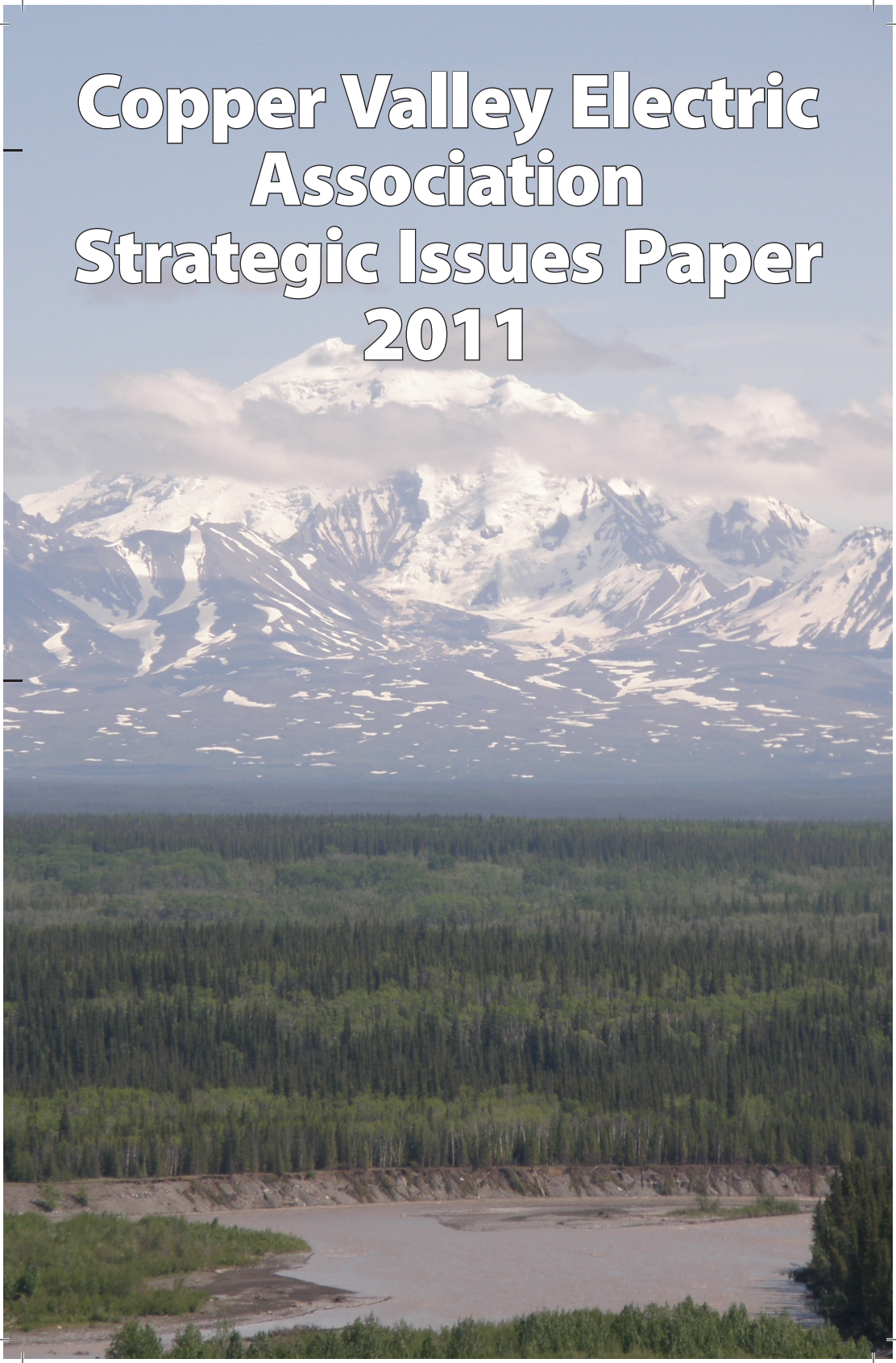
Copper Valley Electric Association Strategic Issues Paper 2011



Dear Member,
February 2011

In 2006, in an effort to better communicate with members, Copper Valley Electric Association published a *Strategic Issues Discussion Paper* to bring you up to speed on some of the difficult issues facing CVEA. Since then we've learned a lot, made a lot of changes, and celebrated some accomplishments; however, CVEA continues to face many difficult issues and challenges. This paper, *CVEA Strategic Issues Paper 2011*, is intended to provide you with updated information on projects we've been working on, issues that we face, and opportunities we are evaluating.

With a recent increase in load, CVEA now generates 50 percent of its annual electricity requirements from fossil fuel plants and, as a consequence, the cost of power members pay on their electric bill remains high. For this reason, CVEA is working toward its vision to reduce or eliminate our dependence on fossil fuel and stabilize the Cooperative's cost of generation with regional, sustainable resources.

To accomplish this task, a substantial amount of the Co-op's time and resources are spent looking at alternative ways to generate electricity. CVEA believes that hydropower is the most viable and cost effective alternative to fossil fuel and has been studying the hydroelectric potential of the Allison and Silver Lake resources. More about those efforts can be found in the body of this report. While we are focused on the development of hydroelectricity, CVEA is also investigating wind, and learning more about other potential local resources including tidal, geothermal, and biomass technologies.

Providing safe, reliable electric service remains the core of CVEA's mission. While there are many outages that are out of CVEA's control, the Co-op's effort to improve system reliability is ongoing. Several major projects that addressed system reliability, such as the Valdez Transformer Replacement, the Glennallen Diesel Plant Upgrade, and the Solomon Gulch Overhaul, to name a few, were completed in 2010. Additional projects are slated for 2011. One major reliability issue is the avalanche problem in Thompson Pass. Solving this ongoing problem is a high priority for CVEA.

