Resource Management Strategy

The Trust
The Alaska Mental Health Trust Authority

The Trust Land Office

Resource Management Strategy

Pursuant to 11 AAC 99.090(c), the TLO is required to adopt and maintain a long-term asset management strategy that establishes goals for managing trust land assets to execute the overall trust management principles of 11 AAC 99.020. To that end, on July 15, 2003, the TLO adopted the "Long Term Asset Management Strategy (LTAMS)." This document, "Resource Management Strategy, 2013," is hereby adopted and replaces the previously adopted strategy, "LTAMS, July 15, 2003," which is no longer in effect. The adoption of this Resource Management Strategy fulfills the obligation of 11 AAC 99.090(c) and provides guidance to the TLO for management of The Trust's non-cash asset base.

About the Trust Land Office

In 1956, the then-Territory of Alaska was granted an entitlement of one million acres from vacant, unappropriated and unreserved federal public lands for the purpose of providing income for mental health programs. Under the Alaska Mental Health Enabling Act, all lands and related income were to be "administered by the Territory of Alaska as a public trust and such proceeds and income shall first be applied to meet the necessary expenses of the mental health program of Alaska." A public trust, called the Alaska Mental Health Trust Authority (The Trust), was subsequently established to provide Alaska with the resources to provide comprehensive, integrated mental health services. Prior to the establishment of this trust, there were few mental health services available to individuals who experienced mental illness or developmental disabilities (now known as Trust beneficiaries).

The Alaska State Legislature was charged with the fiduciary responsibility to manage Trust lands, but gross mismanagement resulted in a class action lawsuit, filed in 1982. At that time, 65 percent of The Trust's real property portfolio had been disposed of by the state. The Alaska Supreme Court ordered the restoration of the original land in 1984, but it wasn't until 1994 that a final settlement reconstructed the trust with 500,000 acres of original Trust land, 500,000 acres of replacement land and $200 million in cash.

Spending of Trust income is managed by an independent board of trustees, also established under the terms of the 1994 settlement agreement. The Trust's cash assets are managed by the Alaska Permanent Fund Corporation, while the land and non-cash assets are managed by the Trust Land Office (TLO), a major office of the state Department of Natural Resources.

Under federal and state law, the TLO is authorized to use, manage, lease, develop and sell the trust's non-cash assets. The TLO may then reinvest proceeds from sales of Trust land to enhance the value and grow the corpus of the trust, including the possibility of developing Trust land and acquiring real estate for The Trust. This broad authority requires:

1. Compliance with state laws and regulations pertaining to transactions;
2. Consultation with and/or approval of the board of trustees with respect to the TLO's activities associated with disposal and acquisition of assets;
3. Reporting to The Trust of its ongoing activities; and
4. Appropriate planning, budgeting and forecasting efforts to keep The Trust informed of its planned activities.

This Resource Management Strategy provides information pertaining to the TLO's planned activities as indicated in (4) above.

Section 202 (e) of Public Law 830, the Alaska Mental Health Enabling Act, states the following:

> (e) All lands granted to the Territory of Alaska under this section… together with any property acquired in exchange therefore, or acquired out of the income or proceeds there from, may be sold, leased, mortgaged, exchanged or otherwise disposed of in such a manner as the Legislature of Alaska may provide, in order to obtain funds or other property to be invested, expended or used by the Territory of Alaska.

With the adoption of AS 38.05.801, the Alaska Legislature agreed to apply the principles set forth in P.L. 830 to the lands. Further, it directed the Department of Natural Resources to adopt regulations that would address:

(1) Maintenance of the trust land base;
(2) Management for the benefit of The Trust;
(3) Management for long-term sustained yield from the land; and
(4) Management for multiple uses of the land.

Alaska Administrative Code (20 ACC 40.700) further clarifies The Trust's responsibility with respect to Trust asset development and investments. That section of the code states:

(a) From time to time, the board may determine that it is in the best interest of the trust and its beneficiaries to use receipts from the management of trust land to:
  (1) Acquire for the trust new land; or
  (2) Improve or develop existing trust land.
(b) If the board decides under (a) of this section to acquire new land or improve or develop existing trust land, the authority will establish a development account for the purpose of monitoring and accounting for receipts used and the costs incurred by the Trust to carry out that acquisition, improvement, or development project.

Under the provisions of the above referenced statutes and codes, the TLO is required to protect and enhance the value of The Trust's holdings. It is also authorized, subject to the approval of the Trustees, to use "receipts from the management of trust land" to buy and develop resources. There is no differentiation in this regulation over the use of income or principal revenue for these purposes. Finally, the regulations require that the TLO plan for and forecast such investment and development activities and consult annually with the Trustees about those activities. This document will be the basis for those consultations.

Guiding Goals

The board of trustees has set forth the following goals to manage the non-cash assets of the trust[1]:

1. Protect and enhance the value and productivity of Trust property and resource assets;
2. Maximize revenues from Trust property and resource assets over time;
3. Encourage a diversity of revenue-producing uses on Trust property and resource assets; and
4. Manage Trust land prudently, efficiently and with accountability to The Trust and its beneficiaries.

Portfolio Management Strategies

TLO will employ a series of supporting strategies in the process of implementing the Guiding Goals outlined above. These strategies will be reviewed annually to ensure that they are relevant with respect to a variety of factors, including the desired allocation of non-cash assets within The Trust's portfolio, the financial requirements of The Trust for both operational and programmatic purposes, and economic and market conditions in the areas where The Trust has made investments and where it is considering investments.

[1] Asset Management Policy Statement, Revised September 2011, Trust Land Management Objectives, pp 5-6.

The strategies to be used in managing the non-cash assets will be the following:

A. Develop and update, as necessary, each non-cash resource plan, to include:
   1. Allocation of investments
   2. Management of risk profile
   3. Establishing diversity guidelines that address:
      a. Asset allocation among land use types
      b. Geographic distribution
      c. Partnership opportunities
      d. Recommended levels of debt, when appropriate
B. Ensure that decisions regarding land and resource management, disposals and investments are supported and guided by state law.
C. Develop guidelines to help determine when it is appropriate to use Trust property for beneficiary programs.
D. Consider leveraging Trust resources through development partners, both public and private, when appropriate.
E. Annually forecast the principal revenue needed to implement this plan and the income to be generated by implementing the plan during the planning horizon (five years).

The above strategies and subsequent *Investment Guidelines* have been developed to guide the management of The Trust's non-cash assets. Together they work as a dynamic management tool that feeds information into the budget and annual decision-making processes. A feedback loop, in the form of annual reviews, will act to keep the *Guiding Goals* and *Portfolio Management Strategies* consistent with changes in The Trust's needs as well as changing markets and economies.

The Trust has made a conscious decision to not attempt to value the land or non-cash portfolio that has been held by The Trust from inception and as a result of the 1994 settlement. An important consideration in making that decision was the difficulty and expense associated with establishing those values and in maintaining accurate values. Each parcel may contain numerous monetization possibilities, and identifying every possibility would be impractical. Once defined, it would be necessary to analyze them in light of volatile markets. Maintaining accurate appraisal information would require constantly monitoring the definition of economic viability. Finally, environmental and community concerns impact The Trust's ability to monetize its assets and would require speculation on the outcome of political and legal processes.

Investment Guidelines

This plan is designed to provide broad guidance to help the TLO pursue development activities and revenue-producing projects that will enhance the value of Trust assets and increase the revenue generation of the portfolio. It will also propose specific investment criteria for the board of trustees to use in evaluating investment and development opportunities.

Funding for Trust-supported mental health programs and services comes, in part, from income generated from the assets of The Trust. Those assets include the two primary types: cash and resources.

The Trust's cash portfolio is managed by the Alaska Permanent Fund Corporation as a commingled percentage of the Permanent Fund. The non-cash assets, primarily composed of land, real estate, timber, materials and subsurface oil, gas, coal and minerals, are managed by the TLO. Trust land is managed separately from other state lands with the focus on maximizing its benefit specifically for the beneficiaries of The Trust.

Revenue generated from the disposal of Trust assets (i.e., sale of land or royalties from resource extraction) must be reinvested, either with the Permanent Fund or through investment by The Trust in other principal assets that will safeguard the value of the asset and/or produce income to The Trust. This ensures that the principal will continue to generate income to the fund in perpetuity. Only income revenue (i.e., leases, fees, bonus bids, interest, etc.) that is generated from investing or managing the assets can be used by The Trust for programs and operating costs. Through its management of the non-cash assets, the TLO is responsible for guiding generation of the maximum return on non-

cash assets through revenue generation, both income and principal, and increase its asset value. This may also involve reinvestment of principal in other assets.

The current economic climate in Alaska is significantly impacted by decreasing revenues from North Slope crude oil production. As the decline in state revenue continues, there will be less income available from both public and private sources to provide programs and services for beneficiaries of The Trust. Simultaneously, the number of beneficiaries is increasing, along with demand for Trust-supported services. In the long term, this combination of trends will likely create pressure on all sources of funding for mental health programs and highlight the need to find new methods of generating program funds. This plan has been developed to address these trends, providing a pathway for The Trust to increase the balance of its principal fund while maximizing the revenue-producing capabilities of its non-cash assets. This will allow The Trust to address the widening gap between available funding and program needs.

While The Trust has taken steps to accommodate variations in its income stream from the Permanent Fund, further diversity among its income sources is desirable. As a method of diversification, by adoption of this plan, the Trustees will have directed the TLO to configure a portion of the non-cash assets of The Trust's fund into income-producing investments exclusive of the Permanent Fund. This plan will guide those investments and acquisitions.

In addition to funding programs, it is important to fund the stewardship and management of Trust land and resource rights. This includes a broad range of activities, from managing trespass issues to developing inventory and asset management systems to participating in public process regarding regulation of land use and resource activities. That function is becoming increasingly important as the TLO pursues more and varied resource development and extraction activities on Trust land.

Resource Management Strategy

This addresses the management of The Trust's non-cash asset base, which is currently categorized into six asset categories:

1. Land
2. Minerals and materials
3. Program-related real estate
4. Forestry
5. Real estate
6. Energy

Each of The Trust's specific non-cash assets is placed into the category that best fits its most significant and beneficial use. It is important to note that each asset may move from one category to another as more information is obtained or as external factors affect its highest and best use.

Each non-cash asset is managed under a resource plan that may include up to three primary components: a narrative plan, investment criteria and goals & objectives.

The narrative plan reviews the current assessment of the resource in all aspects, including accessibility, marketability, environmental feasibility and other external factors. Investment and resource management criteria will be established and recommendations will be made concerning potential characteristics that will help balance risk factors and asset return potential.

The investment criteria component summarizes and restates the investment principles found in the narrative.

Each plan may be supported by a financial model, that may include identified fund sources, investment goals and proposed allocations. It also identifies potential cash flows from both income and principal revenues, as well as the characteristics of those cash flows (i.e., amounts, recurrence and stability).

Land Resource Management Plan

Land Resource Management Plan

Introduction

The Lands Section of the Trust Land Office (TLO) manages the economic opportunities and stewardship obligations of surface lands held by the Alaska Mental Health Trust Authority (The Trust). This management must be consistent with Trust principles as established by the Alaska Mental Health Enabling Act of 1956.

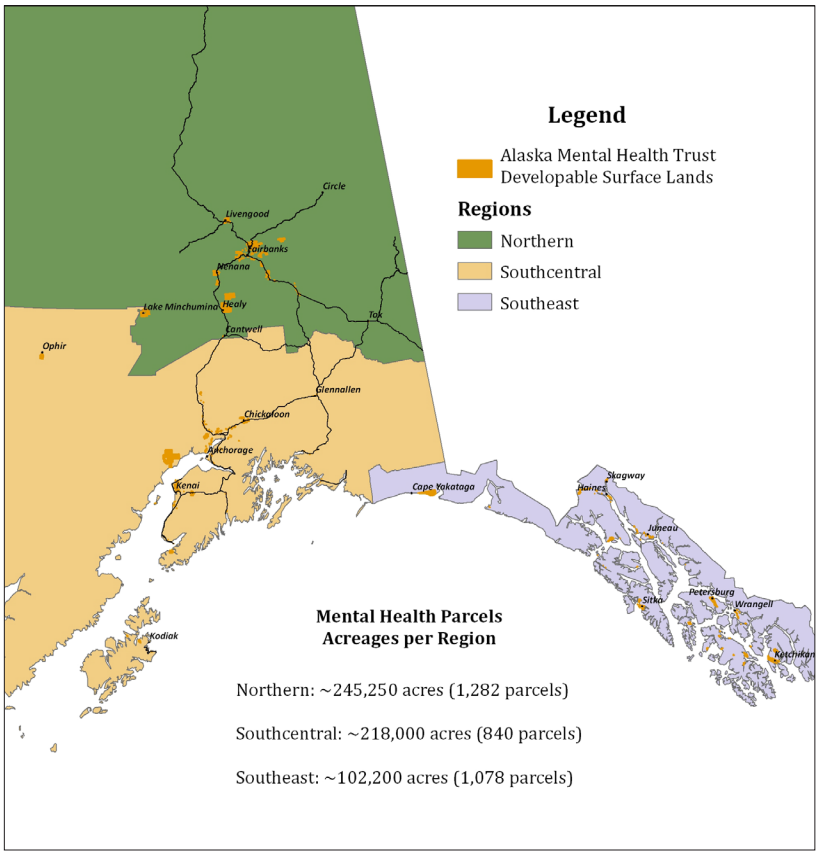
The Trust's surface lands are divided into three regional areas (Northern, Southcentral and Southeast), each comprised of organized and unorganized boroughs. A senior lands manager oversees three regional managers and a lands specialist. Each regional manager offers professional expertise to focus on business transactions, ecosystem management, and the economic and political climate of their respective regions. The specialist assists regional managers with adjudication of business processes, title work and research.

Stewardship

Responsible management obligates the Lands Section to follow preservation and conservation principles to ensure that Trust lands are maintained, assets inventoried, liability exposure minimized, and value is retained for present and future generations. The first priority of the Lands Section is to protect the long-term productivity of The Trust's surface lands until such time as they may be converted into a cash asset. Protection of surface lands is sustained through a working knowledge of the portfolio, identifying and resolving liabilities, and promoting preservation, conservation and best management practices.

Revenue Generation

This plan provides guidelines for management and development of the surface lands to generate a predictable stream of income and principal funds. Historically, land transactions have contributed over 51 percent of gross revenues to The Trust. New opportunities to generate future revenue must meet operating expectations as established in the Alaska Mental Health Trust Authority Asset Management Policy Statement, which focuses on "resources at the high end of their market values ('Best Markets') and then on land or resources with Best Market potential within the next two to ten years."[1]



[1] Asset Management Policy Statement, Revised September 2011, p.8

Inventory of Land Resources

The surface lands are made up of approximately 3,200 parcels and segregated into asset classes as described below.

Performing Assets

A performing asset provides a positive cash flow on a parcel or a selection of parcels. The Lands Section manages land use through various authorizations that generate revenue from fees, licenses, leases and land sales. The Lands Section actively manages more than 570 land use authorizations located on approximately 900 parcels. These authorizations grant individuals, corporations, government agencies and other entities limited or full property rights for the temporary use of Trust land.

Projects authorized on the surface lands are often diverse and require Lands Section staff to possess complex management skills and knowledge. Project types may include easements for utilities, fiber optics and roads; land sales either competitive or negotiated; land leases for short- or long-term development with minor infrastructure, such as cellular/communication sites; licenses for exploration or analysis; and letters of authorization for community events or other minor projects.

Nonperforming Assets

A nonperforming asset is defined as a parcel that is not producing revenue. Presently, there are an estimated 2,300 nonperforming parcels. The Lands Section intends to proactively explore business opportunities to generate a wider range of authorizations, such as cottage industries, conservation mitigation banking and land exchanges, to draw upon emerging markets on nonperforming assets.

It is important to note that other Trust resource management units within the TLO may be generating revenue on parcels that are considered nonperforming by the Lands Section.

