as well as continue to implement DSM/EE and biomass conversion programs as appropriate, based on the results of the updated Southeast Alaska IRP.

This two-phase approach is appropriate given the following challenges that exist with each resource type:

- **Hydro Projects** – The need to improve the quality and inclusiveness of project-specific estimates regarding capital costs, operating costs, annual and monthly energy output, ability to utilize annual and monthly energy outputs in nearby load centers, and so forth.
- **DSM/EE Programs** – Issues related to DSM/EE programs include the following:
    - The total market potential for these programs (which will be addressed in large part by the AEA's current Energy End Use Data Collection Project).
    - The ability of the region, and subregions, to implement a comprehensive and aggressive set of DSM/EE programs.
    - Determining the most effective way to leverage existing DSM/EE programs in the region (including the existing AHFC, AEA, and RurAL CAP programs discussed in Section 10 of the Draft Report).
    - Determining the most effective way to deliver these programs (e.g., each utility developing its own set of DSM/EE programs, a regional entity that would develop and deliver these programs in close coordination with local utilities, and or development of public-private partnerships to deliver these programs).
    - Actual response of residential and commercial customers to the DSM/EE programs offered.
- **Biomass Conversion Program** – Issues related to a regional biomass conversion program include the following:
    - Future price of oil which will impact the level of conversions from diesel space heating that will occur.
    - The total market potential for biomass conversion in each subregion.
    - The ability of the region, and subregions, to implement an aggressive biomass conversion program.
    - Determining the most effective way to leverage existing biomass conversion programs in the region (e.g., biomass programs being implemented by the U.S. Coast Guard, USDA Forest Service, and Sealaska).
    - Similar to the DSM/EE discussion above, there is a need to determine the most effective way to deliver these programs (e.g., individual utilities, a regional entity, and or public-private partnerships).
    - Actual receptiveness of residential and commercial customers to biomass conversions.
- **Transmission Projects** – while none of the proposed transmission interconnections considered were selected for inclusion in the region's expansion plan (other than the transmission Committed Resources), the State may decide to move forward with one or more of these interconnections for noneconomic reasons.

It is Black & Veatch's opinion that the long-term definitive selection of specific potential projects cannot be made until: 1) these challenges are addressed, 2) better information is available regarding the capital and operating costs of specific projects, and 3) experience is gained with regard to the implementation of DSM/EE and biomass conversion programs. Again, the level of

these uncertainties drive home the need for the region to: 1) develop multiple options, 2) move toward a more balanced portfolio of resources (i.e., the solution to the region's energy challenges is not as simple as adding more hydro and some transmission), and 3) maintain flexibility with regard to the selection of resource options over time as the uncertainties above become resolved.

Having said that, the recommendation that the Southeast Alaska IRP be updated in the 2014-2015 time frame does not mean that viable projects that are identified before then, and adequately evaluated to demonstrate their worthiness, should be prohibited from receiving regional support to move to development. The Southeast Alaska IRP serves as a "baseline" type of document that can be used to evaluate the worthiness of potential projects before the next version of the IRP is developed.

Black & Veatch believes that an important element of moving forward is the AEA-proposed decision framework and policy (discussed in Section 10-1 of the Draft Report) requiring developers of each potential project to develop a standard set of information, at an appropriate level and quality of detail, before any decisions are made about which projects should be developed. The AEA proposes that this policy would apply to all projects for which the State will be providing financial assistance, and it recommends that it also apply to cases where the project proponents decide not to seek State financial assistance so that the permitting agencies can compare the benefits consistently between all projects. This decision framework and related information standards are intended to yield a minimum threshold of information, thereby providing the foundation for decisions regarding the next increment of hydro projects. They are also intended to identify any fatal flaws that would prohibit a proposed project from being developed.

Additionally, Black & Veatch supports commitments that the AEA has made with regard to moving forward, including:

- The AEA will support the Southeast Conference and other regional stakeholders in the development of a regional Economic Development Plan.
- The AEA will continue to work with the AWG, Southeast Conference and other regional stakeholders to make decisions regarding which of the Southeast Alaska IRP recommendation should be implemented and the development of appropriate implementation plans.
- The AEA will continue discussions with mining industry representatives to ensure that the needs of that industry are supported as potential projects move closer to development.
- The AEA will continue to support efforts of the AK-BC Intertie proponents to develop a business plan.
- The AEA will consider what additional analysis related to the SE Intertie should occur.
- The AEA will continue discussions with Yukon regional representatives to ensure that future planning efforts will be integrated to the appropriate degree.

Black & Veatch also believes, as discussed in the Draft Report, that the region monitor industry progress related to the development of new technologies (e.g., solar, wind, tidal, thermal storage, anhydrous ammonia, low-power HVDC, etc.), and to provide support of these research, development, and demonstration efforts where appropriate. There is no question that there will be new technologies that will become commercially available within the next 5-20 years, thereby increasing the number of options available to the region in meeting its future energy requirements.