External forces such as environmental and regulatory requirements are changing the way CVEA does business. National environmental policy continues to drive efforts to monitor, control, and reduce emissions from the Co-op's three thermal power plants. Despite CVEA's outstanding record of staying under emissions limits, CVEA will need to make adjustments to meet new and more stringent requirements, and these adjustments will come with a significant cost.

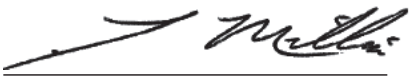
It is our goal to provide CVEA members with a complete picture of the major issues and opportunities facing their Co-op. To accomplish this task, this paper is broken into six separate sections:

(1) Cost of Power and Financial Matters
(2) Power Supply Planning - Major Projects
(3) Alternative Energy Opportunities
(4) Keeping the Lights On
(5) Beyond Our Borders
(6) Community Foundation

This paper contains a lot of information, yet it is quite probable that it leaves many of your questions unanswered. We want to answer those questions. Please plan to attend the annual meeting to give us that opportunity and to hear updates on some of the subjects addressed in this paper. The Annual Meeting of Members is scheduled for Tuesday, April 12, 2011, in the Copper Basin and Thursday, April 14, 2011, in Valdez. If you don't wish to wait for the Annual Meeting, please direct your comments or questions to Sharon Crisp, Manager of Member Services, at 822-5506, 835-7005, or email crisp@cvea.org.

We hope you find the *CVEA Strategic Issues Paper 2011* helpful in updating you on current issues facing CVEA, and we look forward to your feedback.

Sincerely,



Travis Million
President, Board of Directors

Robert A. Wilkinson
Chief Executive Officer

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www.cvea.org

Copper Basin (907) 822-3211 **Valdez (907) 835-4301**

Cost of Power and Financial Matters

Cost of Power

Power is generated from several sources: the Solomon Gulch hydroelectric facility (50 percent), the Cogeneration Project (25 percent), and the diesel plants in Glennallen and Valdez (25 percent).

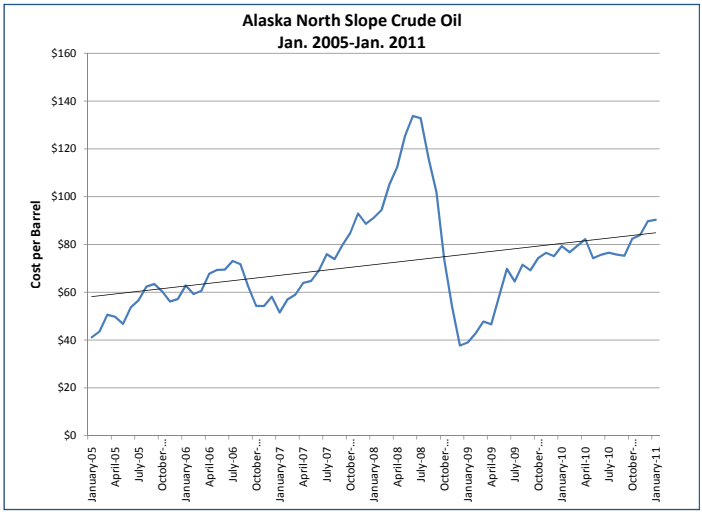
The Cost of Power (previously known as the Fuel & Purchased Power Charge - FPPC) is a separate line item on the monthly bill to collect the amount CVEA pays for fuel to generate a kilowatt-hour and for the cost of Solomon Gulch. The Cost of Power is revised monthly to reflect the changes in these costs.

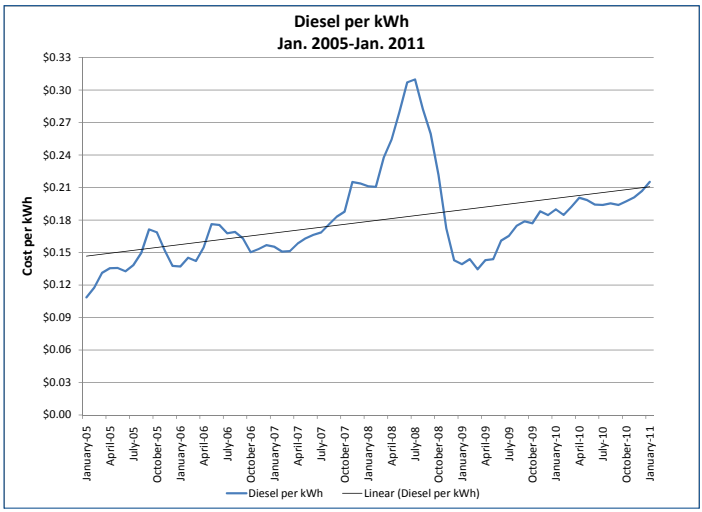
The fuel cost we charge you is a direct pass through from our fuel supplier.

CVEA does not mark up the cost of fuel. The cost per kWh for diesel fuel follows the same trend as Alaska North Slope crude oil, as seen on the charts to the right.

At $80 a barrel of oil, diesel fuel is roughly 21 cents per kWh. This compares to the Solomon Gulch hydro at 6.8 cents.

Depending on the generation mix of power for a particular month, the blended Cost of Power can vary from 9-20 cents per kWh. As fuel costs increase, so does the Cost of Power.