Determined Values

Throughout The Trust's history, valuation of the real property portfolio has been difficult to quantify. In the settlement of the class action suit that reorganized The Trust in 1994, the fair market value of Trust lands could not be agreed upon due to valuation issues related to the original Trust lands compared to the substitute lands awarded in the settlement agreement. Judge Mary E. Greene concluded that, "Without question, the reconstituted trust is not as valuable as the original mental health trust."[2]

During the settlement process, appraisers were hired to determine the value of each parcel, although actual appraisals were not performed. The resulting values are still used today on a limited basis. Valuation today continues to be difficult to quantify.

The TLO utilizes multiple evaluation tools to determine valuation. The valuation process entails a wide range of analysis methods based on the proposed type of authorization. Current parcel values are determined by a process that may include historical values, review of tax assessment records, analysis of comparable sales transactions, and/or procurement of an appraisal.

Maintained Values

The Lands Section is entrusted with the responsibility of protecting the future value of the surface lands. This includes developing stewardship policies, procedures and guidelines to assess current parcel conditions, alleviate and mitigate unauthorized land use and trespass, and develop restoration and reclamation projects. To facilitate this process, the TLO developed a Parcel Attribute Library (PAL), an electronic database that documents each parcel's known condition, attributes, use history, known values and authorizations. PAL is an important management tool for the continuity of future transactions and the current demands for management decisions.

Focus Area Plans

Focus Area Plans will define future uses in respect to land use development and asset preservation for a smaller geographic area within a region. They are intended to forecast an area's economic trends and land resource potential and to identify preservation opportunities and needs. The process may include the evaluation of site characteristics, history of land use, analysis of local zoning regulations, evaluation of market potential, and identification of appropriate management policies.

Previously, asset management plans were developed by third party contractors and procured on a limited basis. Today, with the expansion of the Lands Section, Focus Area Plans that target strategic areas will be developed as needed to identify opportunities and guide potential development and preservation. These plans will be reviewed and approved by the TLO executive director.

[2] Memorandum Decision and Order Granting Final Approval to the Mental Health Settlement by Superior Court, December 6, 1994, p. 63

Development Issues

Surface lands are managed for the economic benefit of The Trust and its beneficiaries — not for the public at large. Consequently, TLO management practices may conflict with the priorities of various public or private user groups. This conflict between the public's interest in Trust land versus the interest of beneficiaries has at times led to confusion and tension between The Trust or the TLO and user groups, government agencies and individuals.

Public Perception

The public is often unaware that Trust land is not managed for public use but managed for the best interest of The Trust and its beneficiaries. The Lands Section may receive pressure to limit the development of surface lands through the public process, public relation campaigns, agencies, or changes to the zoning laws without compensating The Trust or devaluing the property. Limiting parcel development opportunities from the full market potential is inconsistent with AS 38.05.801 and 11 AAC 99.

Public Rights of Access and Compensation

The burden of section line easements,[3] RS2477 rights of way[4] and "to and along" easements[5] on Trust lands may, on a case-by-case basis, be in conflict with TLO's mission. Generally, these are public rights of access created without compensation to The Trust prior to the settlement. There are instances when these rights augment the development of Trust resources. At the same time, there may be instances when these easements diminish the value of Trust land or create a risk or liability to The Trust from trespass or other unauthorized activities. The 1994 settlement allows The Trust to challenge the validity of any encumbrance or interest. Existing case law supports compensation for public takings, such as access easements, in some instances.

Financial Reporting and Information Management

Presently, the Lands Section lacks adequate internal economic measurements and standards for efficient financial accountability. Land management and stewardship require a broad range of financial information and data for efficient administration. A lack of financial reporting tools to monitor transactional efficiencies for business operations, such as "return on asset" by authorization type and by parcel, contributes to management difficulties. For example, the Lands Section must work with multiple antiquated state data systems that are not designed to support the TLO's business processes. This makes comparing revenues to expenses virtually impossible. The Lands Section is currently working with TLO administration to identify state resources or electronic accounting packages that may make it possible to more efficiently manage the required financial data.

Land Management Strategy

Land resource management generates revenue through a variety of transactional authorizations that grant permissions or rights for compensation. The basis of an authorization type is predicated on:

1. The amount of risk associated with the proposed activity;
2. The term or extent of the authorization;
   and
3. Infrastructure added or modification of the property.

Land use fees are established on a case-by-case basis using the TLO's Guidelines for Land Use Fees or by appraisal (as in the case of a disposal). Disposals of Trust interests (such as a long-term lease) require consultation with the board of trustees. Authorizations described below grant the most basic land use rights and proceed to more comprehensive or additional rights.

Income-Generating Authorizations

1. Letter of Authorization

A letter of authorization grants minimum rights, is revocable and non-exclusive for a short period of time, with low risk and low impact to the surface lands. Often, these are used for community-supported events and may provide opportunities for positive public relations for The Trust. Other activities granted under this authorization type may include non-intrusive research, resource studies or monitoring activities conducted by an agency or commercial venture.

[3] AS 19.10.010
[4] AS 19.30.400
[5] AS 38.05.127

2. Revocable License for Land Use

A license allows non-exclusive use of the surface lands and is revocable without cause. Infrastructure or land development associated with the use is temporary in nature, and improvements are removed at the end of the license term. Generally, a license is granted from one to 10 years and may be extended.

3. Land Lease

A lease allows exclusive use of the property and typically will add more infrastructure associated with its use. At the end of the lease term, the infrastructure may be removed, sold to another party or retained by The Trust. A lease period is longer in term and may run from five to 25 years; it requires consultation with Trustees based on the total annual lease revenues.

4. Non-Perpetual Easement

A long-term easement for land use development may include communication towers, roads, trails or utilities. In addition to standard rents, the grantee may be required to pay a percentage of gross revenues from all subleases. The easement agreement is based on an annual fee and may be transferrable upon approval.

5. Land Sale Contract Interest

A land sale contract may be offered for a parcel with a purchase price in excess of $2,000. The contract interest rate is set by statute and determined by the prime rate as reported in the Wall Street Journal on the first business day of the month plus 3 percent. The interest earned on these contracts contributes to the income revenue.

Principal-Generating Authorizations

1. Perpetual Easement

A perpetual easement is a disposal of the surface land in which the mineral rights are usually retained by The Trust. Perpetual easements are negotiated on a limited basis because of the potential for lost economic opportunity in the future. Easements are sold at market rates, generally determined by an appraisal.

A perpetual easement is treated as a negotiated sale and preceded by consultation with Trustees.

2. Competitive Land Sales

The annual competitive land sale program was transferred from the Department of Natural Resources to the TLO in 1998. The program is designed to dispose of existing subdivided lots and small parcels that do not lend themselves to resource development. The competitive nature of the program is derived from the directive to maximize revenue from Trust land. TLO regulations require the disposal of the surface lands on a competitive basis, unless the executive director determines a negotiated sale is in the best interest of The Trust. The land sale program contributes revenue above appraised values and historically has averaged over 26 percent of appraised values. Generally, the appraised value establishes the minimum bid.

An outgrowth of the competitive land sale program is the Outcry Auction. Since 2006, properties with unique characteristics (waterfront, scenic viewsheds and islands) are offered for sale in the Outcry Auction. Although the number of parcels offered in the Outcry Auction is usually low, the competitiveness of auction dynamics often increases revenues compared with other methods.

Small lots in marketable locations have been sold since the inception of the competitive disposal program in 1998. Generally, these lots were created by DNR for the Alaska State Land Offerings program in support of the goal to sell state land for settlement and private ownership as directed by the Alaska Constitution. Many of these small, residential-sized lots were conveyed to The Trust after the settlement as substitute land. However, the inventory of these subdivision lots is almost completely depleted. The future of the competitive land sale program is dependent on creating smaller lots by subdividing larger parcels in recreational or residential marketable locations. It is important to note that preparation of a subdivision may take place during less favorable market conditions in order for the disposal to be ready at the optimum market peak. The number of competitive sales held during a single fiscal year may be adjusted based on demands of the market and availability of parcels.

3. Negotiated Land Sales

From time to time, private parties, communities, conservation groups, nonprofits and local governments approach the TLO, interested in acquiring Trust land. Each request is carefully evaluated and subjected to a stringent adjudication process. If pursued, each sale requires consultation with Trustees, a written finding of a Best Interest Decision and publication of a public notice under 11 AAC 99.050.

A negotiated sale is usually based on a current appraisal plus a 20 to 30 percent surcharge to compensate for not selling

the parcel through a competitive process. All negotiated sales are considered on a case-by-case basis. Negotiated sales are designed to maximize revenues but may also be used to improve public relations in a community. As a general policy, the Lands Section limits the number of negotiated sales and employs competitive sales whenever practical. A negotiated sale application may transition into a competitive sale during the public notice process if additional interest is identified from other commenters. Negotiated sales follow the same administrative process as competitive sales, including consultation with The Trust (11 AAC 99.030), completion of a Best Interest Decision, and noticing the public of the intent to dispose of Trust land.

Management Guidelines

The following guidelines reflect the goals and objectives based on applicable statutes, regulations, policies, and procedures. Performance standards will be developed to measure success and determine if these guidelines are effective or should be reconsidered and rewritten.

Key Performance Indicators

Key performance indicators are based on achieving profit in both principal and income funds, as well as revenue maximization by type of authorization and parcel. A key component of establishing performance measures is the statistical financial information derived from the development of a Net Income Report and Return on Asset Report. Requests for land use that are not profitable will be denied unless they fulfill a stewardship obligation by increasing the inherent or potential value of a parcel.

Stewardship typically does not have revenue performance measures because its focus is the preservation of the parcel; however, revenue potential may be created through lease opportunities for preservation or conservation easements to keep lands pristine and undeveloped.

Profitability in Comparison with Other Land Trusts

The Western States Land Commissioners Association (WSLCA) covers 23 states, and its membership oversees 447 million acres of state land, of which most are managed for school trusts. Due to the lack of a standard reporting system, the WSLCA developed a reporting standard (Return on Asset to compare asset or authorization types) to measure asset performance across multiple states. Although the TLO is a WSLCSA member, it does not yet have the ability to measure itself in comparison to other state trusts, except by revenue per acre, until similar financial reporting functions are developed.

Risk Management

Risk management is the mitigation of The Trust's liability through a process that identifies and assesses the risk associated with a resource management decision and establishes a method to minimize, monitor and control the risk within the parameters of land resource management criteria. Best policies include:

1. Use of contract stipulations requiring indemnification and insurance in all land use contracts issued by the TLO.

   Boilerplate language for risk mitigation has been recommended by the State of Alaska risk management group. On a case-by-case basis, specific authorizations may include input from the Department of Law for prudent environmental or transactional stipulations or conditions.

2. Performance guarantees used to protect The Trust if an applicant defaults on the terms and conditions of a land use contract.

   An applicant must provide a performance guarantee before being authorized to use Trust land, unless the perceived level of risk associated with the activity is de minimis.

Five Year Goals and Objectives

Goal 1:

Protect the inherent value of the surface lands through stewardship obligations.

Objective 1: Establish or increase collaborative relationships with local governments, communities, and state and federal agencies to advance the TLO's mission and land management decisions.

Objective 2: Actively engage in monitoring proposed actions of governments and agencies related to zoning, regulatory changes, plans, operations, and projects that may affect Trust land. Respond to agency reviews, community public relations actions and public notices as necessary. Whenever possible, resolve potential land use conflicts on behalf of The Trust.

Objective 3: Identify and resolve long-standing issues and adverse impacts of Trust resources related to access, trespass, or environmental degradation.

Objective 4: Develop focus area plans that will make recommendations for future land use.

Objective 5: Land disposals through sales will not exceed 5 percent of the total surface lands portfolio over the next five years.

Goal 2:

Maximize revenue by increasing development opportunities on assets.

Objective 1: Evaluate lease programs for conservation and preservation on nonperforming assets that will employ sound economics and environmental practices while providing revenue to income.

Objective 2: The competitive land sale program will maintain a goal of generating $1.5 million per fiscal year, contributing an estimated $7.5 million to principal over the next five years.

Objective 3: Investigate implementing a processing fee for early pay-off of contracts to defray the administrative costs.

Goal 3:

Develop financial management tools to quantify the benefit-cost analysis of land resources management and establish performance standards.

Objective 1: Generate annual net income reports. Net income reports should measure profit by authorization and project types and also by parcel to determine if the activity represents a prudent economic decision. Financial data resides in multiple state systems that do not overlap. The challenge will be to extract meaningful data and compile it into managerial reports. The gathering of reporting information needs to be simple, systematic and repeatable.

Objective 2: Identify labor costs to produce effective management tools to capture both time performance and the expense portion of net income. Although labor expenses are a calculation of net income, it is important to note that by identifying labor costs separately, it becomes a useful management tool to predict time allocation for land management authorizations by activity type.

Objective 3: Develop analysis tools to provide a basis for comparison of projects and other trusts.

Minerals and Materials Resource Management Plan

Minerals and Materials Resource Management Plan

Introduction

In 2012, Alaska ranked sixth among state producers of metals and nonfuel minerals with a production value of $3.5 billion. Alaska Mental Health Trust Authority (Trust) lands have considerable potential for mineral and materials resources (including base and precious metals and industrial rocks and materials), especially in the Ophir District, the greater Fairbanks-Livengood area, Liberty Bell, Icy Cape and Southeast Alaska. Some production has already been realized, primarily from the Fort Knox gold mine and various small gold placer mining operations in the Fairbanks mining district. There is potential for significant production within the next decade from the large Livengood gold deposit being developed by International Tower Hill Mines, if gold prices rise to historic levels.

Materials sales have long contributed a small but consistent revenue stream to The Trust, and a large-scale railroad or pipeline construction project would amplify these earnings. Potential for industrial rocks and minerals asset development on Trust land is largely unknown since Alaska has traditionally not had a mature market for these commodities. Nevertheless, Alaska's position on the Pacific Rim should allow for industrial rocks and minerals to be marketed to Alaska and growing Pacific Rim nations.

Authorities and Responsibilities

The Alaska Mental Health Enabling Act of 1956 provided The Trust with a land endowment of one million acres. Specific to that grant is the statement that "all grants made or confirmed under this section shall include mineral deposits"[1] subject to prior existing rights. It is inherent in the enabling act that the minerals were to be conveyed with the land in order to be utilized by The Trust for its beneficiaries. Today, The Trust finds itself with a mixture of lands, some of which are owned fee simple (meaning The Trust owns both surface and subsurface rights), while other holdings are mineral rights only, hydrocarbon rights only, or surface rights only. Approximately 441,232 acres of the holdings are some form of mineral estate only with the surface managed by the state of Alaska or another entity. In these instances, if the Trust Land Office (TLO) cannot develop the valuable mineral or energy resources present, then the holding is of no value to The Trust.

Management of Alaska Mental Health Trust Lands is guided by Title 11, Chapter 99 of the Alaska Administrative Code. These regulations outline mining rights on Trust land as follows:

11 AAC 99.100. Mining rights

(a) Rights to locatable minerals on trust land are available only as provided in this section. To the extent that a statute or regulation applicable to other state land, including AS 38.05.185, 38.05.195, 38.05.205, and 38.05.245, contains a requirement that provides for or permits the acquisition of mineral rights, rights to prospect, or rights that open land to claim staking, mineral location, or leasehold location, that provision of law is considered inconsistent with 11 AAC 99.020, and does not apply to trust land.

(b) The executive director, in consultation with the trust authority, shall open areas of trust land under one or more of the following methods, or under (c) of this section, which the executive director determines to be consistent with 11 AAC 99.020: (1) competitive lease; (2) exploration license; (3) negotiated agreement; (4) prospecting permit; (5) mineral entry; or (6) by other methods that the executive director considered appropriate.

(c) If an area is not opened for the disposal of rights to locatable minerals under (b) of this section, a person may apply under 11 AAC 99.030 for an authorization to explore and prospect for or lease locatable minerals in that area.

(d) Terms and conditions of an authorization under (b) of this section, applicable to mining rights on trust land, shall be developed in consultation with the trust authority.

(e) The rent, royalty, and assessment work credit provisions of law applicable to other state land, including AS 38.05.211 and 38.05.212, do not apply to trust land unless determined by the executive director, on a case-by-case basis, to be consistent with 11 AAC 99.020. The determination shall be stated in a written finding.

(f) Nothing in this chapter affects valid mineral rights on trust land that existed at the time the land was designated as trust land.

