CHAPTER 6: ENERGY

The topic of energy is pervasive in every element of human activity, interaction and comfort. The economic impacts associated with fossil fuel consumption, and the unique potential of the CBJ’s renewable hydroelectric sites, presents policy makers with an enviable opportunity for guiding future community growth toward renewable energy sources. There is also the need to balance the needs of the consumers with the sustainability of our energy sources.

Access to affordable, secure supplies of energy is necessary for almost every activity of government, business and private residents. The overall goal of an energy policy should be to assure least cost alternatives to energy sources. Costs could be classified as broadly as actual out of pocket costs to the consumer, impact costs to the City budget or impact costs on our environment. Given the ways in which communities are affected by, and affect the global arena, energy policy should reflect the need to establish a fair degree of independence from uncertain international energy markets, and to ensure responsible contributions of our community to the global human and natural environment. The ultimate goal needs to be creation of an energy system that is sustainable, locally and globally. Energy policies can play a crucial role in the development of a local, regional, and national energy system that can help assure the long-term economic viability of the CBJ, and the Southeast Alaska region.

Further development of renewable energy sources will be needed to convert energy systems from fossil fuels for both local and regional use. The CBJ is blessed with significant hydro opportunity as well as tidal and other potential renewable energy sources, all of which should be elements of a comprehensive energy program. Least-cost, or integrated-resource planning, in which investment in energy conservation is weighed against investment in energy purchase, and in which life-cycle costs are included in all decision making, can provide a framework for cost-effective, responsible energy planning and conservation. Working capital must also be equally weighted as it is likewise a scarce resource economically defined. Education is an important element in giving direct assistance to energy users and for maintaining an informed citizenry. As used below, “near-term” means one to five years; and “long-term” means five years or longer.

Energy Planning

For many reasons, energy production, conservation, and use have come to the forefront of world consciousness in recent times. In Juneau, the disruption of the supply of hydroelectric energy to the community in the spring of 2008 has made energy issues even more relevant to the well being of the community. New energy sources are being discovered and new technologies for energy generation, transmission, and conservation are being developed. Federal and State funding sources are becoming available for renewable and/or efficient energy planning and projects. It would be beneficial to the CBJ to examine these emerging sources, technologies and funding sources for potential use in the community and as a revenue source to external communities.

Understanding where energy is used in the CBJ (internal and external uses), its sources, and the financial and social implications of our energy use is fundamental to establishing a sound policy
for energy development and use. In order to implement the policies outlined in this Chapter it will be necessary to establish a plan for the future use of energy resources in the CBJ.

POLICY 6.1. IT IS THE POLICY OF THE CBJ TO ANALYZE THE CBJ ENERGY SYSTEM, POTENTIAL RENEWABLE ENERGY SOURCES, AND EMERGING TECHNOLOGIES; ESTABLISH A LONG-TERM ENERGY PLAN; AND IMPLEMENT THAT PLAN FOR THE AFFORDABLE AND SUSTAINABLE USE OF ENERGY IN THE CBJ.

Implementing Actions
6.1.IA1 Analyze Juneau’s internal and external energy economies and systems throughout system life-cycles.

6.1.IA2 Develop and implement a long range energy plan for Juneau that addresses both private-sector and CBJ energy conservation and management goals, objectives, and an action plan. The plan should consider renewable energy sources, emerging technologies, and other plans being developed within the region and the state.

6.1.IA3 Host research projects that identify energy sources that use renewable resources such as hydro, tidal, solar, wind, and energy from organic waste (e.g. cellulosic ethanol) that can be used by households, businesses and the public sector.

6.1.IA4 (i) Develop and examine scenarios for alternative long-term energy plans, including a risk management plan.
(ii) Based on alternative scenarios, identify courses of action for each scenario.
(iii) Implement actions that maintain flexible energy strategies that best meet Juneau’s future energy needs.

6.1.IA5 Work with the State of Alaska, Southeast Conference, Tlingit Haida Central Council, and other entities in planning for energy resource development and use in the Southeast Alaska Region.

6.1.IA6 Conduct public meetings to explain and develop the CBJ long range energy plan.

6.1.IA7 Once an energy plan is developed, undertake an immediate reconsideration and rewrite of the policies and actions in this chapter for approval of the Borough Assembly.

POLICY 6.2 IT IS THE POLICY OF CBJ TO SUPPORT THE DEVELOPMENT OF RENEWABLE ENERGY RESOURCES IN THE CBJ AND SOUTHEAST ALASKA REGION.