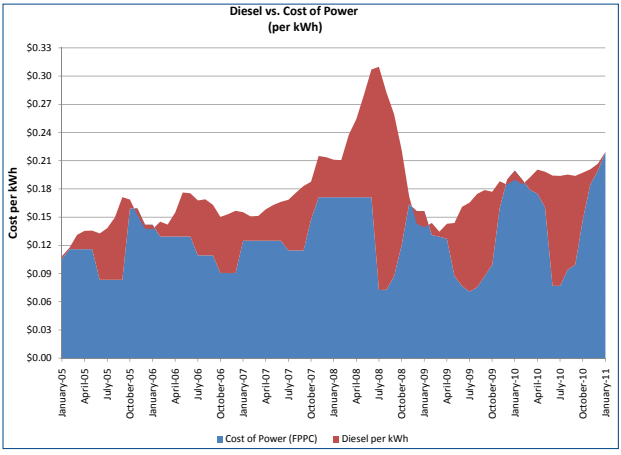




CVEA charges 6.8 cents per kWh for Solomon Gulch power, which is the same as we paid to the Four Dam Pool when they owned the project. The cost charged for Solomon Gulch power has not changed since 1998.

In 2010 CVEA sold 76 million kilowatt-hours of electricity. With the additional load for the Petro Star Clean Fuels Project, CVEA is projecting to sell approximately 86 million kWhs for 2011. This increased load, and for that matter any increased load, will impact the Cost of Power since Solomon Gulch is fully utilized. That means any increased energy sales will be served with a fossil fuel resource.

The chart to the right compares the cost per kWh of diesel to the Cost of Power. The blue section of the chart is the cost per kWh charged to members through the Cost of Power. The difference (in red) represents the benefit of the lower cost per kWh for Solomon Gulch and any heat revenue money used to reduce the Cost of Power.



CVEA has no control over the price of oil. As you can see from the graphs, the Cost of Power fluctuates with the price of a barrel of oil.

Heat Revenue

When the Cogeneration Project was commissioned in 2000, CVEA began to collect a new source of revenue in the form of exhaust gas (heat) sold to the Petro Star Refinery. The price Petro Star pays for heat revenue, like fuel, changes with the price of oil.

When heat revenues have been high, CVEA has offset high fuel costs through various fuel credit programs.

CVEA has collected nearly $19 million from Petro Star in heat revenue since 2000. These dollars have been used for the following purposes:
- $9 million to fund operations and capital projects
- $7 million in fuel credits to offset the high cost of fuel
- $3 million in capital credits paid to members

Heat revenue is a critical part of CVEA's finances and the Co-op relies on these dollars to pay operating expenses. To illustrate the importance of these revenues to CVEA's financial well being, we only have to look as far back as December 2008 when a fire shut down the refinery and shut off heat revenues for ten months. Overnight, CVEA margins went from a budgeted plus $950,000 to a minus $820,000. Addressing this reliance on one revenue source is a priority for CVEA in 2011 as we move forward with conducting a rate study.

Rate Study

A rate study is a multi-step process used to determine what rates should be charged for energy sales and tariffed services. It has been 13 years since CVEA last conducted a rate study. The study completed in 1998 resulted in an average system base rate decrease of 7.3 percent. In the intervening 13 year period, CVEA has sustained that base rate decrease and only adjusted the Cost of Power portion of the rate based on fluctuations in the price of fuel.

Since 1998 the costs of doing business has increased with inflation along with additional costs for environmental regulation. During this same period CVEA system energy sales have not increased (and in fact have declined). As a consequence these two events have resulted in negative operating margins for many years. Put another way, CVEA's expenses to operate and maintain the core business of producing and selling electricity are greater than the electric revenues it collects to pay for those core expenses.

Most utility companies contract an objective and unbiased third-party consultant to conduct rate studies, CVEA is no exception. Following a competitive process in 2007, CVEA selected D. Hittle & Associates to conduct a rate study for the Co-op. Work was done in 2007 and 2008; however, the study was put on hold pending the acquisition of Solomon Gulch and the completion of Petro Star's clean fuels project.

Both events have since come to fruition, and it is now time to resume the rate study project. CVEA will provide several opportunities for members to be involved as the project moves forward. Public meetings will occur in both districts to hear member comments and questions.

Financial Status

CVEA is required to meet certain financial ratios to ensure the financial health of the Co-op. By updating the rate study in 2011 and lessening the dependence on heat revenue to pay operating expenses, CVEA will be in a stronger financial position which is crucial to move important projects like Allison Creek (described on page 8) forward. In October 2010 the CVEA Board of Directors approved a five percent capital credit retirement. Checks were mailed in January 2011 and totaled $629,000. This is one of the many benefits of belonging to a cooperative.

Environmental & Regulatory Issues

The Environmental Protection Agency (EPA) is constantly changing pollution standards. Recent changes will have a significant economic impact on the cost of electricity. EPA's most recent change will require CVEA to reduce Carbon Monoxide emissions by 70 percent and will require CVEA to convert our diesel fuel to ultra low sulfur diesel fuel. These changes involve hundreds of thousands of additional dollars to make the same amount of electricity we are producing today. In addition, this new requirement changes the way in which we measure and monitor emissions. Rather than testing our emissions monthly, we will need to monitor our emissions continuously, 24 hours a day.

Another EPA change requires CVEA to begin measuring our production of Carbon Dioxide. If you remember from biology class, all animals exhale Carbon Dioxide. It is a naturally occurring gas that is not hazardous to humans or animals. In fact, Carbon Dioxide is essential for plants to live and breathe so it is an essential gas to the environment. It is also at the center of the global warming debate. Since there is a belief that global warming is caused by upper atmosphere ozone depletion, EPA has decided that it wants to control all ozone depleting gases known as Green House Gases (GHG). Carbon Dioxide is listed as a GHG under EPA's new GHG regulations. This means that starting in January 2011, CVEA will have to report Carbon Dioxide production to EPA. There is currently no fee charged to CVEA for the production of Carbon Dioxide but that could change given EPA's earlier attempts to pass Cap and Trade regulations. If EPA passes new GHG standards for Carbon Dioxide, we will most probably have fees levied on us that once again raise the cost to produce electricity for our Co-op.