Under this code, the normal methods of acquiring mining rights on state land do not apply to Trust land. Instead, the TLO executive director will open land for mineral development as dictated under (b) above. The development of minerals must be consistent with the overall general management of Trust lands as outlined in 11 AAC

[1] Sec. 2.2 (c)

99.020, which states that "management shall be conducted solely in the best interest of the Alaska mental health trust and its beneficiaries," that land be managed for "maximization of long-term revenue" and that a "best interest" decision consider only the interests of The Trust and the beneficiaries. Such a best interest decision, made on a case-by-case basis, is in fact required to be written and made public before a disposal of interest is finalized.

TLO is not a regulatory agency but rather depends upon the appropriate state agencies to permit and regulate the mining industry in Alaska, including those on Trust land, and upon the companies with which it conducts business to implement best management practices that address matters such as storm water handling, cultural resources, solid waste management, wetlands, spill prevention and control, and spill contingency plans. Large mine permitting in Alaska is primarily coordinated through the State's Office of Project Management and Permitting (OPMP) and Large Mine Permitting Team (LMPT). The team consists of members of state and federal agencies with permitting authority over various aspects of a particular mine's development, production and reclamation. TLO interaction at various junctures in the permitting process allows for input into important parameters such as reclamation and post-mining land use to fulfill the Trust's responsibilities for "protection and enhancement of the long-tem productivity of trust land" and "encouragement of a diversity of revenue-producing uses of trust land."[2] For instance, this could mean the introduction of a commercial tree growing and harvesting project on lands reclaimed by mining.

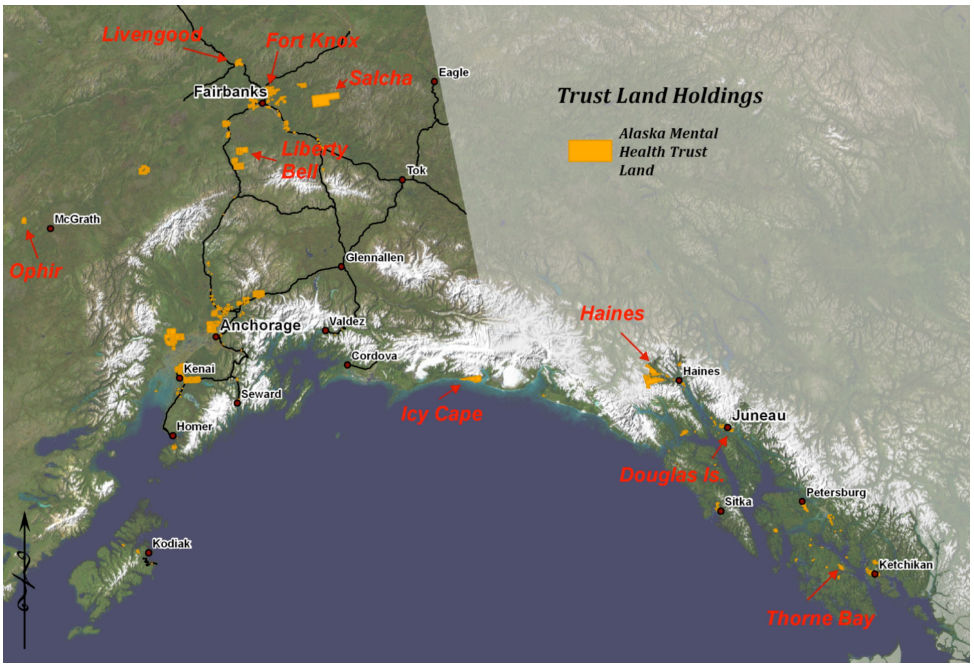
Mineral exploration, development and production on Trust lands are permitted through the appropriate state and federal regulatory agencies. In the state of Alaska, the Department of Natural Resources (DNR) is the lead agency for all mining matters, while the Alaska Department of Environmental Conservation (DEC) has various authorities affecting mineral activities, especially with regard to controlling degradation of air and water quality. DNR also regulates the coal industry under the auspices and oversight of the federal Office of Surface Mining. DNR and DEC share oversight on acid mine drainage and ensure that appropriate financial assurances are in place to guarantee that reclamation can be completed even if the miner is unable or unwilling to conduct the work. The financial assurances of the various large mines and large mine projects are continually updated; as of June 30, 2013, the total bonding was equal to $511 million. Various federal agencies may also have jurisdiction over aspects of a mining project. For example, the U.S. Army Corps of Engineers oversees disturbance to wetlands, and the Environmental Protection Agency manages issues related to water injection wells.

The TLO's mineral leases and material sales contracts contain provisions that reinforce the state's requirements for timely and concurrent mining reclamation, bonding, insurance, reporting, inspection, and adherence to laws and regulations governing mining in Alaska.

Mineral and Material Resources

Materials

Materials (or, more accurately, "mineral materials") are commonly considered to consist of all saleable "common variety" rock and minerals of any quality that are not subject to location under state or federal laws.[3] The TLO ties its definition of materials not only to



Trust Land Holdings Showing Select Areas with Metals Resource Potential

[2] 11 AAC 99.010(C)(3) and (4)
[3] AS 38.05.965 (A)(B)

commodity but to end use and includes sand, stone, gravel, clay, pumice, cinders, loam, silt, road ballast, road metal, railroad ballast, riprap and aggregate.

U.S. construction sand and gravel production was recently valued at $6.4 billion, with an estimated 4,000 companies and government agencies conducting about 6,500 operations in 50 states. It is estimated that about 43 percent of construction sand and gravel is used as concrete aggregates; 26 percent as road base and coverings and road stabilization; 12 percent each as asphaltic concrete aggregates and other bituminous mixtures and construction fill; 1 percent each for concrete products, such as blocks, bricks, and pipes; plaster and gunnite sands; and snow and ice control. The remaining 4 percent is used for filtration, golf courses, railroad ballast, roofing granules and other miscellaneous uses. In 2010 in Alaska, the sand, gravel, and rock business was estimated to have a production value of $52.3 million from roughly 7 million tons of sand and gravel and 300,000 tons of rock. Materials are abundant on a large portion of Trust lands and use is driven more by local demand and markets than by scarcity. Sand and gravel prices vary somewhat depending on location in the state; however, the Trust receives prices at least as high as those realized by private and DNR sources. Typically these are in the $3 per cubic yard range.

Inventory of Mineral and Material Assets on Trust Lands

There is no large-scale systematic minerals inventory or assessment of the exploration potential for various minerals and materials on Trust lands. However, the task is not as daunting as might be supposed. Many areas have at least regional geologic mapping, compilations of known mineral occurrences, airborne geophysics and other information. The first step is to utilize geographic information system (GIS) technology to conduct a broad scale assessment by overlaying Trust mineral estate over a compilation of the mapping of Alaska mineral terrains and known mineral deposit areas. The various land parcels should then be grouped into coherent "blocks" based upon economic geology parameters (as has been done with the Liberty Bell Block). As more detailed information is gathered from published sources, the references and data can be loaded into a land parcel or land block mineral database with exploration potential ratings added for prospective commodities.

The only metal deposits on Trust land with calculated reserves/ resources are at the Fort Knox gold mine and Livengood gold project. Considerable potential exists in the next decade for resources to be developed on Trust land at Cleary Summit (Freegold's Golden Summit Project).

The Fort Knox gold mine began production in 1996 and through the end of 2012 produced approximately 5.6 million ounces of gold. At its current rate of production, the mine is slated to operate until 2020, although it is unknown how long the heap leach may continue to produce gold after mining operations cease. The year-end 2012 reserve estimate was 3.6 million ounces of gold with another 1.4 million ounces possible. Production in 2012 was 359,372 ounces of gold, all from The Trust's mineral estate. The Trust receives a 3 percent net profit royalty from mine production. In 2012, this totaled $4.25 million. The mine is projecting to produce 425,000 ounces gold in 2013.

The Livengood gold deposit is situated on a mix of Trust land, state land, federal mining claims, and private holdings. It is one of the most significant gold discoveries in Alaska in recent years. Measured and indicated resources total approximately 16.5 million ounces using a mineable grade cutoff of 0.0064 opt. The project is currently nearing completion of a feasibility study with the aim of developing an economically viable mine. The Trust's share of the resource is estimated at roughly 53 percent of the mineable resource. The Trust would receive a 5 percent royalty from production at a gold price above $500 per ounce. A preliminary economic analysis of the project shows mine output potentially at 33.6 million tons per year, producing 587,943 ounces of gold. At a gold price of $1,400 per ounce, The Trust's annual revenue (with the calculated 20-year mine life would be approximately $21.8 million).

Deposit	Potential Trust Value	Proven/ Measured	Probable/ Indicated	Possible/ Inferred
Fort Knox	$24 million	115,116,000 tons 0.013 opt 1,510,000 oz.	122,629,000 tons 0.017 opt 2,099,000 oz.	99,824,000 tons 0.014 opt 1,375,000 oz.
Liven-good	$436 million	817,684,000 tons 0.016 opt 12,893,000 oz.	354,844,000 tons 0.013 opt 4,870,000 oz.	492,594,000 tons 0.012 opt 6,041,000 oz.

Tracking

Current or active leases are managed through a traditional paper filing system with indexing based upon an assigned internal tracking number. The physical files are housed in the TLO office and stored electronically on a dedicated TLO server that utilizes a software system, modified for TLO use, called "Document Locator." In addition, the Energy section maintains a spreadsheet of active leases with field heading that include serialized file numbers, origin date,

acreage, rental rate, annual rental amount, initial term, renewals and royalty. Currently the active list contains approximately 59 agreements representing both mineral and energy leases including coal (18), undeground coal gasification (3), mineral (6), and oil and gas (32). The spreadsheet is updated as agreements are added or expire.

Development Issues

Addressing Resource Conflicts

Resource conflicts on fee simple Trust lands are rare, largely because the marketplace usually quickly resolves the relative value of resources on a merit basis. For instance, most parcels in an urban or suburban setting have high real estate values and little chance of being developed for mineable resources due to their location in densely populated areas – and thus the mineral resources are not pursued. For those areas where resource conflicts do occur, such as timber and mineral resources at Icy Bay, active management is required by TLO to ensure both resources' value can be realized without sacrificing either.

More common are conflicts on lands with a split estate – where The Trust owns the subsurface mineral estate and another entity, like the State of Alaska, owns the surface estate. In such cases, the public has become habituated to using the land as if it were typical state-owned land and is not aware that The Trust has a need and a right to eventually develop the subsurface resources. In addition, in some instances the state has contributed to conflicts by selling the surface estate for residential use and thus has severely compromised The Trust's ability to develop its resources. In these instances, The Trust should aggressively seek to return these lands to the state and receive replacement lands that have a reasonable chance to be developed, thus meeting the original intent of Congress in granting minerals to The Trust.

Political and Regulatory Environment Effects

Alaska's economy is almost totally dependent upon the extractive resource industries, petroleum and mining. As revenue from the oil industry continues to decline due to decreasing production on Alaska's North Slope, the state will become more dependent upon other sources, especially mining, to help offset the loss of oil revenue.

It is not likely, given what is known about North Slope oil production, that many programs, including those under the auspices of the Alaska Mental Health Trust Authority, will continue to receive funding commensurate with past budgets. Thus, mining activity in Alaska as a whole will likely increase, and mining development of Trust land may become an even more important source of funding for The Trust. TLO and The Trust have a role to play in these developments, particularly in supporting business partners and investors in their efforts of responsible development of resources on Trust land and defending The Trust's responsibility to develop its resources. TLO and The Trust also need to monitor proposed legislative or regulatory changes that could add impediments to resource development. To that end, the TLO should develop and trustees should approve specific policy statements expressing the importance of resource development on Trust land for beneficiaries.

Minerals and Materials Management Strategy

Trust lands generate revenue through disposal of mineral and material resources. ("Disposal" here means the issuance of a lease or sales contract that grants the lessee the right to explore for, develop, remove, and market a particular resource on Trust land.) A typical "granting clause" from a Trust mineral lease reads in part as follows:

Grant of Lease.

a. Subject to the royalty reserved under Paragraph 7 hereof and to the other provisions of this Lease, the TLO hereby grants to Lessee the following rights, to have and to hold for the term set out in Paragraph 5 hereof:

i. the exclusive right to explore for, mine, remove, and dispose of all locatable Minerals situated on, in, or under the Leased Area, together with any and all rights appurtenant thereto including but not necessarily limited to water rights and express and implied access rights;

and

ii. the right to conduct reclamation on, in, and under the Leased Area.

b. Subject to the other provisions of this Lease (including but not limited to Paragraphs 10 and 11 hereof), Lessee may mine and remove Minerals by any method consistent with good mining practice, including but not limited to underground, surface, or insitu mining. The rights granted to Lessee by this Lease shall be exercised in a manner that will not unreasonably interfere with the reserved rights of the TLO or of its permittees, lessees, or grantees…

Clauses in TLO material sales contracts grant similar rights to explore for and develop sand, gravel or rock resources. Note that land use licenses are not considered a disposal of interest in Trust land because they do not allow for the acquisition of an interest in Trust land or resources. A license is issued to authorize a particular use of Trust land. An example of a license issued for activities associated with a material sales contract is an authorization to excavate test pits to determine quantity and suitability of material. Compensation received for the issuance of a land use license might be in the form of a land use fee, as outlined in the TLO fee schedule, or it could be in the form of information received as a result of the authorized activity, such as data gathered by the licensee during a geophysical exploration program.

Disposals of Trust mineral resources have occurred and continue to exist that are not the result of specific TLO actions. This is because Trust land is subject to prior existing rights; that is, rights that existed before the land was conveyed to The Trust. Examples are: all or portions of a limited number of oil and gas leases on the west side of Cook Inlet; the upland mining lease at Fort Knox; the coal leases at Chuitna; and approximately 1,100 state mining claims, all of which were established before the land was conveyed to The Trust. While these legacy leases and claims were not negotiated through TLO, The Trust receives revenue in the form of rents and royalties according to the terms and conditions of the agreements as established by state statutes and regulations in effect at the time of disposal.

Disposal of Trust Mineral Resources

11 AAC 99.020 describes the management responsibilities that are consistent with trust principles accepted by the Territory and state of Alaska under the Alaska Mental Health Enabling Act. When taking land management actions, including disposals of resources, the executive director must make a number of considerations to be consistent with these principles. These considerations are:[4]

1. Maximization of long-term revenue from Trust land;
2. Protection of the corpus of the trust;
3. Protection and enhancement of the long-term productivity of the land;
4. Encouragement of a diversity of revenue-producing uses of Trust land; and
5. Management of Trust land prudently, efficiently and with accountability to The Trust and its beneficiaries.

11 AAC 99.020(d) reads:

> The disposal of trust land shall be on a competitive basis unless (1) the executive director, in consultation with the trust authority, determined in a written decision required by 11 AAC 99.040 that a non-competitive disposal is in the best interest of the trust and its beneficiaries; or (2) an existing law that is applicable to other state land and that is consistent with (a)-(c) of this section allows for a negotiated transaction.

This is the key regulation that determines how an interest in Trust land can be disposed. Disposal of resources on Trust land can be initiated in several ways, such as the expression of interest from a prospective purchaser, the acceptance of an application, or the opening of an area by the executive director for leasing, but the actual disposal is conducted based on 11 AAC 99.020(d).

Locatable Minerals

Locatable minerals are typically defined under general mining laws as all minerals that have a distinct and special value, are found on lands open to mineral entry, and are not leasable under mining laws. Rights to these types of minerals found on state or federal land are typically acquired by staking a mining claim. However, the method of acquiring rights to valuable minerals on Trust land is defined in 11 AAC 99.100. This regulation gives the executive director great latitude in determining the best method of making Trust land available for mineral development. The preferred method of encouraging mineral development on Trust land is issuance of a lease, either on a competitive basis or, if consistent with 11 AAC 99.020, on a negotiated basis.

Competitive Lease

The TLO has identified several blocks of land for prospective mineral development:

1. Thorne Bay Block, located on Prince of Wales Island near Thorne Bay;
2. Haines Block, located northwest of Haines;
3. Icy Cape Block, northwest of Yakutat near Cape Yakataga;
4. Salcha Block, about 80 miles southeast of Fairbanks;
5. Liberty Bell, located north of Healy; and
6. Ophir Block.