Implementing Action
6.2.IA1 Work with the State of Alaska, Southeast Conference, Tlingit Haida Central Council and other interested entities toward the planning, funding and development of renewable resources in CBJ and the region.
POLICY 6.3  IT IS THE POLICY OF CBJ TO SUPPORT THE DEVELOPMENT OF A SOUTHEAST ALASKA INTERTIE.

6.3.IA1  Work with the State of Alaska, Southeast Conference, Tlingit Haida Central Council and other interested entities toward the planning, funding and development of a regional electrical intertie.

Support State Capital Functions
As Alaska’s Capital, it is vital for the CBJ to offer modern transport and communications systems and facilities to Alaskan residents who wish to participate in State legislative affairs. Over the years, the CBJ has invested in such facilities, systems and infrastructure and will continue to support effective citizen participation in State affairs. As the availability of fossil fuels decreases throughout the world, it will be increasingly important to identify energy-efficient means of assuring cost-effective electronic and physical access to the Capital.

POLICY 6.4. IT IS THE POLICY OF THE CBJ TO PROVIDE COST-EFFECTIVE AND ENERGY-EFFICIENT FACILITIES, SYSTEMS AND INFRASTRUCTURE THAT STRENGTHENS ITS ROLE AS THE STATE CAPITAL.

Standard Operating Procedure
6.4.SOP1  Invest in energy-efficient technologies and equipment that provide affordable electronic and physical access to State legislative, courts and other governmental agencies for Alaskan residents.

6.4.SOP2  The City must weigh the additional costs of investment up front with the long term savings over the life of the improvement and it must at least generate a positive return.

Energy Efficient CBJ Buildings and Projects
In addition to keeping costs to CBJ’s taxpayers as low as possible and conserving energy in general, it is the role of the CBJ to set an example for businesses and individuals in adopting cost effective energy saving technologies and operating procedures.

POLICY 6.5. IT IS THE POLICY OF THE CBJ TO INCORPORATE TECHNOLOGIES AND OPERATING PRACTICES THAT WILL PROMOTE EFFICIENT AND COST EFFECTIVE ENERGY USE INTO ALL OF ITS NEW AND EXISTING BUILDINGS AND ENERGY-USING PROJECTS.
Standard Operating Procedure

6.5.SOP1 Replace inefficient street lighting and lighting in CBJ buildings and facilities with efficient fixtures upon replacement cycle.

Implementing Actions

6.5.IA1 Establish and fund a revolving energy conservation investment fund, to invest in energy-saving public projects that meet CBJ return-on-investment criteria.

6.5.IA2 Invest in necessary metering equipment to produce monthly project energy reports.

6.5.IA3 Conduct energy audits and establish energy management goals for CBJ buildings.

6.5.IA4 Develop and implement a system for rewarding CBJ employee initiative and responsibility in good energy management.

6.5.IA5 Incorporate LEED, or other similar principles and standards when designing public structures and facilities. The LEED or other standards should be adapted for local climate and materials resources and should include life-cycle cost analyses (including long-term operational costs) with appropriate fuel cost sensitivity analyses over the long term life of the Project.

6.5.IA6 When designing new facilities or major renovation of CBJ facilities, analyze life-cycle costs of energy applications.

6.5.IA7 Analyze the workings of the CBJ water and wastewater facilities and incorporate energy saving methods and technologies where appropriate.

Maximize Use of Local Energy Resources

The CBJ’s fossil fuel supply is subject to disruption due to a variety of reasons: embargoes, price hikes, shipping disputes, or disasters, among others. Use of local energy resources reduces these risks. As the Snettisham avalanches of 2008 showed, however, dependence on exposed, remote transmission lines for delivering electricity to users exposes the electrical system to unforeseen disruption. Most of the money used to purchase fossil fuels leaves the CBJ. The CBJ can have a much healthier local economy if we develop and encourage the use of our own energy resources that are adequately protected from disruption by relatively predictable natural disasters such as avalanches.

POLICY 6.6. IT IS THE POLICY OF THE CBJ TO MAXIMIZE THE RATIO OF LOCAL, RENEWABLE-SOURCE ENERGY TO IMPORTED FOSSIL-SOURCE ENERGY IN JUNEAU’S INTERNAL ENERGY ECONOMY.

Standard Operating Procedure
6.6.SOP1 Encourage energy conservation to reduce the amount of money leaving the community to pay for fuels.

Implementing Actions

6.6.IA1 Seek federal and state funding to convert the CBJ fleet and, particularly, public transit vehicles, to dual-fuel, hybrid, or other fuel technologies with reduced carbon footprints and enhanced sustainability over fossil-fuel burning vehicles.