EPA justifies constant changes in air emission standards using a precedent they set years ago. EPA is given authority to require the Best Available Control Technology (BACT) to any organization with a Title V Permit. CVEA has three Title V Permits so EPA has authority over our emissions of the Glennallen Diesel Plant, Valdez Diesel Plant and the Cogen Plant. Since technology changes constantly through time, EPA can force CVEA to adopt the BACT standard as it becomes available (even if we flawlessly meet all our Title V permit standards as written today). Because of the methodology in place, EPA will continue to change emission standards and each time, the cost to produce electricity is likely to go up.

For new power plants, emissions get even more difficult to manage. If CVEA were to add a new diesel generator raising our emissions higher than our Title V permits allow, then we fall under Maximum Achievable Control Technology (MACT). This EPA standard is normally very hard to meet since it involves only the highest control technology on the market. This was one of the consequences we faced when we added Unit 9 to the Glennallen Diesel Plant. This new unit was required

to operate with the highest emission standards and combust ultra low sulfur diesel despite no other unit using ULSD at Glennallen. That, in turn, required a new fuel tank to hold the ULSD and higher cost for CVEA to get this more expensive fuel. If we planned to add any new additions to CVEA today, the MACT standards are even more stringent than installing Unit 9 in 2010. This would be extremely important to consider if CVEA were to take part in a biomass project or other combustion type power generators.

To combat the ever increasing complexities in environmental changes, CVEA hired an engineer with expertise in regulatory compliance. This person has the role of overseeing air quality, spill control, permitting, environmental compliance, license renewal, Federal Energy Regulatory Commission (FERC) regulations and project management. Most importantly, the position is intended to take a proactive stance to changing standards among regulatory agencies.

CVEA's response to these changing standards is to use every means available to inform Legislators, Congressional Members, FERC, and EPA Management of the impact from these changing standards. We have taken an aggressive approach to learn about changing standards before they are approved as regulation and provide statements about their impact to our members. CVEA is actively involved in the Environmental Regulations Committee for the Alaska Power Association (APA). Our involvement has resulted in APA-sponsored resolutions to curb some of these costly EPA standard changes.

Power Supply Planning - Major Projects

Allison Lake

Consistent with the Vision of CVEA to significantly reduce or eliminate our dependence on fossil fuel for power generation, we have aggressively pursued the hydroelectric potential of Allison Lake.

In 2008, FERC granted CVEA a three-year preliminary permit to study the hydropower potential of Allison Lake. Prior to receiving the permit, CVEA initiated preliminary engineering and environmental studies to complete a review of three project alternatives.

In May 2009, the CVEA Board of Directors selected a preferred alternative which involved constructing an earth filled dam at the lake outlet with conveyance of water through a 9,000 foot surface and buried penstock to a four megawatt power house near tidewater.

This alternative (Alt. 3C) became the focus of ongoing field studies and assessments that included environmental and geotechnical investigations, avalanche hazard assessments, and reconnaissance of a proposed project access road.

In April 2010, a Final Feasibility Report was presented to the Board of Directors. While it concluded that Alt. 3C was environmentally net positive and technically feasible, it also confirmed many serious challenges including risks associated with seepage under or around the dam structure, access to the project for construction and maintenance, avalanche risk to personnel and project facilities, and significant ecological release requirements.

The risk of seepage could not be fully evaluated prior to project completion. This unacceptable risk could reduce the amount of water available for power generation. Due to site conditions, access to the project would be difficult and expensive. Extensive road construction and maintenance to the dam would be cost prohibitive, so no permanent road access would be maintained after project construction. This limits access for operations, maintenance, and emergencies to air access only.

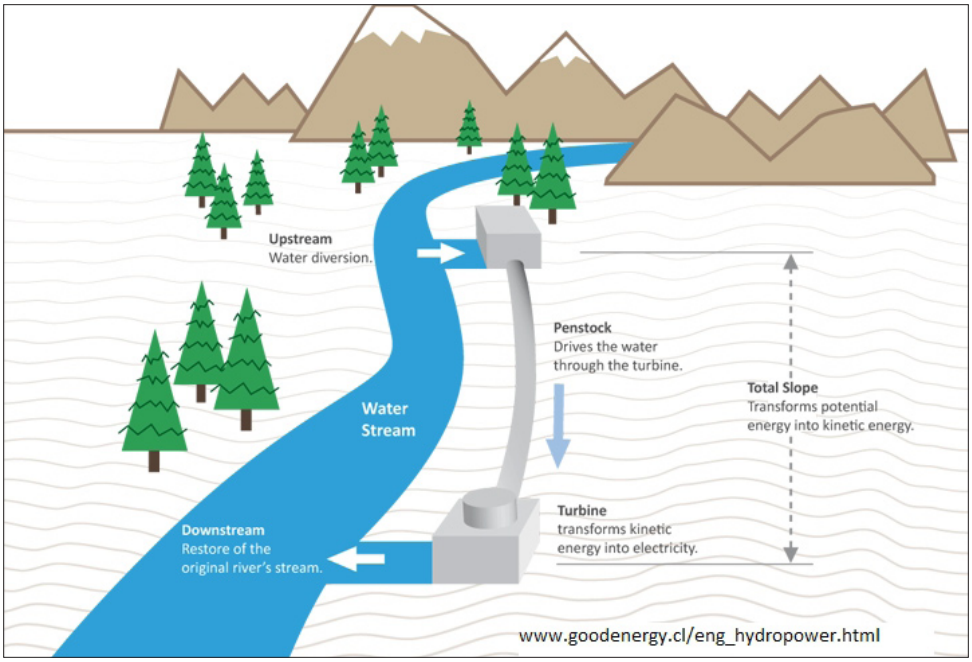
Avalanche risk to life and project property during certain times of the year is severe. While this risk can be mitigated and managed, it may increase project costs. In addition, fish issues remain an ongoing concern. Resident Dolly Varden, found above the proposed power house location, would have to be addressed. To address fish and habitat concerns in-stream ecological flow requirements would likely have to be in the range of three-five cubic feet per second which would significantly reduce the amount of water available for power generation. Operating requirements to mitigate fish and habitat issues could further interfere with efficient project operations.