[4] 11 AAC 99.020(c)

Prospectuses have been developed that describe each area in detail, including land and geologic features of the area.

The competitive leasing process is as follows:

1. Completion of TLO adjudicatory process, including consultation, best interest decision and public notice;
2. Assembling a lease prospectus that includes the legal description of the available tracts, description of the bidder qualifications, basic lease and bid terms, draft lease, and bid packet that includes an application form;
3. Establishment of a deadline for submittal of application;
4. Advertisement or direct mailing of sale notice to prospective applicants;
5. Opening of applications that have been timely submitted;
6. If only one application is received, ensuring completeness of application and qualification of applicant and proceeding to lease issuance;
7. If more than one applicant, proceeding to bonus bid process, where highest bid per acre determines successful lessee;
8. Determining if highest bidder is qualified and has included correct deposit (20 percent or more of total cash bonus bid);
9. Issuing award letter to highest qualified bidder;
10. Issuance of lease upon receipt of remainder of bonus bid and first year's annual rental.

Typical terms of a competitive mining lease are:

1. Primary term: Three years extendable for two three-year terms.
2. Annual rental: Flat rate rental fee per year.
   Years 1-3: $2 per acre per year
   Years 4-6: $6 per acre per year
   Years 7-9: $10 per acre per year

3. Annual work commitment:[5]
   Years 1-3: $20 per acre per year
   Years 4-6: $50 per acre per year
   Years 7-9: $100 per acre per year

4. Production royalty: Sliding scale net royalty ranging from 1 percent to 4.5 percent depending on the price of gold, with the highest rate for gold prices greater than $1,000 per ounce.

Negotiated Lease

11 AAC 99.020(d) allows the executive director to enter into a negotiated mining lease if it is in the best interest of The Trust to do so. An example of negotiated upland mining lease is the lease originally negotiated with AngloGold Ashanti for Trust land at Livengood. Terms of a negotiated lease may vary depending on how The Trust may benefit from the lease and are subject to change based on current industry practices.

Legacy Leases

The Trust has one legacy mining lease with Fairbanks Gold Mining, Inc. at Fort Knox. The primary difference between this lease and other TLO leases is that the royalty structure of the Fort Knox lease is based on 3 percent of net profits of the mining company. Since this lease is a state lease that was in existence when the land was conveyed to The Trust, the royalty structure as well as the other terms of the lease were established by statute.

Legacy Mining Claims

As mentioned previously, Trust land is encumbered by approximately 1,100 state and federal mining claims that were valid when the land was conveyed to The Trust. These claims will continue to exist as long as the claimholders continue to meet regulatory standards to keep their claims valid. The Trust does receive revenue in the form of annual rental payments, payments in lieu of labor, and any royalty that may be generated.

Material Sales

The disposal of industrial minerals such as sand, gravel and rock is governed by the principles outlined in 11 AAC.99.020 and .030, with one important exception: the sale of up to 100,000 cubic yards of material is not considered to be a disposal.[6] As a result, smaller sales can be negotiated and are not subject to the adjudicatory disposal process. These sales do not typically extend for more than a year. Royalties vary and are typically in the range of $2 to $3 per cubic yard, but sales of armor rock or landscape rock may be considerably more. Larger volume sales may warrant a reduction in price, and sale prices for competitive sales (more than 100,000 cubic yards) would be established by a bid process.

Mineral Resources Management Guidelines

Mineral resource development projects are guided by the following management principles:

[5] A work commitment is a financial commitment from the lessee to perform work to benefit the lease (ie road construction, drilling, etc.)
[6] 11 AAC.99.990(8)(B)

1. Accomplished while protecting and enhancing the non-cash asset value and productivity of Trust land.
2. Accomplished to maximize revenues from Trust lands over time.
3. Initiated as resources are at the high end of the market values within a 10-year price cycle.
4. Transactions will attempt to maximize return at prudent risk levels, embrace a diversity of resource projects, provide ancillary values such as enhanced access, to Trust lands, and prevent liability risks.
5. Competitive lease offerings are required, but non-competitive leases can be used where competitive lease sales have failed or where a non-competitive lease agreement benefits the Trust in other ways. Examples include areas where a miner might own the surrounding mineral rights or in instances whereby a miner might agree to conduct cleanup of Trust land.

Risk

Natural resource projects are subject to many risks: future commodity prices; uncertainties about the quality and quantity of the resource base; developing technology; input prices; and external or domestic political developments. Such risks must be assessed and classified. Typically, investors bear operational or market risk since they can better manage or control it. The Trust shares in bearing certain political risks since natural resource development projects often have some measure of controversy.

Capital Risk

The Trust has the potential to make much more profit on a large-scale mining operation if it were to successfully explore its land, discover a deposit, prove the deposit capable of being profitably extracted, successfully permit the facility, construct the facility, operate it until exhaustion of the resource, and conduct reclamation. However, each step is fraught with risk and requires expertise and personnel that would have to be acquired on a large scale. A commitment to explore Trust lands would reasonably require millions of dollars per year with no assurance of successful development. Thus, risk is reduced by not investing Trust capital in resource exploration and development but rather by marketing the properties to attract others to invest in this high-risk segment of the minerals business.

Diversification

Another method for reducing risk is to diversify the commodity portfolio as much as possible. Most commodities have price cycles that are difficult to predict but nonetheless are cyclical with established trading ranges. Commodity prices seldom rise and fall together, so it is advantageous to be involved with a wide selection of resources. Since some commodity prices fall as others rise, the TLO seeks to be involved with as many commodities as are available on Trust land – precious metals, base metals, materials, industrial rocks and minerals, etc.

Partnering

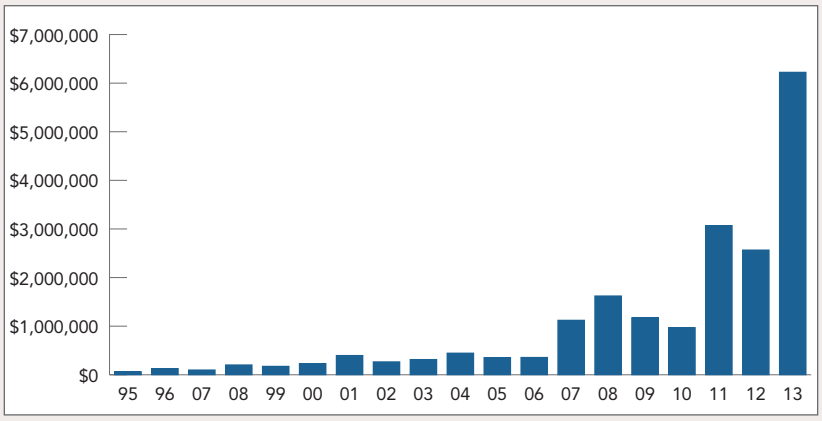
The characteristics of major natural resource projects – longevity, scale, capital requirements, social and environmental impacts, specialized and demanding technology, and exposure to commodity market risks – mean that development of large projects is most efficiently achieved in cooperation with partners that possess both significant financial capacity and the necessary technical and managerial skills. Attracting such partners while still securing full value for The Trust's resources requires carefully designed leasing policies and contractual terms. TLO follows well established and transparent procedures for leasing and seeks to establish financial terms that are competitive with the private marketplace (while recogizing that each property has its own set of merits dependent upon location, access, geology, available information and commodities). Additionally, where leasing is employed, eligibility is restricted to those entities that have demonstrated possession of, or access to, sufficient capital resources as well as appropriate management and technological capabilities.

Royalty Type

There are a number of options regarding financial return to The Trust in resource extraction. These are usually in the form of royalties, typically either a net-type royalty or a gross-type royalty. The state of Alaska, for the most part, receives benefits from resource extraction on state land through net royalties and also has the advantage of taxing operations and benefiting from the jobs and support industries that are created. The state usually takes a 5 percent adjusted gross royalty and 7 percent net profits mining license tax from coal mining operations. On metal mines the state takes a net profits royalty of 3 percent and has a mining license tax of 7 percent of the net profits. Most operations are also subject to corporate income taxes at 9.5 percent of net profits. For leases of Trust land that originate from the TLO, a gross-type royalty is preferred so a steady revenue stream is available from the outset of production and continues whether the operator's profits are high or non-existent. This minimizes risk to The Trust's income stream. For example, recent Trust leases for placer gold vary between 10 and 20 percent of the adjusted gross value; coal royalties are generally 5 percent of the adjusted gross value; and hard rock mineral royalties commonly vary somewhat but generally are competitive at a 3 to 3.5 percent gross royalty.

Goals and Objectives

Trust lands have a significant but undetermined amount of valuable mineral resources, predominantly in the form of gold and a lesser amount of base metals. The current program of aggressively leasing land for mineral development is already returning good revenues. TLO's goal is to manage these resources to provide a relatively steady and increasing stream of revenue until such time as they are exhausted. Annual minerals and materials revenues have risen over the past two decades, from less than $100,000 in FY1995 to more than $6 million in FY2013). Part of the spike in FY2013 revenue is due to monies received from auditing the Fort Knox royalty payment for calendar years 2007-2011; however, the mine has become more profitable in recent years due to increases in the price of gold and improvement in mine efficiency.



Trust Revenue from Minerals and Materials FY1995-2013

General Goal:

Develop a diversified portfolio of mineral products that can contribute significant revenue to The Trust.

Objective: Conduct leasing programs utilizing the plan guidelines for resource development on lands permissive of minerals and materials at prices above the midpoint of the 10-year high-low price cycle.

Resource Inventory Goal:

Develop an inventory of mineral and materials and periodically update the inventory.

Objective: Using GIS tools, evaluate Trust land parcels with respect to mineral terrain and parameters of economic geology and segregate into manageable blocks that can be individually leased.

Objective: Continue to develop a resource database of geological and resource information that is linked in a electronic relational database to Trust land parcels. Continue to expand resource inventory tables for the various resource commodities on Trust land that provide information on the amount of resources present and their value. Update the inventory biannually or whenever major changes occur.

Marketing Goal:

Expand marketing of Trust lease offerings beyond the typical U.S./ Canadian marketplace. Marketing of lease offerings and general business contacts has historically been North America-centric, but current growth projections in the mineral resource business show demand dominated by growing Asian markets and development interest from Asian companies.

Objective: Expand efforts with the World Trade Center Alaska and the Governor's Office of International Trade to increase contacts and knowledge of Asian investors.

Objective: Secure funds for the next China Mining Congress and Expo (or a similar event) to draw attention to investment opportunities on Trust land and expand business contacts.

Bonding Goal:

Ensure adequate financial assurance or bonding is in place for projects where The Trust would incur liability in default. The State of Alaska does an admirable job of reviewing financial assurance for mining projects in Alaska; however, TLO needs to provide some oversight on Trust lands.

Objective: Participate with the Large Mine Permitting Team and Alaska Department of Natural Resources Mining, Land & Water mining section in review of mine and mining project financial assurance when permits are renewed or assurances are updated.

Replacement Land Goal:

Seek replacement land for those mineral-estate-only lands where development cannot take place due to surface conflicts.

Objective: Identify and compile of list of these impaired lands; identify potential replacement lands; seek a remedy through administrative, legislative or legal proceedings so that the intent of Congress can be met.

Precious Metals Goal:

Continue seeking parties to inventory and develop precious metals and minerals on Trust land.

Objective: Continue commodity price tracking and aggressive marketing of appropriate Trust land as prices remain above the 10-year mean.

Industrial Rocks and Minerals Goal:

Develop an increased understanding of the potential industrial rock and mineral commodities on Trust land for marketing.

Objective: Within five years, develop an information database and compile an inventory of likely commodities and an exploration potential rating system.

Objective: Investigate marketing opportunities for West Cook Inlet sand and gravel that could utilize the Chuitna Project port facility to provide sand and gravel to the Anchorage metropolitan area.

Base Metals Goal:

Develop opportunities for base metal exploration and development on Trust land.

Objective: Diligently pursue marketing of copper properties while price remains high; develop data and prospectus on Haines mineral estate holdings; update Thorne Bay prospectus and pursue a negotiated lease for base and precious metals.

Appendix A: Minerals and Commodities–Descriptions and Uses

Inventory of Mineral and Material Resources

Base Metals

Base metals are generally those that oxidize, tarnish or corrode relatively easily when exposed to air or moisture. Base metals are widely used in commercial and industrial applications and are more abundant in nature and therefore far cheaper than precious metals such as gold, silver and platinum. While the term "base metals" probably arose because these materials are inexpensive and more commonly found than "noble" metals such as gold and platinum, base metals are invaluable to the global economy because of their utility and ubiquity. Base metals include aluminum, copper, lead, nickel, tin, zinc and iron.

Copper:

Element No. 29, copper, is one of the most important ancient and modern metals. Copper is reddish with a bright metallic luster. It is malleable, ductile, and a good conductor of heat and electricity (second only to silver in electrical conductivity). Its alloys, brass (with zinc) and bronze (with tin), are very important to industrial societies. The early popularity of copper is due in part to its malleability. However, it is too soft for many tools and around 5,000 years ago it was discovered that when copper is mixed with other metals the resulting alloys are harder than copper alone. Presently, copper is used in building construction, power generation and transmission, electronic product manufacturing, and the production of industrial machinery and transportation vehicles. Copper wiring and plumbing are integral to appliances, heating and cooling systems, and telecommunications links used every day in homes and businesses. Copper is an essential component in motors, wiring, radiators, connectors, brakes, and bearings used in cars and trucks. The average car contains 1.5 kilometers (0.9 mile) of copper wire, and the total amount of copper ranges from 20 kilograms (44 pounds) in small cars to 45 kilograms (99 pounds) in luxury and hybrid vehicles.

Copper deposits are broadly classified on the basis of how the deposits formed. Porphyry copper deposits, which are associated with igneous intrusions, yield about two-thirds of the world's copper and are therefore the world's most important type of copper deposit. Large copper deposits of this type (like the Pebble copper deposit) are found in mountainous regions of western North and South America. Another important type of copper deposit is a sandstone-type that is contained in clastic sedimentary rocks and accounts for approximately one-fourth of the world's identified copper resources. These deposits occur in such areas as the central African copper belt and the Zechstein basin of Eastern Europe. Copper-rich "skarns" are another type of deposit related to the intrusion of granitic rocks into reactive host rocks (like limestone) where contact metasomatism and hyrothermal deposition creates accumulations of copper.

Although copper mining at Kennicott was significant in the early history of Alaska, presently, Alaska's only copper production is byproduct copper from the mining of gold in a copper-gold skarn deposit at the Nixon Fork gold mine 32 miles northeast of McGrath. Trust lands hold potential for copper deposits in the Thorne Bay area, where high-grade copper skarns historically produced copper; on Prince of Wales Island in the Kasaan area; on southern Douglas Island; in the Haines area; Liberty Bell; and the Slacha Block. Copper prices are currently high, by historical measures – on the order of $3.30 per pound.

Zinc:

Element No. 30, zinc, was used for centuries before it was identified as an element. It is used to make brass (an alloy of zinc and copper) and for medicinal purposes. Zinc is currently the fourth most widely consumed metal in the world after iron, aluminum, and copper. It has strong anticorrosive properties and bonds well with other metals. Consequently, about one-half of the zinc that is produced is used in zinc galvanizing, which is the process of adding thin layers of zinc to iron or steel to prevent rusting. The next leading use of zinc is as an alloy; zinc is combined with copper (to form brass) and with other metals to form materials that are used in automobiles, electrical components, and household fixtures. A third significant use of zinc is in the production of zinc oxide (the most important zinc chemical by production volume), which is used in rubber manufacturing and as a protective skin ointment. Zinc is also important for health. It is a necessary element for the proper growth and development of humans, animals, and plants. The adult human body contains between two and three grams of zinc, which is the amount needed for the body's enzymes and immune system

to function properly. It is also important for taste, smell, and to heal wounds. Trace amounts of zinc occur in many foods, such as oysters, beef, and peanuts.