6.6.IA2 Where practicable in large industrial operations, encourage co-generation processes to transform by-product heat to electrical energy for use by the operation and adjacent uses or for transmission to a nearby electrical grid.

6.6.IA3 Where practicable and where there are no significant adverse impacts to marine or other ecosystems, encourage the use of tidal, geothermal, wind and other renewable energy sources to generate energy for adjacent uses or for transmission to the electrical grid.

6.6.IA4 Encourage dual fuel systems that are cost effective for buildings.

6.6.IA5 Coordinate with the University of Alaska, other research organizations, and companies to identify potential renewable energy sources to power vehicles, vessels, aircraft, and structures. Analyze both the short-term and long-term costs and environmental impacts of energy production and distribution systems giving preference to dependable, cost-competitive, renewable sources that do not adversely affect natural resources and wildlife habitat when choosing a source of energy.

6.6.IA6 Amend the Land Use Code to create a new land use category for small-scale energy production facilities, such as solar panels and residentially-scaled wind turbines, so that they are not held to the same permitting requirements as industrial-scale energy production facilities.

Maximize Efficient Use of Renewable Energy Resources

In 1995, about 85 percent of the energy used in the CBJ was provided by fossil fuels. Conservation and renewable resources could displace much of this fossil fuel and greatly reduce both the dependence on these fuels and the export of capital from the CBJ and Alaska.

POLICY 6.7 IT IS THE POLICY OF THE CBJ TO MAXIMIZE THE EFFICIENT USE OF RENEWABLE ENERGY RESOURCES.

Implementing Actions

6.7.IA1 Coordinate efforts with the University of Alaska and other research organizations and entities to identify potential renewable energy sources to fuel vehicles, vessels, aircraft, structures and utilities and to heat structures. Analyze both the short-term and long-term costs and environmental impacts of energy production and distribution systems and give preference to dependable, cost-competitive, renewable sources that do not adversely affect natural resources and ecosystems when choosing a source of energy.
6.7.IA2 When designing new facilities or major renovation of CBJ facilities, analyze life-cycle costs of energy applications with consideration of renewable sources given priority.

Full-Cost Analysis
The very real environmental and social costs, now and in future generations, of relying completely on fossil fuels are not included in the prices we pay for fossil fuel-based energy. Wise local and global energy production and use requires these external costs to be internalized into energy prices, in order to conserve energy and to encourage its production from renewable, low impact sources. Additionally, the Federal, State and City budgets are strained with less funds trickling down to the City. Working capital or funds available for investment are therefore a scarce resource not unlike energy. Therefore, careful consideration of impact on the local citizenry must include how redirecting those scarce dollars to renewable energy or conservation may have a very real impact. Because national and state policies, where they exist, have not been implemented to do this, the CBJ should take the initiative to protect the long-term interests of its residents. The exact dollar value of these costs is always hard to determine, yet they must not be ignored since they ultimately have a major economic impact on the quality of our lives.

POLICY 6.8 IT IS THE POLICY OF THE CBJ TO INCLUDE THE FULL COSTS (DIRECT AND INDIRECT) OF ENERGY USE IN ITS ECONOMIC ANALYSES.

Standard Operating Procedure
6.8.SOP1 Use quantifiable external and indirect costs in establishing the cost of energy when conducting life-cycle cost analyses of CBJ facilities, projects, and operations.

Implementing Action
6.8.IA1 Incorporate energy costs into scenario analyses conducted as part of long term energy planning. [see 6.1IA.4(iii)]

Minimize Utility Investment
The peak rate of energy use (peak load) determines the size of generators, transformers, wires, backup generators, and other equipment needed to provide that peak load. The cost of these capital investments has a major effect on rates, and can be reduced by leveling out energy use on a daily and seasonal basis.

POLICY 6.9 IT IS THE POLICY OF THE CBJ TO ENCOURAGE ELECTRICAL ENERGY USE PATTERNS THAT MINIMIZE UTILITY INVESTMENT.

Implementing Action
6.9.IA1 Work with electrical utility providers to develop programs and educational materials promoting energy conservation.
Use of Favorable Energy Assets for Job Creation

A stable and reasonably priced source of electricity will enhance the CBJ’s business and industrial climate. The CBJ’s favorable electric energy assets include a current hydroelectric supply with a back-up system that uses diesel fuel. Potential renewable energy resources within the CBJ should be protected.

POLICY 6.10 IT IS THE POLICY OF THE CBJ TO TAKE ADVANTAGE OF JUNEAU’S FAVORABLE ELECTRICAL ENERGY ASSETS TO ADD QUALITY JOB OPPORTUNITIES.