Finally, project economics were not seen as favorable. The cost of Alt. 3C in 2010 dollars is $70 million, not accounting for potential cost overruns and inflation. While grant funding would improve the project economics, there is a lack of state and federal funding available. At the federal level, hydro storage projects are not defined as renewable energy for purposes of qualifying for below market federal financing programs. At $70 million, with conventional financing, the cost to the member would be 26 cents/kWh.

Based on the foregoing challenges, the Board of Directors undertook a re-examination of all potential development alternatives and determined to set aside Alt. 3C in favor of a run of the river (ROR) alternative (Alternative 4).

In simple terms the ROR project will divert water from Allison Creek via a diversion structure, at elevation 1,200 feet, into a penstock which will carry water to a power house near tidewater. The ROR alternative costs $39 million and produces an equivalent amount of energy to Alt. 3C.

Eliminating the earth filled dam reduces construction costs, lessens project access challenges, eliminates the seepage and liquefaction risks and significantly reduces the environmental impacts.



The first year cost of power is estimated to be 21 cents/kWh, which is competitive with $80/barrel oil. The ROR project is considered to be renewable for certain federal financing programs, which could serve to reduce the project cost per kWh.

One obvious downside of this alternative is that it does not produce energy in the winter months and, as such, will not eliminate that need for diesel power generation, but it does reduce our diesel dependence by over a million gallons per year.

The study and evaluation of the hydropower potential of the Allison Lake watershed has been funded by a renewable energy fund matching grant of $2.8 million (CVEA 20 percent) and a direct state grant of $1.0 million. CVEA expects to file the ROR development license application with FERC by September 2011.

Silver Lake

In additional efforts to evaluate opportunities to lessen the burden of fossil fuel on electric rates, CVEA commissioned a Pre-Feasibility Study to evaluate Silver Lake as a hydroelectric resource.

Silver Lake is located on Galena Bay approximately 15 miles southwest of Valdez. In 1915 the US Geological Survey identified Silver Lake as the most promising hydroelectric site on Prince William Sound. The hydroelectric potential of this

resource had previously been studied in 1982 and 1992 by the State of Alaska. The lake is approximately 3 miles long, has a normal surface elevation of 306 feet, and a surface area of 978 acres. The total drainage basin is approximately 24.5 square miles which is four times larger than Solomon Gulch. The lake discharges into the Duck River through a narrow gorge and falls 306 feet over 1-1/2 miles to the lagoon on Galena Bay. By comparison Solomon Gulch Lake crests at elevation 685 feet and Allison Lake crests at elevation 1,345 feet.

Silver Lake

The configuration reviewed in the CVEA Pre-Feasibility Study included a 120 foot high concrete dam, an intake at the existing lake level at elevation 306 feet, a 6,000-foot long 9-foot diameter steel penstock, a steel surge tower, a 60 x 80 foot 15-megawatt power house at elevation 65 feet, a switchyard, approximately 25 miles of 115 kV overhead transmission line, a dock, access roads, and operator housing located at Galena Bay.

The study concluded that while the project is technically feasible it does have challenging land usage and environmental issues. The land under and surrounding the lake is owned by Chugach Alaska Corporation. The land where much of the penstock and the proposed power house would be located, is owned by the Tatitlek Corporation. In particular there may be some difficulty acquiring land use easements from the US Forest Service for the transmission line due to the scenic nature of the surrounding area.

In addition, the steps required, and the probability for success, to obtain clearance to construct and operate those portions of the project that are within the 1992 Conservation Easement (negotiated between the Exxon Valdez Oil Spill Trustee Council and the Tatitlek Corporation) cannot be determined at this time.

Most importantly, the study concluded there is a wide variation in past and present cost and energy estimates. The current effort indicated the project has an annual energy potential of 38 million kilowatt-hours, but there is a gap between this amount and past studies. Additional effort could be expended to narrow the gaps, but with a projected capital cost of $187 million (2010 dollars) and a first year Cost of Power at 41 cents per kWh, the CVEA Board of Directors determined not to further pursue the Silver Lake Project at the present time.

Alyeska

Conversations between Alyeska and CVEA have taken place from time to time about CVEA providing electric service to the Valdez Marine Terminal (VMT). The VMT is not connected to the CVEA electric system grid. Serving an industrial load of this size would require construction of new generating facilities and, most likely, would be reciprocating diesel fired units.

Alternative Energy Opportunities

Wind

In 2010, a thorough review of possible locations for wind turbines in the Valdez District was conducted. CVEA staff identified two locations where a wind resource study could be initiated. CVEA presented the two options to the Valdez Mayor's Energy Task Force in September 2010 and was asked to focus on one of the two locations, Mile 12 of the Richardson Highway.

Example of a MET Tower

CVEA was awarded a $100,000 grant by the State of Alaska in the 2011 Capital Budget for the purchase and installation of two meteorological (MET) towers.

CVEA applied for permits in October 2010 to install a MET tower near the Alpine Woods Subdivision in order to collect wind data in the area. CVEA expects to install one MET tower in the Alpine Woods area as soon as possible after break-up. CVEA is also examining possible locations in the Copper Basin to install the second MET tower.

The MET towers comprise the first step in determining the feasibility of a wind project for a particular location.

The wind energy field is constantly undergoing technology improvements with current prototype projects experimenting with harnessing 'dirty' wind. Dirty wind is classified as the locations where the wind is not consistent in speed or direction and may contain negative effect winds that put undue stress on the mechanical components of the turbine. CVEA will continue to monitor the development of improved technology but is only interested in deploying proven technology to capture wind energy.