Sphalerite (zinc sulfide or ZnS) is the primary ore mineral from which most of the world's zinc is produced. Zinc is mined from a number of different types of deposits: Mississippi Valley deposits, where zinc and lead sulfides replace carbonate rocks; Volcanogenic Massive Sulfide (VMS) deposits, where zinc, copper, and lead sulfides are deposited in submarine volcanic centers; and Sedimentary Exhalative deposits where zinc and lead sulfides are precipitated in restricted sedimentary basins with black shales. In Alaska the Greens Creek mine produces byproduct zinc from a VMS deposit and the Red Dog mine produces large amounts of zinc and lead from a sedimentary exhalative deposit. Alaska produces more zinc than any state with the zinc from Red Dog and a small amount of zinc from Green's Creek accounting for 78 percent of U.S. production. The potential for zinc on Trust land is somewhat limited with moderate potential on the Salcha Block, and limited potential at Liberty Bell, portions of the Haines Block, and southern Douglas Island. Zinc prices are currently near the middle of its ten-year price range, trading at approximately $0.83 per pound (Appendix B).

Lead:

Element No. 82, lead, is a very corrosion-resistant, dense, ductile, and malleable blue-gray metal that has been used for at least 5,000 years. Early uses of lead included building materials, pigments for glazing ceramics, and pipes for transporting water. The castles and cathedrals of Europe contain considerable quantities of lead in decorative fixtures, roofs, pipes, and windows. Prior to the early 1900s, uses of lead in the United States were primarily for ammunition, brass, burial vault liners, ceramic glazes, leaded glass and crystal, paints or other protective coatings, pewter, and water lines and pipes. The advent of the electrical age resulted in the addition of bearing metals, cable covering, caulking lead, solders, and type metal to the list of lead uses. With the growth in production of public and private motorized vehicles and the associated use of lead-acid storage batteries demand for lead increased. Most of these uses for lead continued to increase with the growth in population and the national economy. Contributing to the increase in demand for lead was the use of lead as radiation shielding in medical analysis and video display equipment and as an additive in gasoline.

By the mid-1980s, a significant shift in lead end-use patterns had taken place. Much of this shift was a result of the U.S. lead consumers compliance with environmental regulations that significantly reduced or eliminated the use of lead in non-battery products, including gasoline, paints, solders, and water systems. As the use of lead in non-battery products has continued to decline, the demand for lead in batteries has continued to grow. Other battery applications include motive sources of power for industrial forklifts, airport ground equipment, mining equipment, and a variety of non-road utility vehicles, as well as stationary sources of power in uninterruptible electric power systems for hospitals, computer and telecommunications networks, and load-leveling equipment for electric utility companies. By the early 2000s, the total demand for lead in all types of lead-acid storage batteries represented 88 percent of apparent U.S. lead consumption.

Lead is rarely found in native form in nature but it combines with other elements to form a variety of interesting and beautiful minerals. Galena (PbS), the dominant lead ore mineral, is blue-white in color but tarnishes to dull gray when exposed to air. Lead ores commonly occur with zinc and copper and thus are found in the same type of mineral deposits as noted above. Alaska is a significant producer of lead as a byproduct of zinc mining at the Red Dog Mine and silver mining at the Green's Creek mine. Alaska produces approximately one third of U.S. lead production with Missouri and Idaho as leading contributors. Trust land has potential for byproduct lead from those lands with potential for copper and zinc. The lead price is currently in the middle of its ten-year trading range with a spot price of approximately $0.93 per pound.

Iron:

Element No. 26, iron, is the most common element (by mass) forming the planet Earth as a whole, forming much of Earth's outer and inner core. It is the 4th most abundant element in the earth's crust. Iron metal has been used since ancient times, though copper alloys, which have lower melting temperatures, were used first in history. Pure iron is soft (softer than aluminum), but is unobtainable by smelting. The material is significantly hardened and strengthened by impurities from the smelting process, such as carbon. A certain proportion of carbon (between 0.002 percent and 2.1 percent) produces steel, which may be up to 1,000 times harder than pure iron. Crude iron metal is produced in blast furnaces, where ore is reduced by coke to pig iron, which has a high carbon content. Further refinement with oxygen

reduces the carbon content to the correct proportion to make steel. Steels and low carbon iron alloys with other metals (alloy steels) are by far the most common metals in industrial use, due to their great range of desirable properties and the abundance of iron. Iron plays an important role in biology, forming complexes with molecular oxygen in hemoglobin and myoglobin; these two compounds are common oxygen transport proteins in vertebrates. Iron is also the metal used at the active site of many important redox enzymes dealing with cellular respiration and oxidation and reduction in plants and animals.

Nearly all of Earth's major iron ore deposits are in rocks that formed over 1.8 billion years ago (during the Precambrian Proterozoic Eon). At that time Earth's oceans contained abundant dissolved iron and almost no dissolved oxygen. The iron ore deposits began forming when the first organisms capable of photosynthesis began releasing oxygen into the waters and bringing about precipitation of the iron into layers referred to as Banded Iron Formations (BIF). The two most important minerals in these deposits are iron oxides: hematite (Fe_2O_3) and magnetite (Fe_3O_4). Smaller, less common, and younger iron deposits form during contact metasomatism as iron-rich skarns containing replacement bodies of hematite and magnetite. Other, even less common deposit-types are iron deposits that have become segregated during the crystallization of magmatic rocks. Alaska has none of the BIF deposits but it does have a number of potential producers from the skarn and magmatic segregation types. Alaska iron deposits extend from Nome to Southeast. A significant number of iron skarns and replacements are found in Southeast. One of the largest is in the Haines area near Klukwan, estimated at over five billion tons. Another recent development is in the Juneau area at a deposit near Snettisham which was drilled in 2012 reportedly containing a resource estimated at one billion tons. Quite a few others, small but of good grade, are located on POW in the Copper Mountain-Tolstoi Mountain-Kasaan region. Good to modest exploration potential exists for iron deposits on Trust land in the Haines, Thorne Bay (Kassan Peninsula) areas; some of these are associated with copper mineralization. Iron ore prices have risen over the last decade from prices on the order of $13 per metric tonne to $180 per metric tonne. The current price is in the $140 per tonne range.

Nickel:

Element no. 28, nickel, is a silvery-white, hard, malleable, and ductile metal that takes on a high polish. It is a fairly good conductor of heat and electricity. The major use of nickel is in the preparation of alloys. Nickel alloys are characterized by strength, ductility, and resistance to corrosion and heat. About 65 percent of the nickel consumed in the Western World is used to make stainless steel. Twelve percent of all the nickel consumed goes into super alloys. The remaining 23 percent of consumption is divided between alloy steels, rechargeable batteries, catalysts and other chemicals, coinage, foundry products, and plating. Nickel typically occurs in a wide variety of sulfide minerals but typically at pentlandite ($(Fe,Ni)S_2$). Most nickel is mined from magmatic segregation deposits associated with basic igneous rocks. The potential for nickel on Trust lands is largely unassessed but there is some potential for lands situated in Southeast.

Precious and Rare Earth Elements

A precious metal is a rare, naturally occurring metallic chemical element of high economic value. Demand for precious metals is driven not only by their commercial use but also by their function as investments. The best-known precious metals are gold and silver, both of which have important industrial uses but are better known for their uses in art, jewelry and coinage. Other precious metals include the platinum group metals: ruthenium, rhodium, palladium, osmium, iridium and platinum, of which platinum is the most widely traded. Rare earth elements (REEs) are a set of 17 metals, specifically the 15 lanthanides plus scandium and yttrium. Scandium and yttrium are considered rare earth elements since they tend to occur in the same ore deposits as the lanthanides and exhibit similar chemical properties. Despite their name, rare earth elements are relatively plentiful in the Earth's crust; for example, one REE, cerium, is the 25th most abundant element at 68 parts per million (similar to copper). However, because of their geochemical properties, rare earth elements are typically dispersed and not often concentrated in economically exploitable ore deposits. It was the very scarcity of the economic deposits that led to the term "rare earth." Presently there is national concern over developing a domestic supply of REEs since many are of strategic value and the world supply has come to be dominated by China, which has begun restricting exports. The state of Alaska has encouraged REE exploration and hosted two meetings on the subject. Exploration efforts to develop rare-earth projects continued in 2012. Alaska's Bokan Mountain deposit, located near the south end of Prince of Wales Island on Forest Service land, is being promoted as a significant REE resource.

Gold:

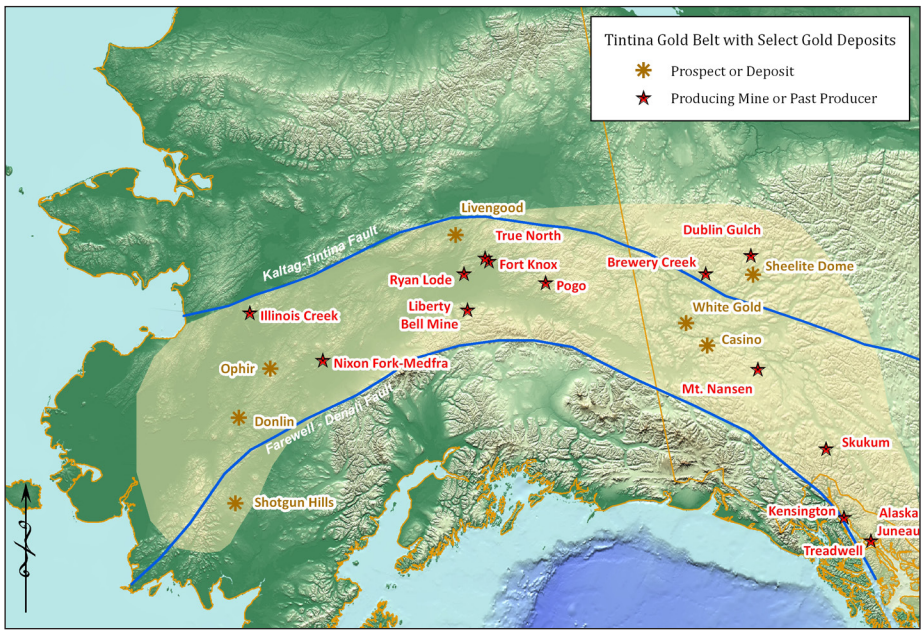
Element No. 29, gold, is a dense, soft, malleable, and ductile metal with a bright yellow color and luster that is considered attractive and is maintained without tarnishing in air or water. It is one of the least reactive of the elements. The metal therefore occurs often in free (native) form, as nuggets or grains in rocks, in veins and in alluvial deposits. Less commonly, it occurs in minerals as gold compounds, typically with tellurium; e.g. the gold ore mined at the Kensington gold mine near Juneau consists of a gold telluride mineral, calavarite (AuTe2).

Gold resists attacks by individual acids, but it can be dissolved by the aqua regia a (nitric-hydrochloric acid mixture). Gold also dissolves in alkaline solutions of cyanide, which is an important process in gold recovery and in "heap leach" facilities such as at the Fort Knox gold mine near Fairbanks. Gold also dissolves in mercury, forming amalgam alloys; it is insoluble in nitric acid, which dissolves silver and base metals, a property that has long been used to confirm the presence of gold in items, giving rise to the term "acid test." Perhaps surprisingly, despite mankind's long history of gold mining, over 90 percent of the world's gold has been mined since the California Gold Rush (1949).

The geology of gold deposits is somewhat complex in that gold deposits occur in a wide variety of geologic environments. Gold can occur in igneous, metamorphic, and sedimentary rocks. However, a few generalizations apply: gold is commonly associated with granitic to intermediate igneous rocks especially plutonic and volcanic rocks; gold is commonly associated directly with quartz or with silica flooding or silicification of surrounding rocks. In metamorphic terranes, gold commonly occurs as "mesothermal" or "Mother Lode" deposits that form late in the metamorphic process from fluids derived from the dewatering of rock during metamorphism and concentration in late stage quartz-rich lodes; gold in sedimentary rocks usually accumulated originally as detrital gold particles (placer gold), especially in the Precambrian conglomerates as found in the Witwatersrand of South Africa.

In Alaska much of the historic mining was placer gold deposits; a placer deposit is the accumulation of mineral grains that have been freed from their host rocks through weathering and transportation into streams, of virtually any size. However, most modern production is from lode (hardrock) deposits.

The largest operating gold mines in Alaska are the Fort Knox gold mine and the Pogo gold mine. In Alaska, many of the largest gold deposits are situated in a region referred to at the Tintina Gold Belt. The Tintina Gold Belt is a 600-mile arcuate shaped belt of rocks in Alaska, Yukon, and northern British Columbia that hosts a number of gold mines and prospects including the Pogo, Fort Knox, and True North gold mines as well as the Livengood and Donlin Gold deposits. It encompasses at least 60,000 square miles, bounded roughly by the Kaltag-Tintina fault system on the north and the Farewell-Denali fault system on the south. It extends westward in a broad arc, some 125 miles wide, from northernmost British Columbia, through the Yukon, through southeastern and central Alaska, to southwestern Alaska. Although the Tintina Gold Belt is historically important for some of the very first placer and lode gold discoveries in northern North America, it has recently seen a resurgence in mineral exploration, development, and mining activity due to both new discoveries (e.g., Livengood, Pogo and Donlin Creek) and to the application of modern extraction methods. The major gold deposits share a common spatial and temporal relationship with Cretaceous granitic magmatism.



The Tintina Gold Belt Showing Select Mines, Prospects, and Deposits

Comparison of Some Alaska Gold Deposits

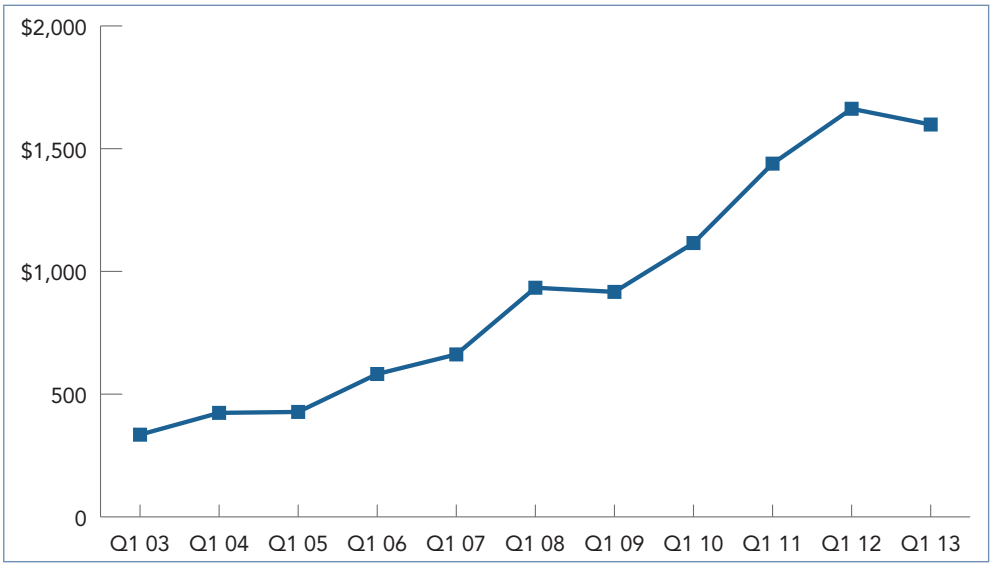
Deposit	Total Ounces (Prod. plus Reserves or Resources)	Gold Grade (opt)	Type
Alaska Juneau	8.5	0.05	Mesothermal
Treadwell	3.5	0.12	Intrusive-related
Fort Knox*	9.2	0.02	Intrusive-related
Pogo	7.0	0.41	Intrusive-related
Kensington	1.6	0.14	Intrusive-related
Nixon Fork	0.315	0.65	Skarn
Livengood*	16.5	0.017	Intrusive-related
Donlin	39	0.07	Intrusive-related
Golden Summit*	5.6	0.02	Intrusive Related
Pebble**	107	0.03 gold equiv.	Porphyry Copper

* Deposit with Trust Land involvement
** Pebble is not a gold deposit but rather a copper-molybdenum deposit with an unusually high gold content.

Alaska is the second largest producer of gold in the United States. In 2012 Alaska's gold production as estimated at approximately 900,000 ounces; Nevada's production was 5.5 million ounces. In recent years gold production has been aided by a sharply increasing gold price.