Implementing Actions
6.10.IA1 Encourage the Juneau Economic Development Council (JEDC) to promote the CBJ’s favorable energy assets to potential investors, entrepreneurs, and employers.

6.10.IA2 Implement an aggressive water and energy conservation program; and use other renewable energy sources, such as geothermal and micro-hydro electrical generators.

6.10.IA3 Actively support hydroelectric development and other renewable energy projects.

Use Renewable Energy for Transportation

We do not have a current assessment of CBJ government and resident use of fossil fuels but, clearly, we, as a community, are dependent upon the use of fossil fuels to power our vehicles, vessels and aircraft and to heat our homes, among other things. The scarcity of fossil fuels, particularly oil and natural gas, will cause the price of these non-renewable resources to rise over time. Powering transport facilities by fossil fuels may not be affordable in the short-term or sustainable in the long term. The CBJ’s linear topology is amenable to an efficient, high-quality public transportation system. It is prudent to reduce our dependence upon the private vehicle for transportation and to ensure that public transit offers a safe, convenient and affordable means of travel.

POLICY 6.11 IT IS THE POLICY OF THE CBJ TO ENCOURAGE THE TRANSPORTATION OF CBJ RESIDENTS, VISITORS, FREIGHT AND MAIL BY RENEWABLE ENERGY SOURCES ON BOTH PRIVATE AND PUBLIC TRANSPORTATION.

Standard Operating Procedure
6.11.SOP1 Promote the use of public transportation and car pooling to reduce the reliance of CBJ residents and visitors on single-occupant vehicles.
Implementing Actions

6.11.IA1 Use a mix of vehicle sizes and fuels for CBJ-provided public transport to promote fuel and cost efficiency, and to keep frequency of service such that it will encourage use of public transportation systems.

6.11.IA2 Seek to convert fossil-fueled CBJ buses to renewable energy-fueled or hybrid vehicles. Hybrid or other dual-fuel buses that can run on fuel other than electricity are preferable to electric-only buses, especially in light of the effect of the April 2008 Snettisham avalanches and their effect on the provision of electricity to Juneau.

6.11.IA3 Encourage conversion of private fossil-fueled busses to renewable energy.

6.11.IA4 Provide metered electric energy sources at public parking lots and garages to recharge public and private electric automobiles, and provide preferential parking spaces for those vehicles. The metered electrical sources should have the functionality of being turned off automatically or manually by AEL&P and/or CBJ staff during periods of peak loading of the electrical system or emergency situations.

6.11.IA4 Retain adequate rights-of-way for fixed-guideway transit systems pending investigation of the feasibility of providing light or heavy rail public transit service, fueled by renewable energy sources, linking existing and new neighborhoods of Douglas Island with the mainland, the Mendenhall Valley with downtown Juneau and, in the future, connecting the Juneau area to the Alaskan interior. In the analysis of the feasibility of such a Borough-wide rail transport system, consider the life-cycle costs of design, construction, environmental mitigation and monitoring, as well as operation and maintenance costs.

Energy Efficient Buildings

The CBJ’s maritime climate and comparatively cold winters mean that keeping living spaces warm must needlessly consume energy if efficient heating, insulating and ventilating practices, materials, equipment and design are not used in the construction of new buildings and in remodeling existing buildings.

POLICY 6.12 IT IS THE POLICY OF THE CBJ TO ENCOURAGE COST EFFECTIVE ENERGY EFFICIENT BUILDING AND REMODELING PRACTICES.

Implementing Actions

6.12.IA1 Encourage the installation of energy-efficient heating systems in new construction.

6.12.IA2 Encourage participation in current residential energy efficient mortgage programs for both new and existing homes. Encourage favorable lending rate programs for energy efficient multifamily housing and commercial construction or renovation.

6.12.IA3 Establish energy efficient standards for new and existing buildings.
6.12.IA4 Encourage the conversion of existing heating systems from fossil fuel to renewable sources of energy.

6.12.IA5 Consider enacting water conservation ordinances that would lead to significant energy savings to the CBJ in pumping water and in treating wastewater.

6.12.IA6 Encourage consideration of “life cycle” costs, the use of energy efficient construction techniques, materials and equipment that are consistent with acceptable health and safety standards and that are appropriate for local climatic conditions, while keeping project costs low.