As a final note, wind energy will not negate the need for thermal (fuel-based) generation without significant breakthroughs in energy storage devices. Due to the very nature of wind being unpredictable and undependable, only a small percentage of wind energy can be put into a small low inertia system like CVEA. The term for this limitation is called maximum wind penetration and the input load generally cannot exceed ten percent of the total system load.

Tidal

As the name implies, tidal energy is the potential energy that could be obtained from changing sea levels or tidal flow. Using current technology, potential energy of moving water can be converted to electric energy by one of two basic methods. The first method is called a tidal barrage. The tidal barrage is basically a dam across an entire tidal estuary that captures energy through the difference in height (head) of high and low tides. During the period of changing tides, the water flow is forced through a small section of the barrage and turns a turbine very similar to current hydroelectric turbines. This means that the turbine output is limited in the duration that it can produce energy but, due to our scientific understanding of tidal flows, is very predictable. Due to ecological and ocean vessel conflicts, CVEA does not believe the tidal barrage is a viable option to pursue in our region.

The other basic method of converting tidal energy to electrical energy is called tidal flow or tidal stream generator. The tidal flow shares many characteristics with the concept of wind turbines but in a subsea environment. This method is gaining popularity over the tidal barrage as it is expected to eventually be much lower in cost and ecological impact compared to the tidal barrage. This technology is promising and will be periodically monitored to evaluate whether it has advanced to the stage that it would be prudent for CVEA to conduct a feasibility study.

Geothermal

Geothermal energy is simply thermal energy created and captured within the Earth. The preliminary field studies for geothermal exploration are capitally intensive and require deep drilling to determine subsurface liquid temperatures.

At least one Alaskan utility has declared bankruptcy while pursuing potential geothermal resources in an effort to reduce their dependence on fossil fuel generation. Deep thermal wells require 'oil and gas drilling' protocols that are not conducive to geothermal wells, these protocols played a large part in the recent Alaskan utility bankruptcy.

The closest, most well known potential resources for geothermal energy for Valdez and the Copper Basin are located in the Klawasi Hot Springs. There are two possible thermal well locations in this area that were identified by the state of Alaska.

According to a state of Alaska geothermal resource map, the two thermal wells have been identified as Upper and Lower Klawasi, have surface temperatures of 17°C and 20°C respectively (63°F and 68°F). A typical utility-scale geothermal generation plant requires a steam temperature of at least 150°C (302°F) to turn the turbine. With newer technologies, geothermal generation plants have been implemented that require as little as 57°C (135°F) liquid temperature to turn the turbines.

The Klawasi thermal wells are located on native corporation land but are surrounded by the Wrangell St. Elias National Park and Preserve, which significantly limits the ability to develop those wells as potential resources. CVEA has also been told of a potential resource within the Copper Basin, not inside or surrounded by the Park, which is being pursued to determine if a potentially viable resource is available.

Biomass

A potential renewable resource in the Copper Basin is wood fueled biomass generation. This could be either through a cogeneration-type operation that utilizes waste heat from a wood product manufacturing operation or by directly utilizing wood products in a generation plant. CVEA has been contacted by a local native corporation with significant land and timber resources that is interested in pursuing a relationship to study the economic case of a wood fueled biomass plant.

Emerging EPA regulations may require that BACT standards, mentioned earlier, be utilized in all aspects of a generation plant. Those standards would have significant impacts on the economic viability of a biomass plant. Even without the emerging EPA regulations, there are significant air quality issues that must be addressed when licensing a biomass plant.

Emerging Technology

There are many technologies that are on the cusp of becoming the 'next best thing' in producing energy. Our responsibility, to the member-owners of CVEA, is to make sure each dollar is spent wisely. CVEA does not have the resources to experiment on emerging technologies. We must use the members' money on resources that will provide reliable and predictable energy in a cost effective manner.

Above and beyond technologies already discussed, we are monitoring the progress and costs of in-stream hydroelectric generation and generator efficiency technology.

There are a couple projects in Alaska that harness the energy of streams and rivers, but currently the cost of the energy is not viable without research and grant-based funding. This technology would only provide energy in non-winter months and is not considered a year-round solution.

With regards to generator efficiency technology, whether it is for our existing Solomon Gulch hydroelectric turbines or our diesel-fired units, every percentage increase in efficiency we can achieve from each unit is that much less fuel (diesel or water) that is used to convert to electricity. The generator efficiency field is constantly changing and CVEA monitors and calculates the cost-benefit analysis to determine when it is the appropriate time to use the members' resources to upgrade a unit.

Keeping the Lights On

Outages

Keeping the lights on in the Copper Valley system can be a delicate balancing act, and it isn't easy when we experience inclement weather to include extreme snowfall, subzero temperatures, hurricane force winds, blowing snow, rime ice build-up, and snow and ice packed roads; not to mention an avalanche now and again.

Lines near Eureka loaded with heavy snow and ice

The reality is there are many obstacles that keep the lights from staying on. It can be as simple as a tree or it can be very complicated where, on some occasions, even the experts might not know why the lights go out.

A major cause of CVEA outages has to do with trees falling into the line, either through natural decay, natural growth, wind, heavy snow, ice loading, or human caused events. CVEA clears and maintains portions of our dedicated rights of way, usually within 15 to 25 feet from the centerline, but due to private, state, and federal property limitations, we can only maintain vegetation in our dedicated easement or right-of-way permit.

A second major cause of outages is animals and birds. It doesn't take much for small creatures to cause big problems. Every time CVEA has an animal caused event on our system, we consider what might be done to ensure that particular section will not have the same problem again. We install a variety of devices including squirrel guards, insulated conductor covers, anti perching devices, and bird flappers (that provide a visual indicator) to prevent animal caused outages.