Trust land holds considerable gold reserves, resources, and exploration potential. The Trust benefits from gold production at the large scale Fort Knox gold mine and small placer leases. Trust lessees have developed considerable resources on the Livengood property and The Trust has active exploration leases at Fort Knox, Cleary Summit, and the Ophir Block, and Icy Cape. Trust land also has considerable exploration potential, which the TLO will continue to market, on holdings in the Fairbanks Mining District, the Salcha Block, the Liberty Bell Block, Icy Cape, the Haines mineral estate holdings, south Douglas Island, and Thorne Bay.

Ten-Year Gold Price Q1 2003 through Q1 2013 (U.S. Dollars per Troy Ounce)



(Price Data from World Gold Institute)

Silver:

Element no. 47, pure silver, has a brilliant white metallic luster. It is a little harder than gold and is very ductile and malleable. Pure silver has the highest electrical and thermal conductivity of all metals, and possesses the lowest contact resistance. Silver, long valued as a precious metal, is used in coinage, to make ornaments, jewelry, tableware and utensils and as an investment. Silver metal is used industrially in electrical contacts and conductors, in mirrors and in catalysis of chemical reactions. Silver compounds are used in photographic film. Dilute silver nitrate and other silver compounds are used as disinfectants; further research into clinical potential continues. The bulk of silver production is as a byproduct from base metal mining. Primary silver occurs in vein deposits and as a constituent of VMS deposits. However, Alaska's Greens Creek mine, a VMS deposit, is a prodigious silver producer; in 2012 the mine produced 6.4 million ounces at an

average cost of $2.70 per ounce. Silver currently sells at approximately $22.00 per ounce. Silver exploration potential exits at the Liberty Bell Block, the Haines mineral estate holdings, on South Douglas Island, Thorne Bay, and potentially other holdings in Southeast.

Platinum Group Elements:

The platinum group elements (PGE) The platinum-group elements (PGEs) is a group of six elements – platinum (Pt), palladium (Pd), rhodium (Rh), iridium (Ir), osmium (Os), and ruthenium, (Ru) – each of which is among the rarest and most precious of metals. The elements of most commercial significance are platinum, palladium, and rhodium. The PGEs have unique physical and chemical properties that make them critical to many emerging technologies. For example, osmium, iridium, and platinum are the densest metals known and have some of the highest melting points (1550 to 3030 °C) of all metallic elements. They also are hard-wearing, highly reflective, brittle, malleable, electrically and thermally conductive and have unique catalytic characteristics. The PGEs are regarded as strategic metals because of their specialized applications in the automotive, agriculture, chemical, petroleum, electrical, dental, medical, defense, and aerospace industries. They also have important uses in environmentally-related technologies, such as catalytic converters in automobiles and in fuel cells.

For much of the last century, Alaska was the only significant producer of PGEs in the United States – largely from placer platinum deposits in the Goodnews Bay area of southwestern Alaska, as well as from the Salt Chuck mine on the upper Kasaan Peninsula on POW Island. However, the State of Montana is now a major PGE producer from the Stillwater complex. Geologically, PGEs largely occurs in what are termed "magmatic segregation" deposits in which the PGE minerals precipitate and accumulate in layers, commonly associated with chromite (Cr2O3) and/or sulfides of nickel and copper, during slow crystallization of the usually mafic to ultramafic melt. Southeast Alaska has a number of PGE enriched ultramafic rock suites of a type referred to as "Alaskan-Type Ultramafics" or as they are known in the Ural Mountains, the "Uralian-Type Ultramafics".

The Salt Chuck Mine produced at various periods between 1906 and 1941 and processed somewhat in excess of 300,000 tons of ore. The average grade of ore produced overall is estimated at 0.95 percent Cu, 0.10 opt Ag, 0.01 opt Ag, and 0.05 opt Pd. The mine produced copper, silver, palladium, small amounts of gold, and traces of platinum. The ore deposits are associated with an intrusive body of magnetite-bearing pyroxenite and gabbro that is part of a larger belt of 400-440 million year old plutonic rocks. Importantly the pyroxenite-gabbro body trends northwest-southeast and the southeast extension is mapped as extending into The Trust's Thorne Bay land block. Thus modest potential exists for deposits similar to Salt Chuck on adjacent Trust lands.

PGEs are associated with copper minerals and magnetite (Fe3O4) in the Haines-Klukwan area, where they are found with the Klukwan mafic/ultramafic plutonic complex and especially with pyroxenites. In 1972 the Henry J. Kaiser Company estimated a reserve of 3.5 billion tons with a soluble iron content of 16.8 percent. Various Trust land parcels occur on the plutonic complex and some prospects are recorded on Trust land. Thus there is modest potential for PGE associated with copper and iron on a number of the Haines land parcels.

Rare Earth Elements:

The rare earth elements are a group of 17 chemical (metallic) elements that consists of the 15 lanthanide elements along with Yttrium and Scandium. They share many similar properties, which is why they occur together in geological deposits. The 17 REEs are found in all REE deposits but their distribution and concentrations vary. They are referred to as 'rare' because it is uncommon to find them in commercially viable concentrations. REEs generally fall into one of two categories – light rare earths (LREE) and heavy rare earths (HREE), with varying levels of uses and demand. REE mineral deposits are usually rich in either LREE or HREE, but rarely contain both in significant quantities.

Silvery-white or gray in color, these metals have a high luster and tarnish readily when exposed to air. REEs are found in many everyday applications because of their unique chemical and physical properties. New applications have arisen consistently over the past 50 years, including important environmental innovations such as catalytic converters and the development of permanent magnets which have enabled greater efficiency, miniaturization, durability and speed in electric and electronic components. Substitutes exist, but rarely work as effectively. In general, they are vital to some of the world's fastest growing markets: clean energy and high technology.

Recent steps taken by China to restrict REE supplies have raised concerns that the world is reliant on a single source for rare earths. Currently, the world is nearly 100 percent dependant on Chinese exports of a commodity that is essential to certain high-tech, renewable-energy, and defense-related technologies. Thus the race is on for the rest of the world to develop rare earth deposits. The U.S. considers REEs as a strategic material and in April 2011 legislation known as Rare Earths Supply Chain Technology and Resources Transformation Act HR 1388 (RESTART) was introduced to avert a rare earth crisis by re-establishing a domestic rare earth industry. Subsequently, California based Molycorp signed a Joint Venture with Daido Steel and Mitsubishi to manufacture high power magnets.

Alaska hosts a significant REE deposit on southernmost POW Island at Bokan Mountain near the historic Ross Adams uranium mine. The Bokan property is particularly enriched with heavy rare earth elements, including the critical elements dysprosium, terbium and yttrium. Approximately 40 percent (by weight) of the rare earth elements contained on the Dotson Ridge property are heavy rare earths elements. The State of Alaska is encouraging REE exploration and the Governor's Office has sponsored annual summit meeting on the subject in 2011 and 2012. The Alaska DGGS has an ongoing REE assessment program that intends to spur interest in REE exploration. The REE potential of Trust Lands remains unassessed.

Strategic Minerals and Metals:

Strategic minerals are minerals essential to the national defense, the supply of which a country uses but cannot produce itself. Thirty-three (33) to fifty (50) percent of the 80 minerals used by industry could be classed as strategic minerals. Wealthy nations, such as the United States, stockpile these minerals to avoid any crippling effect on their economy or military strength if political circumstances were to restrict supplies. The United States stockpiles bauxite (14 1/2 million tons), manganese (2.2 million tons), chromium (1.8 million tons), tin (185 thousand tons), cobalt (19 thousand tons), tantalum (635 tons), palladium (1.25 million troy ounces), and platinum (453 thousand troy ounces).

Tungsten is found in several minerals but especially scheelite ($CaWO_4$) and wolframite (Fe, Mn)WO_4. Tungsten is widely used primarily in cutting and wear resistant applications, primarily as tungsten-carbide, and also in metal alloys, and filaments in incandescent light bulbs. Scheelite occurs in many areas in the Tanana Uplands in veins and skarns sometimes by itself or in association with antimony sulfides and/or gold mineralization. It is also a common accessory mineral in placer gold deposits in the Fairbanks and Tolovana Mining Districts and the Tanana Uplands. Tungsten has been intermittently produced from both lodes and placers in the Fairbanks area and has been the focus of some dedicated exploration programs in the 1970s and 1980s (Union Carbide and Phillips Minerals among others). Tungsten potential is present on Trust land such as the Slacha Block and on many parcels in the Fairbanks Mining District in both lodes and placer accumulations.

Mercury occurs primarily as the ore mineral cinnabar (HgS). Mercury has not been produced as a principal mineral commodity in the United States since 1992, when the McDermitt Mine, in Humboldt County, NV, closed. In 2012, mercury was recovered as a byproduct from processing gold-silver ore at several mines in Nevada. Secondary, or recycled, mercury was recovered by retorting end-of-use mercury-containing products that mainly included batteries, compact and traditional fluorescent lamps, dental amalgam, medical devices, and thermostats, as well as mercury-contaminated soils. Owing to mercury toxicity and concerns for the environment and human health, overall mercury use has declined in the United States. Mercury has been released to the environment from mercury-containing car switches when the automobile is scrapped for recycling, from coal-fired power plant emissions, and from incinerated mercury-containing medical devices. Cinnabar is a common constituent throughout the Kuskokwim mineral terrane and was the primary product mined at the Red Devil mercury mine. There is modest potential for cinnabar associated with gold mineralization at the Ophir Block.

Placer Deposits:

Placer deposits are accumulations of resistate minerals in soils or sediments (typically sand and gravel) that have been deposited by fluvial action following weathering of the minerals from the primary lode source. Minerals in Alaska that typically form economic placer deposits are gold and platinum with by product metals such as tin, as cassiterite (SnO_2), tungsten, as sheelite ($CaWO_4$), or tantalum, as tantalite,((Fe, Mn)Ta_2O_6. Heavy Mineral Sands also accumulate in beach environments in deposits formed through gravity concentration by currents and wave action; this includes the titanium minerals rutile (TiO_2) and ilmenite ($FeTiO_3$) as well as zironcium as the mineral zircon ($ZrSiO_4$). Of course, the most

important placer mineral produced in Alaska is gold, followed by modest, but significant platinum production. Historic gold production in Alaska totals an estimated 25 million ounces (compared to lode production of approximately 18 million ounces). Placer deposits, in addition to their intrinsic value, serve as indicators of areas of potential development of lode deposits. The search for major lode gold deposits depends in part on an accurate inventory of placer deposits and a knowledge of the geology of their source areas.

The Fairbanks Mining District is the most prolific placer district in the state, having produced over 8 million ounces, followed by the Nome Mining District with over 5 million ounces. Fortunately The Trust has significant land and mineral holdings in the Fairbanks Mining District and the placer gold potential of many parcels is high. In the 2012 field season Trust revenue from placer gold production was in excess of $85,000. The area in and around large land parcel F70015, northeast of Fairbanks, and adjacent to Felix Pedro's original 1902 gold discovery in Fairbanks, is a prolific placer-bearing area with major production from many creeks including Goldstream, Engineer, Gilmore, Pedro, Fairbanks, Fish and Cleary Creeks. These placer deposits indeed proved to be related to nearby lode sources when the Fort Knox gold deposit was discovered in 1984 and with the recent discovery of the Golden Summit gold deposit.

The Trust land block at Icy Cape also holds considerable large scale placer gold potential and potential for byproduct heavy minerals sands in elevated beach deposits. Other land blocks such as the Ophir and the Liberty Bell block have good placer gold potential. Some of the mineral estate holdings in the Haines Mining District also have good potential for placer gold. Other than at Icy Cape, the TLO has not historically actively promoted small-scale placer mining on its holdings. Currently the approach used is to make the industry aware that the TLO will entertain such ventures and conduct lease offerings or recommend negotiated leases when approached by qualified parties.

Industrial Rocks and Minerals

The term "industrial rocks and minerals" is meant to be inclusive of a large number of substances that do not fall into the category of metals and metallic ores, as it indicates both a broad field of use and the twofold nature of the materials included. The construction industry uses industrial rocks in the form of crushed stone, dimension stone and raw materials for cement, brick, tile and insulation. The chemical industry relies on the basic commodities of sulfur, salt and limestone. Agriculture in today's society is heavily dependent upon phosphates, nitrates and potash. The ceramics industry utilizes feldspar, talc and clay. Limestone and fluorspar are critical for steel making, and extractive metallurgy requires graphite, magnesite, molding sand and fire clay. Hydrocarbon production is dependent upon barite for drilling mud and fracking sand. Other rocks and minerals are used for abrasives, filtration media (zeolites), lubricants and extremes of temperature (asbestos). It is estimated that some 60 different rocks and minerals are fundamental to present-day industrial uses. Materials such as sand and gravel are normally considered commodities in the industrial rocks and minerals category but are significant enough on Trust land to warrant discussion on their own.

Except for the basic materials of sand and gravel, stone, and minor limestone, Alaska imports almost all industrial minerals consumed in the state, including such basic items as cement (from limestone), lime, barite, fracking sand, abrasives and brick (from clay). Historically, barite was produced in Southeast, principally on Castle Island near Petersburg and also at Lime Point on Prince of Wales Island, and marble has been quarried for building purposes and chemical uses at Calder. The barite deposit on Castle Island was exhausted in the 1980s and little production has occurred in recent times at Calder, although a recent sale of the property to Columbia River Carbonates was announced in January 2011. Alaska Lime Company (James Caswell) historically produced lime/limestone near Cantwell to supply the mining industry and others. Of recent interest to the embryonic industrial minerals sector in Alaska are the recent developments of Graphite One Resources, which is exploring a large resource of surface mineable high-grade graphite on the Seward Peninsula; they report an inferred resource o 164.5 million tonnes at 4.61 percent Cg including a zone of 7.8 million tonnes at 13.5 percent Cg from graphite.

The industrial rocks and minerals, in large part, have a value that is dependent upon geographic location. This is termed "place" value as opposed to precious metals, for instance, which have a high "unit value." Of course mineral and rocks run a continuum from high place value to high unit value. For example, commodities like common variety stone or sand and gravel has a high place value – location is everything in determining its value and to be competitive it can't be transported very far. Alternatively, commodities like sheet mica have value based on inherent and rare characteristics that allow for mining and shipment worldwide. Sand and gravel by comparison, are rarely shipped from state to state or across the seas. The relative importance of industrial minerals to the economy of various jurisdictions reflects the

economic maturity of that jurisdiction and today they constitute the most important raw materials exploited in the developed industrialized countries. Because the unit value of many industrial minerals is small compared to that of metals this small unit value also dictates the extent of processing and beneficiation that the commodity can be subjected to and remain economic.

Clay:

Although clay is a very common material, and there are a variety of different clay minerals, it is usually referred to as "clay material" as applied to all fine-grained argillaceous materials, including clay, shale, and clayey soils. The clay minerals are a small group of crystalline substances whose composition and crystal structure are dominant factors in controlling their properties for such uses as ion-exchange, adsorption, high temperature behavior, swelling, plasticity, and colloidal activity. In general, clay materials are used in ceramics, as refractories (e.g. bricks and crucibles), as filler and coatings (in paint and paper), as drilling mud, adsorbents, in some cements, and cat litter. Approximately three quarters of clay materials are use in ceramics. Clays and clay minerals occur under a fairly limited range of geologic conditions. The environments of formation include soil horizons, continental and marine sediments, geothermal fields, volcanic deposits, and weathering rock formations. Most clay minerals form where rocks are in contact with water, air, or steam. Examples of these situations include weathering boulders on a hillside, sediments on sea or lake bottoms, deeply buried sediments containing pore water, and rocks in contact with water heated by magma (molten rock). All of these environments may cause the formation of clay minerals from preexisting minerals. Extensive alteration of rocks to clay minerals can produce relatively pure clay deposits that are of economic interest. The potential for clay material resources on Trust lands is good. Potential uses in Alaska are for landfill liners, manufacture of brick (where natural gas or coal supplies are nearby), local ceramic uses, contaminant removal, and kitty litter.