Southeast Alaska Integrated Resource Plan
Summary of Black & Veatch's Responses to Public Comments on Draft Report

Attachment A
List of Public Comments Received

(NOTE: ALL COMMENTS CAN BE FOUND ON THE ALASKA ENERGY AUTHORITY WEB PAGE)

Advisory Work Group	Public Comments
• Alaska Canada Energy (ACE) Coalition • Alaska Electric Light and Power • Alaska Power & Telephone Company • Bill Corbus • City & Borough of Wrangell • City of Sitka Electric • Petersburg Municipal Power & Light • Southeast Alaska Conservation Council • Southeast Alaska Power Agency • USDA Forest Service	• Alaska Energy Engineering, LLC • Alaska Independent Power Producers Association • Alaska Miners Association • Amy Skilbred • Bill Leighty • Bob Sivertson • Bradley Fluetsch • Cape Fox Corporation • Coeur Alaska Kensington Gold Mine • Council of Alaska Producers • David Beebe • Elaine Price • Glacier Valley Alaska Native Brotherhood Camp #70 • Greenpeace, Greater Southeast Alaska Conservation Community, and Tongass Conservation Society • James Erikson • Jim Rehfeldt • John Sandor • Juneau Hydropower, Inc. • Kootznoowoo, Inc. • Mavis Henrickson • Mike Bell • Patricia Phillips • Polarconsult Alaska, Inc. • Prince of Wales Community Advisory Council • Rebecca Knight • Robert Deering • Ron Jackson • Russell Stigall • Sitka Conservation Council • Steven Haagenson • Stormy Hamar • Tongass Forest Enterprises • Unnamed Citizen to AMA • Yukon Economic Development • Yukon Energy
State Legislature • Representatives Cathy Munoz and Peggy Wilson • Senator Bert Stedman	
Local Governments • City of Kupreanof • City of Saxman • City of Tenakee Springs • Haines Borough • Municipality of Skagway	
Utilities • Elfin Cove Utility Commission • Kwaan Electric Transmission Intertie Cooperative, Inc.	

Southeast Alaska Integrated Resource Plan
Summary of Black & Veatch's Responses to Public Comments on Draft Report

Attachment B
List of Stakeholder Meetings

Organization	Location	Date
SEAPA	Ketchikan	February 10, 2011
Hoonah Wood Energy and District Heating Meeting	Hoonah	February 15, 2011
Tour of Icy Straits Mill	Hoonah	February 16, 2011
Tour of Geothermal Heated House	Juneau	February 16, 2011
Developers, Contractors, and Utilities	Juneau	February 16, 2011
IPEC	Juneau	February 16, 2011
Alaska Canada Energy Coalition	Juneau	February 17, 2011
SEAPA	Juneau	March 8, 2011
Southeast Conference Mid-Session Summit	Juneau	March 9-10, 2011
Petersburg Diesel Plant Tour	Petersburg	March 22, 2011
Blind Slough Tour	Petersburg	March 23, 2011
Petersburg Municipal Light & Power	Petersburg	March 23, 2011
Ketchikan Public Utilities	Ketchikan	March 24, 2011
Ketchikan Mayor and City Manager	Ketchikan	March 24, 2011
Alaska Ship & Drydock	Ketchikan	March 24, 2011
Mark Begich Town Hall Meeting	Ketchikan	March 24, 2011
Ketchikan Public Utilities	Ketchikan	March 25, 2011
Power Systems and Supplies of Alaska	Ketchikan	March 25, 2011
Kake Energy Workshop and Energy Fair	Kake	April 5, 2011
Kake Town Meeting	Kake	April 5, 2011
Kake School Presentation	Kake	April 5, 2011
Yakutat Power	Yakutat	April 7, 2011
Biomass Project Tour	Yakutat	April 7, 2011
Yakutat Wave Project Tour	Yakutat	April 7, 2011
Yakutat Diesel Plant Tour	Yakutat	April 7, 2011
Town Hall Meeting	Yakutat	April 7, 2011
Yakutat City Manager	Yakutat	April 8, 2011
Town Hall Meeting	Sitka	April 21, 2011
Alaska Wood Energy Conference	Fairbanks	April 24-27, 2011

Organization	Location	Date
SEAPA Board Meeting	Seattle	April 29, 2011
Town Hall Meeting	Ketchikan	May 23, 2011
Garn Boiler Tour	Thorne Bay	May 24, 2011
POWCAC Meeting	Coffman Cove	May 24, 2011
Haida Board Meeting	Hydaburg	May 24, 2011
Community Meeting	Hydaburg	May 24, 2011
Craig City Manager	Craig	May 25, 2011
Chip Boiler Tour	Craig	May 25, 2011
SEAPA	Ketchikan	July 11-16, 2011
City Assembly Meeting	Haines	July 26, 2011
Town Hall Meeting	Wrangell	August 15, 2011
Southeast Conference	Ketchikan	September 15-16, 2011
Rural Energy Conference	Juneau	September 30, 2011
SEAPA Board Meeting	Juneau	November 9, 2011
Governor's Energy Office	Anchorage	December 16, 2011
Legislator Briefing	Juneau	January 6, 2012
SEAPA	Juneau	January 6, 2011
Alaska House Energy Committee Hearings	Juneau	February 8 and 22, 2012
Southeast Conference Mid-Session Summit	Juneau	March 12-14, 2012