The weather in our service area is not always conducive to the reliable transmission and distribution of electricity. While our poles and lines are designed to withstand extreme weather, there are times when Mother Nature prevails via extreme wind, snow, and ice caused outages.

In addition to outages beyond CVEA's control, we also have scheduled power outages. These are not typically system wide, but can affect large sections of our service territory. While inconvenient, scheduled outages are necessary for the safety of our employees and equipment when making repairs or upgrades to the system. Measures are taken to notify affected members of upcoming scheduled outages. CVEA maintains a list that includes people who use life support equipment that requires electricity. The people on the list are notified of a scheduled power outage so they can make alternate arrangements. If you or someone you know fits into this category, please notify CVEA.

While we cannot guarantee 100 percent reliable power, we can guarantee that we are doing everything possible to deliver your power through safe, reliable, cost-effective means. In the electric utility industry, reliability refers to a utility's ability to provide electricity to its consumers. To ensure reliability, CVEA strives to keep electrical outages to a minimum. CVEA's average over the last five years is 6 outage hours per consumer; eliminating extreme storms drops that average to 5.15 hours, eliminating other major events (i.e., the raven outages in August 2009), drops the average to 3.97 outage hours per consumer. Reliability is calculated as a percentage of the total hours in a year that the power is on, which in this case is 99.95 percent of the time (8,754/8,760=99.95%). Like a lot of things in the electric business, this is an average. You may have experienced more or less hours out than the statistical average.

We know many members are interested in outage statistics; who was affected, how long they lasted, and what caused them. CVEA has recently developed an enhanced internal and external Outage Communications Plan, and we pledge to do a better job communicating outage information through Facebook and public service announcements on local radio stations.

If you experience an outage, make sure you have not blown a fuse or tripped a circuit breaker, and then call CVEA during normal business hours at 822-3211 or 835-4301. After hours, call (866) 835-2832. This will help us determine the location and possible cause of the outage.

Thompson Pass

The transmission line that connects the Copper Basin and Valdez has severe avalanche risk, particularly in Thompson Pass. The transmission line is part of the Solomon Gulch project and when CVEA acquired Solomon Gulch from the Four Dam Pool in 2009 we acquired the transmission line as well. As part of the transaction we also received funds to address the avalanche problem.

Work site after an avalanche in 2003

In 2010 CVEA dusted off a 2003 Four Dam Pool report which evaluated options to address the risk and resumed the effort. That updated work is nearly complete. Upon completion, a final option will be selected by the Board of Directors and the process of communicating with permitting agencies and the CVEA membership will begin.

Permafrost Impacts to Future Maintenance

Permafrost is soil remaining at or below the freezing point of water for two or more consecutive years. The thin layer of organic material between the ground surface and the permafrost is called the active layer. The annual freeze and thaw cycle of the active layer creates stress upon structures constructed on or within the active layer.

Jacked Transmission Structures

When the active layer thaws in the spring, CVEA's poles, equipment foundations, and underground lines can settle, sink into the ground, or shift in any direction; even shift upwards, which is commonly referred to as jacking.

When the pole is pushed up, it becomes out of balance and more times than not will tilt to one side or the other. Every year CVEA personnel perform multiple line inspections identifying the poles or sections of line that are experiencing the most significant jacking.

Due to the weight of structures and conductors, the transmission line structures are the most vulnerable to jacking. The most cost-effective tried-and-true methodology is to drive steel piles as deep as possible and attach the structure to the top of the pile. The concept is to get the piling through the active layer into the permanently frozen layer.

CVEA is exploring other cost-effective alternatives to mitigate permafrost jacking such as pre-drilling pile holes to attain greater depth and pre-treating the piles with a polymer layer to minimize the friction between the pile and the earth. Another concept CVEA is evaluating is to float the structures on the surface of the ground to avoid the jacking issue outright.

Example of a Bog Shoe structure

CVEA has installed several of these floating structures on the distribution system with a "bog shoe" that effectively spreads the weight of the pole and conductors over a ground based support structure. This concept is being explored for transmission line structures in heavily susceptible permafrost jacking zones.

CVEA has experienced a higher incidence of foundation jacking on the distribution and transmission systems and in the transmission substations in recent years. It is anticipated this will be an ongoing maintenance problem for the Co-op.

Solomon Gulch Major Maintenance

The Solomon Gulch Hydro Plant has a 13-megawatt capacity which is capable of producing 50,000 megawatt-hours of electricity annually. The power is produced by two 6.5 megawatt turbines. Through a series of divestitures from the State of Alaska and the Four Dam Power Pool Power Agency, Solomon Gulch is wholly owned and operated by CVEA. The plant has been in service for 30 years without major maintenance to its primary mechanical components.

The performance of the hydro units is carefully monitored, and in 2009 CVEA experienced problems with the water control gates on Unit 1. Careful study of these events led to the conclusion that major failures with the gates were likely if the issue was not addressed. The decision was made to overhaul the unit and beginning September 1, 2010, the complete turbine was totally rebuilt to factory specifications over a 60 day period.

Rotor clear of stator

During the overhaul project several problems were identified that would have lead to progressive component failures, drastically reducing the reliability of the unit. The benefits of the overhaul project were immediate and substantial. The project reduced vibrations overall by 25 percent and increased the unit response time by 50 percent. Unit response time is very important when dealing with rapid load losses or gains within the system as well as with conditions which could, or ultimately do, lead to system outages. The overhaul has also improved the interactive capabilities between the other generation plants which have led to a more stable system in terms of frequency and load control. This, and many other projects performed in the CVEA system, demonstrates the Co-op is dealing in a proactive, versus a reactive, approach to improve our system. A proactive approach is always less costly compared to reacting to equipment issues. This project and approach demonstrates that CVEA is committed to maintaining and improving the reliability of our generation portfolio to provide a sustainable source of electricity for our Co-op.