Limestone and Dolomite:

Limestone is a sedimentary rock formed from precipitation of calcite, or calcium carbonate (CaC03). In nature magnesium may substitute for calcium in the mineral structure forming the mineral dolomite (Ca,Mg(CO3)2). Limestone with more than ten percent of the mineral dolomite is termed dolomitic limestone, and that with 5-10 percent, magnesium limestone. Limestone with more than 95 percent calcite is in high demand and referred to as high-calcium limestone. Limestone and dolomite are uses as crushed stone, as a fluxing agent (smelting and refining), as a soil conditioner, as a chemical raw material (glassmaking, acid neutralization) and as dimension stone. Limestone, but not dolomite, is a basic raw material for Portland-cement manufacture. The most important requirements of limestone for the manufacture of portland cement is that it must not contain more than about 3 percent of magnesia (about 5 percent of MgCO3); it also needs to contain some silica, alumina and iron oxides (or have them added by supplying some clay or shale). There is good potential for limestone resources on Trust lands. In Alaska this could be used for road metal, or railroad ballast, aggregate, building stone, and perhaps manufacture of lime or portland cement where coal or natural gas supplies are available.

Barite:

Barite rock is a composed primarily of the mineral barite or barium sulfate (BaSO4). Barite is notably heavy with a specific gravity of 4.3 to 4.6 (water has a specific gravity of 1.0). Over three quarter of worldwide barite production is used as a weighting agent for drilling fluids in oil and gas exploration to suppress high formation pressures and prevent blowouts. The deeper the hole, the more barite is needed as a percentage of the total mud mix. The barite is finely ground so that at least 97 percent of the material, by weight, can pass through a 200-mesh screen. The ground barite also must be dense enough so that its specific gravity is 4.2 or greater, soft enough to not damage the bearings of a tricone drill bit, chemically inert, and containing no more than 250 milligrams per kilogram of soluble alkaline salts. Other uses include filler in paint and plastics, sound reduction in engine compartments, as an additive in automobile finishes for smoothness and corrosion resistance, friction products for automobiles and trucks, radiation-shielding cement, glass ceramics and medical applications. Barite can form in a variety of geological environments included evaporates, bedded deposits in syngenetic hydrothermal areas, as hydrothermal replacements and as veins. Because barite is heavy it cannot be economically moved great distances by truck or rail. A given deposit's economic viability depends heavily on proximity to transportation, nearness to markets, and ease of beneficiation. In Alaska the greatest number of barite deposits occur in the Brooks Range, and many are associated with the Red Dog-type shale hosted lead-zinc deposits, either intimately

or distally. However, the most significant mine production to date came from the Castle Island bedded deposit (up to 80-feet thick) found conformably within siliceous metasedimentary rocks and pillow lavas. This deposit, however, was exhausted in the 1980s. The potential for barite resources on Trust land is modest and would likely occur in Southeast, which at least has the advantage of tidewater access and could likely be used for drilling additives for the Alaska petroleum industry.

Mineral Sands:

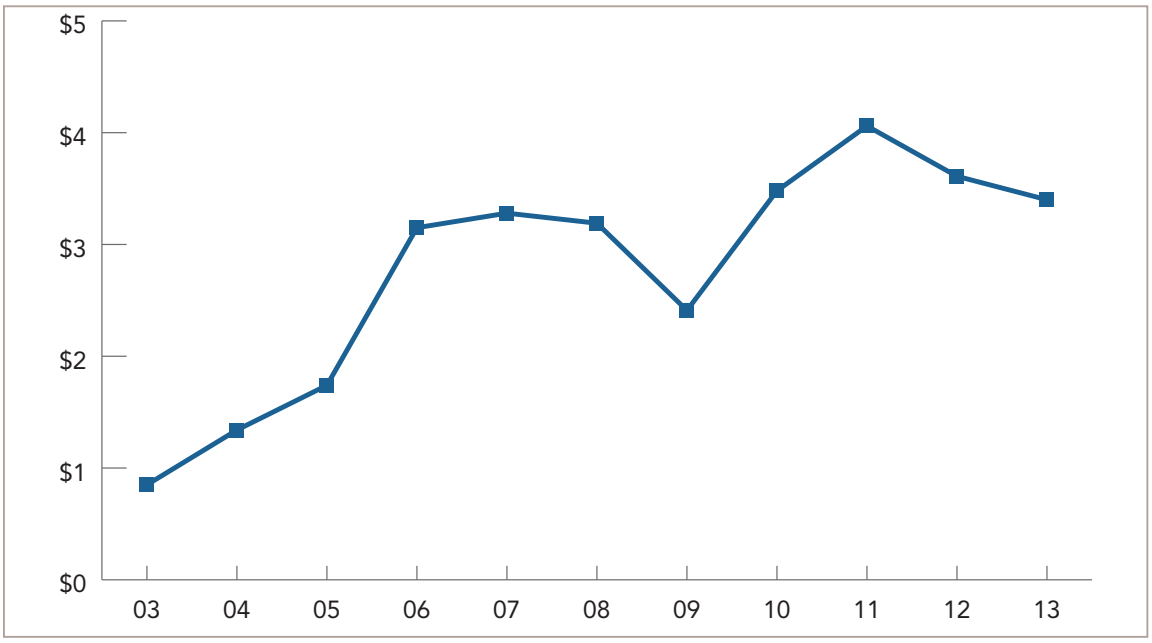
Heavy mineral sands or simply "mineral sands" are placer deposits formed most commonly in beach environments by concentration due to the specific gravity of the mineral grains. The grade of a typical heavy mineral sand ore deposit is usually low. The lowest cut-off grades of heavy minerals, as a total heavy mineral (THM) concentrate from the bulk sand, in most ore deposits of this type is around 1 percent heavy minerals, although several are higher grade. Heavy mineral sands account for the vast majority of production of titanium and zirconium from concentrations of the minerals rutile (TiO_2), ilmenite ($FeTiO_3$), and zircon ($ZrSiO_4$). Other minerals that may be associated with these deposits include garnet, chromite, magnetite, and gold or diamonds in rare instances. The titanium minerals that are processed are commonly used to produce ground titanium dioxide pigment which is used extensively in paints as the principal replacement for lead pigments; titanium metal may also be produced. Zircon is commonly processed to produce a product consumed as an opacifier in the decorative ceramics industry. It is also the principal precursor not only to metallic zirconium, although this application is small, but also to all compounds of zirconium including zirconium oxide (ZrO_2), one of the most refractory materials known. Garnet is well suited for use as an abrasive, with a hardness of 7.5 and brittle fracture. Mineral sands are known to exist at several of the coastal beaches in Alaska and several studies have been undertaken in the Gulf of Alaska province. Trust lands at Icy Bay and Yakutat have potential to contain at least by-product titanium-zironium-garnet-bearing materials that could be recovered during placer gold mining.

Zeolites:

Zeolites are a group of minerals with similar crystal structure that include the minerals, heulandites, stilbite, chabazite, analcime, clinoptilolite, and natrolite. They are members of the family of microporous solids known as "molecular sieves". Zeolites are widely used in industry for water purification; as catalysts for the preparation of advanced materials; and in nuclear reprocessing. They are used to extract nitrogen from air to increase oxygen content for both industrial and medical purposes. Their biggest use is in the production of laundry detergents. They are also used in medicine and in agriculture. Domestic uses for natural zeolites are, in decreasing order by tonnage, animal feed, pet litter, cement, odor control, water purification, wastewater cleanup, fungicide or pesticide carrier, gas absorbent, fertilizer carrier, oil absorbent, desiccant, catalyst, and aquaculture. Animal feed, cement, odor control, pet litter, wastewater treatment, and water purification applications account for more than 70 percent of the domestic sales tonnage. Economic deposits of zeolites are typically formed from the late stage diagenesis or hydrothermal alteration of volcanic rocks. Zeolites also form where volcanic rocks and ash layers react with alkaline groundwater. In Alaska, zeolites occur in the volcanic rocks of the Talkeetna Moutains and in volcanic terranes on Kuiu and Kupreanof Islands in Southeast. There may be some potential for zeolites on Trust lands in these areas.

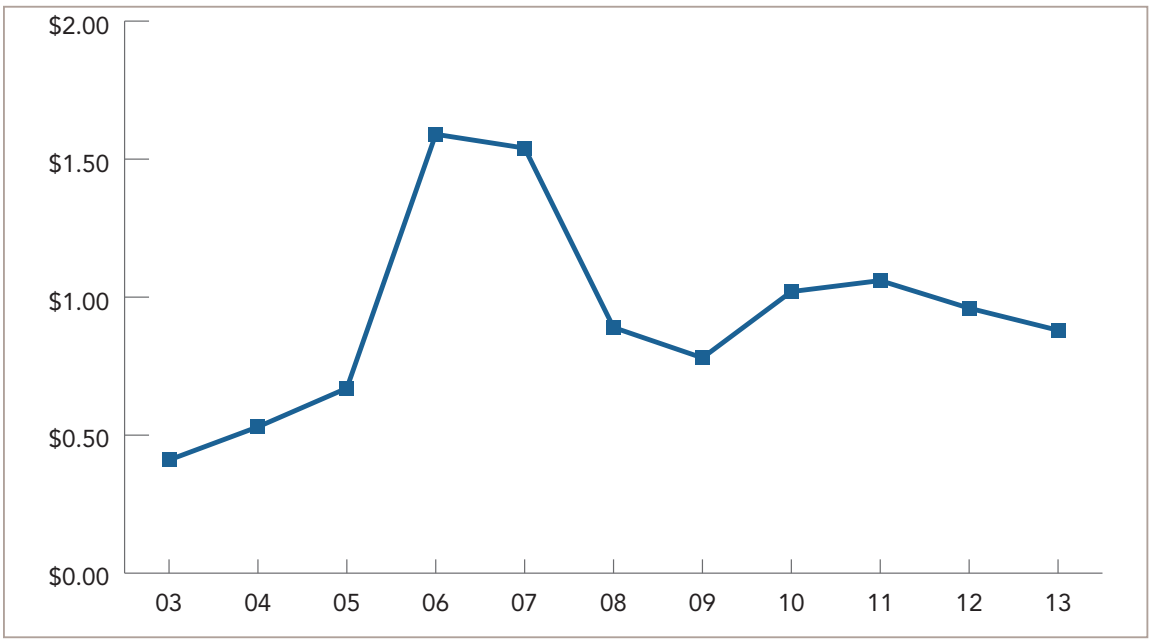
Appendix B: Historic Commodity Price Graphs

Average Annual Copper Price (Dollars per Pound)



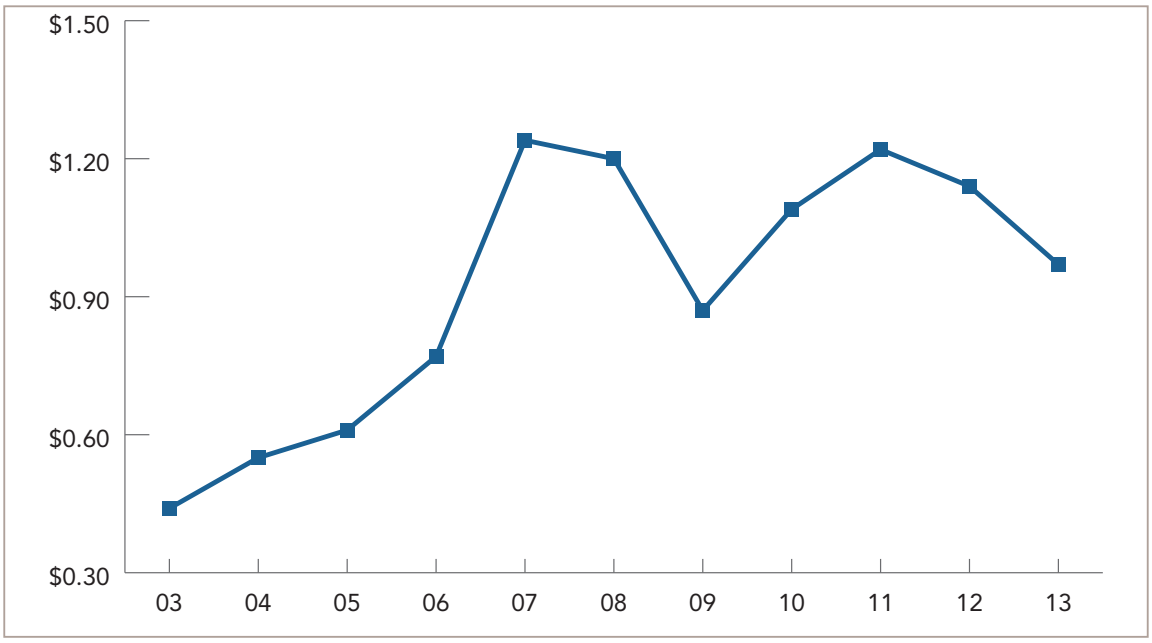
(Price Data from USGS)

Average Annual Zinc Price (Dollars per Pound)



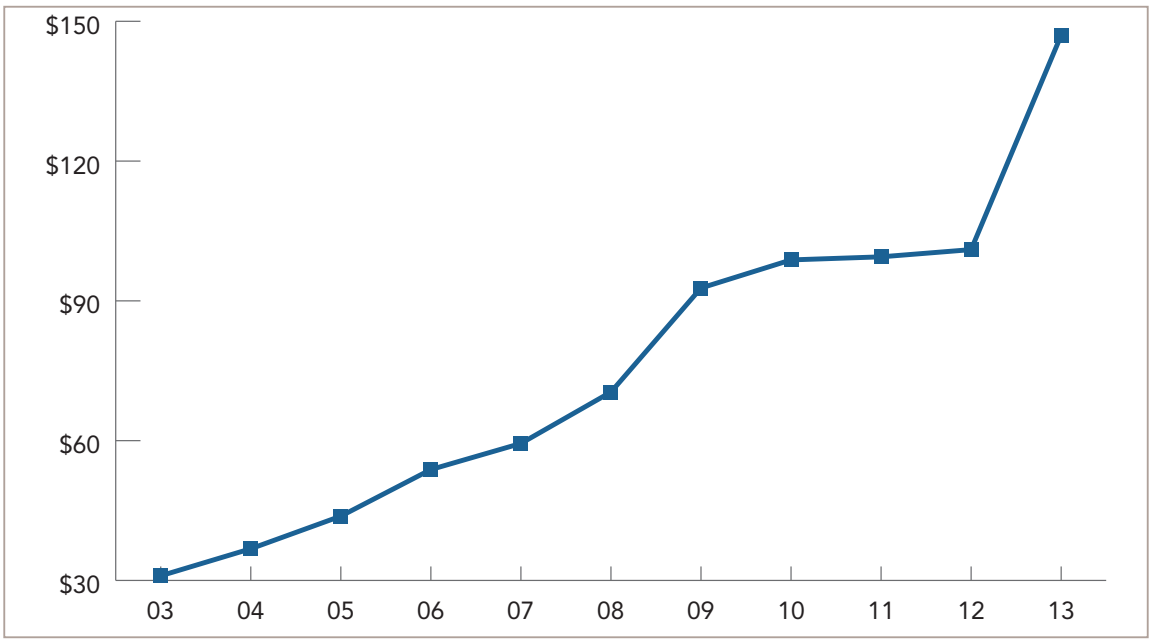
(Price Data from USGS)

Average Annual U.S. Lead Price (Dollars per Pound)