**Industrial Energy Use**

The design and operation of industrial developments can be managed to reduce, transfer or minimize waste of energy and to maximize use of renewable energy. Mining projects tend to be energy intensive and short-lived (tens of years). Within the CBJ they could have a great effect on the CBJ energy economy and be greatly affected by the CBJ energy policy. For industries with large amounts of fuel material by-products (e.g. wood waste), or with high temperature energy by-products (e.g. steam), the generation of electrical energy for sale to the utility grid can be useful and increase overall community energy efficiency. Similarly, there are industries that produce large amounts of heat as a by-product, e.g., over one megawatt thermal, and could use this energy resource to displace fossil fuel energy in nearby structures for space heating or other low temperature processes. The CBJ could play a role in making such projects viable, saving considerable energy dollars for use in the community, rather than for export to pay fossil fuel energy costs.

POLICY 6.13 IT IS THE POLICY OF THE CBJ TO ENCOURAGE INDUSTRIAL AND COMMERCIAL USERS TO BE AS EFFICIENT AS POSSIBLE IN THEIR USE OF ENERGY, TO USE RENEWABLE ENERGY SOURCES, AND TO MAKE ENERGY BY-PRODUCTS AVAILABLE FOR USE ELSEWHERE IN THE COMMUNITY.

**Implementing Actions**

6.13.IA1 Encourage energy intensive projects to follow CBJ energy policy.

6.13.IA2 Assist those proposing energy intensive projects, such as mining, in understanding, at the earliest point in their projects, the CBJ energy policy.

6.13.IA3 Require the use of renewable and environmentally-sensitive energy sources for energy intensive projects, where cost effective.

6.13.IA4 Encourage the development of co-generated electrical energy at avoided cost.
6.13.IA5 Encourage appropriate land use patterns of development close to potential sources of surplus by-product heat.

Waste Reduction, Reuse and Recycling

It is in the long-term interest of all people in the CBJ to minimize waste disposal and to recycle used materials as a part of local efforts to conserve natural resources. Recycling, where appropriate, will lead to the more efficient and economical use of resources and will lessen the impact on the environment by decreasing the need for the disposal of materials. It is recognized that since the CBJ is located far from major recycling markets, it may not be energy efficient to recycle some classes of materials at the present time. Therefore, reduced resource use is especially important. Direct, immediate or short-term costs should not be the sole consideration for CBJ support of programs and policies for waste reduction, reuse and recycling. Instead, related indirect, future or long-term costs should also be considered, such as the costs of a landfill operation and its remediation, once closed. The CBJ understands that effective efforts towards materials conservation, reuse, and recycling, as well as energy conservation, necessarily involve close and on-going communication, coordination, and cooperation between the public, private and non-profit sectors. While some programs may not be cost effective in Juneau alone, the CBJ could work with regional entities that are forming a regional solid waste authority, and developing plans for a central facility for the region.

POLICY 6.14 IT IS THE POLICY OF THE CBJ TO ENCOURAGE WASTE REDUCTION, REUSE AND RECYCLING ACTIVITIES THAT HAVE POSITIVE ECONOMIC AND/OR ENVIRONMENTAL BENEFITS.

Implementing Actions


6.14.IA2 Coordinate/cooperate with villages, towns, municipalities, private companies and non-profit organizations within the region on solid waste management programs.

Public Education on Energy

Individual consumer decisions and behavior are significant in governing the extent of required energy development. Nationally, there is a trend toward using rate incentives to further community energy goals. The effect of these incentives is maximized by advising consumers on how to take advantage of them. Only a well-educated citizenry is able to make well-informed decisions.

POLICY 6.15 IT IS THE POLICY OF THE CBJ TO INCREASE PUBLIC UNDERSTANDING OF HOW INDIVIDUAL AND CBJ ENERGY DECISIONS AFFECT INDIVIDUAL CONSUMER COSTS, AS WELL AS THE LIVABILITY AND SUSTAINABILITY OF THE COMMUNITY.
Implementing Actions

6.15.IA1 The CBJ Commission and the Juneau School District should work together to improve energy education in K-12 public school educational curriculum within the Juneau Douglas School District, including:

- energy as a fundamental human need;
- historical perspective of energy;
- understanding our local energy system, and how it fits within the regional, state, federal, and world systems;
- helping students become smart consumers;
- informing future voters on the need to establish and maintain an energy system that is high quality, secure, equitable, and sustainable; and
- a multi-disciplinary approach to energy.

6.15.IA2 Encourage the private sector, with financial assistance from the CBJ and support from the Commission on Sustainability, to conduct a public education program to explain the benefits of conservation of energy.

6.15.IA3 Conduct public meetings to explain and discuss the Energy Chapter of this Plan.