Glennallen Diesel Plant Upgrade

A new diesel engine has recently been added to the Glennallen Diesel Plant. This new Electro Motive Diesel (EMD) adds 2.865 megawatts of capacity to the CVEA system and will help mitigate the reliance on older engines, particularly when the transmission line is down and cold weather conditions exist in Glennallen.

The physical installation of the unit started in September 2009 and was completed in November 2010.

Glennallen Diesel Plant-Unit 9
Electromotive Diesel 2865KW

The new EMD is more efficient than any other diesel unit in the CVEA system and is in compliance with new air quality standards for 2013. The older units will require modifications to their exhaust system to meet the compliance standards while the EMD will not.

The project involved retiring two small obsolete Fairbanks Morse units, moving Unit 8 from one end of the building to the other, building new foundations for the EMD and Unit 8, and various other steps to install the radiator cooling system and ancillary equipment. With this work complete the EMD was moved into the plant. The project included significant structural additions, installation of major electrical components and equipment, installation and programming of new control systems, and updating and integration of existing control systems into the new plant configuration. In addition, significant piping upgrades were required to establish a common cooling loop for all the engines along with a new plant cooling system.

The vast majority of the work was accomplished using very dedicated plant operators who added quality, value and ownership to the project, and resulted in a better product plus the added benefits of training the operators on the new plant systems and components. This project is a win for the Co-op, will save the members money over the long run, and will increase the reliability and capability of the CVEA system.

The Glennallen Diesel Plant Upgrade Project cost $4.5 million and was funded with a US Department of Energy grant of $1.9 million and a State of Alaska grant of $2.0 million. The balance of funding was provided by CVEA members.

R&R Fund

In 2009, when CVEA acquired Solomon Gulch from the Four Dam Pool Power Agency, we negotiated a sum of money to fund future maintenance and upgrade projects for the hydro and transmission systems. The amount of money received in February 2009 was $16.6 million. Interest and contributions totaling $1.0 million have since been added to the fund and $1.9 million has been expended, leaving a balance at December 31, 2010, of $15.7 million.

The value of the R&R Fund is that major maintenance expended from the fund does not otherwise have to be collected from electric rates. The largest expenditure in 2010 was the overhaul of Unit 1 at $1.3 million. Major expenses planned for 2011 include the overhaul of Unit 2 to include replacing the runner, which is estimated to cost $2.0 million.

The R&R Fund also includes some dollars for avalanche mitigation once a specific project is identified.

Beyond our Borders

State Energy Policy

In 2010 the 26th Alaska Legislature passed two bills important to electric utilities. HB 306 declared a state energy policy which, among other things, declared the state should receive 50 percent of its electrical generation from renewable and alternative energy sources. SB 220 put the meat on the bones of the energy policy bill by addressing programs relating to energy efficiency, energy conservation, alternative energy, and emerging technology. These ambitious bills received widespread support from the electric industry, conservation groups, municipal governments, and consumer groups. As with many authorization bills there is much work to be done, not the least of which is providing capital funding for projects. While the legislation establishes intended funding vehicles for capital projects, funding was not provided.

Funding for Capital Projects

In 2008 the 25th Alaska Legislature passed HB 152 authorizing the Alaska Energy Authority to distribute renewable energy grants to assist development of Alaska's vast renewable energy resources. In passing HB 152 it was the intent of the Legislature that each year for the next five years the program would be funded at $50,000,000 per year. Funding has fallen well short of the legislative goal and under current AEA guidelines each project is limited to $8 million in funding.

CVEA has joined the APA in urging the Alaska Legislature to fulfill the policy commitments it established in 2008 and 2010 by appropriating funding for deserving energy projects.

The outlook for federal appropriations for energy projects is not good. All three members of Alaska's Congressional Delegation are supporting a ban on earmarks and are not entertaining appropriation requests from constituents. CVEA is pursuing efforts to redefine Alaska hydro projects as "renewable energy" so as to qualify for certain federal programs including Clean Renewable Energy Bonds, a below market interest rate bond.

CVEA will continue to seek both state and federal funding opportunities that could lower the cost of energy of future generation projects.

CVEA Community Foundation

To further our commitment to the community, CVEA created the CVEA Community Foundation (CVEACF) in 2006. Our hope is to build a sustainable nonprofit foundation that promotes and sponsors the community support activities of CVEA, allowing us to do more for the people we serve.

2010 Copper Basin Scholarship Winners

The mission of the Foundation is to provide scholarships for students and contributions to educational, scientific, and charitable organizations in our communities. Each year the Foundation provides $9,500 in educational scholarships to graduating high school seniors and adults who are continuing their education. The Foundation also provides a scholarship to one student in each district to fund their participation in a youth leadership program that includes the Idaho Youth Rally and the National Youth Tour.

Initial funding of the Foundation came from unclaimed capital credits which escheated to CVEA. Now we're looking to you; our members, our vendors, and other public and private organizations, to help us make a difference in the lives of our friends, neighbors, and communities.

CVEA encourages all members to consider rounding up their electric bill to the nearest dollar amount. Participants who round up their bill contribute between $.01 and $.99 monthly, an average of only $6 a year, to the CVEACF. Individually, this is not a large number, but combined with other CVEA members, it will make a big difference. If half of all CVEA members round up their bills each month, the Foundation will bring in an amazing $10,000 each year.

Members can also make a one-time donation, make a monthly donation by adding a specific amount to their CVEA electric bill, and even donate future capital credit disbursements.

For information or to make a contribution to the CVEA Community Foundation, stop by your local office or visit www.cvea.org.


www.cvea.org