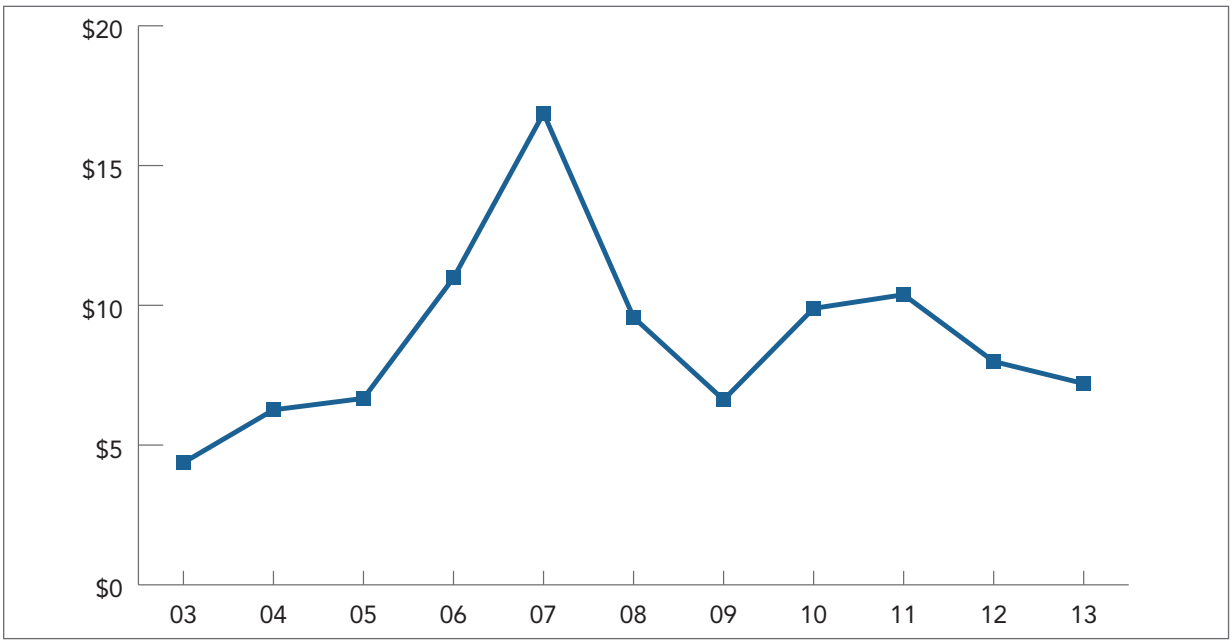
(Price Data from USGS)

Average Annual Iron Ore Price (Dollars per Metric Tonne)



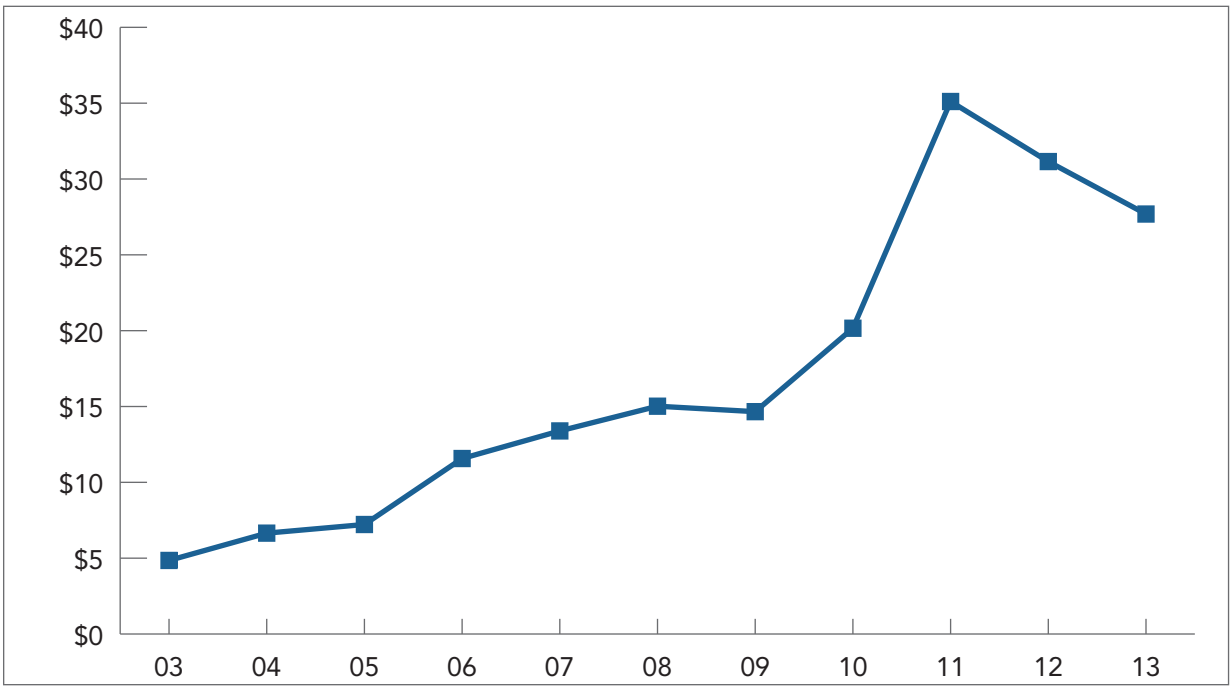
(Price Data from USGS)

Average Annual Nickel Price (Dollars per Pound)



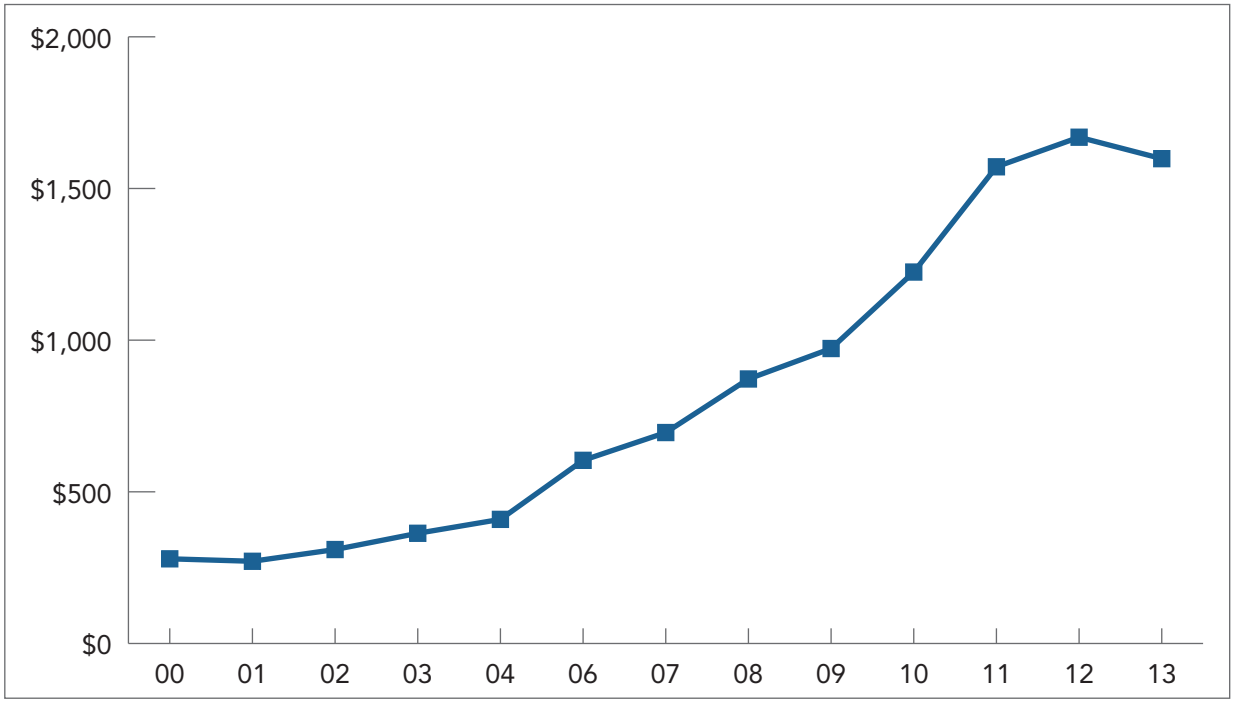
(Price Data from USGS)

Average Annual Silver Price, Jan 2003 through May 2013 (Dollars per Troy Ounce)



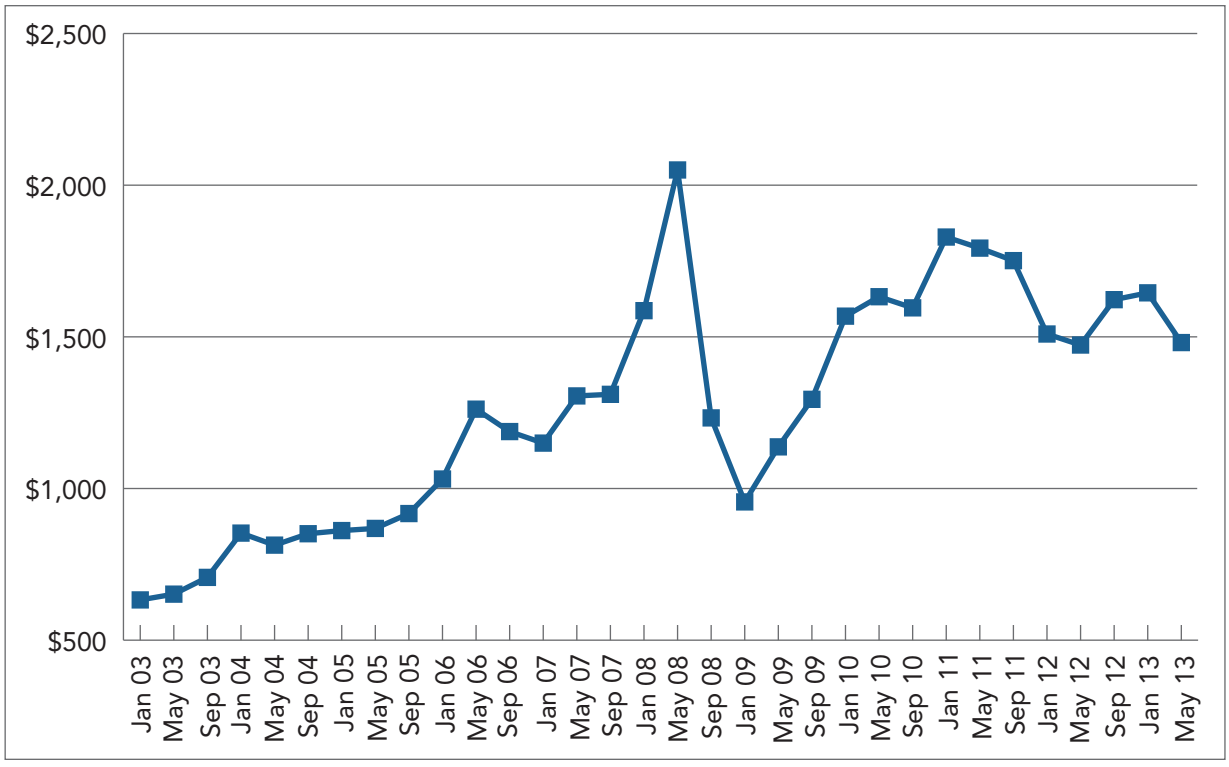
(Price Data from the Silver Institute)

Gold Price, Jan 2000 through May 2013 (U.S. Dollars per Troy Ounce)



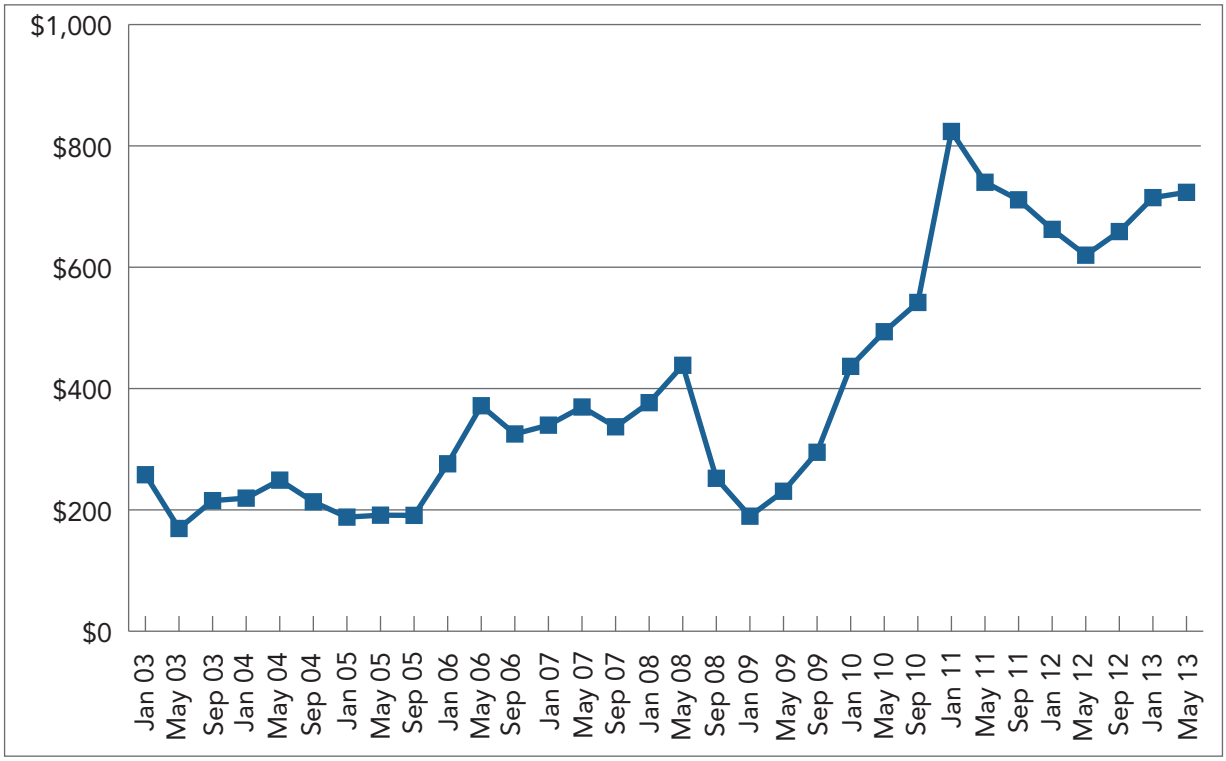
(Price Data from the World Gold Council)

Average Monthly Platinum Price (Dollars per Troy Ounce)



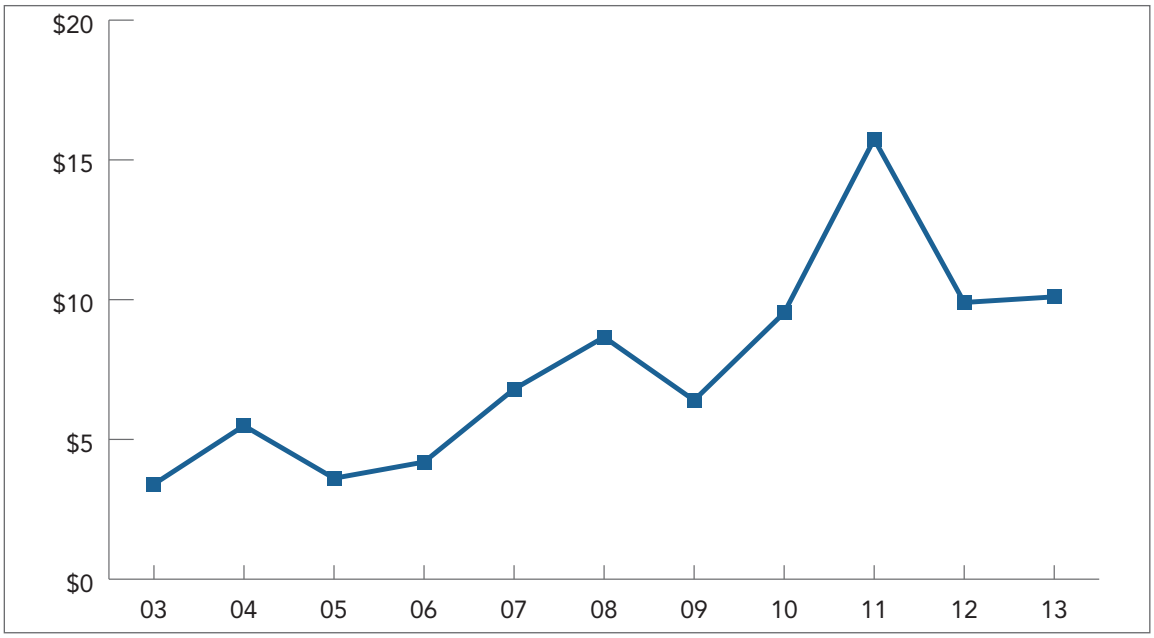
(Price Data from Platinum Today)

Average Monthly Palladium Price (Dollars per Troy Ounce)



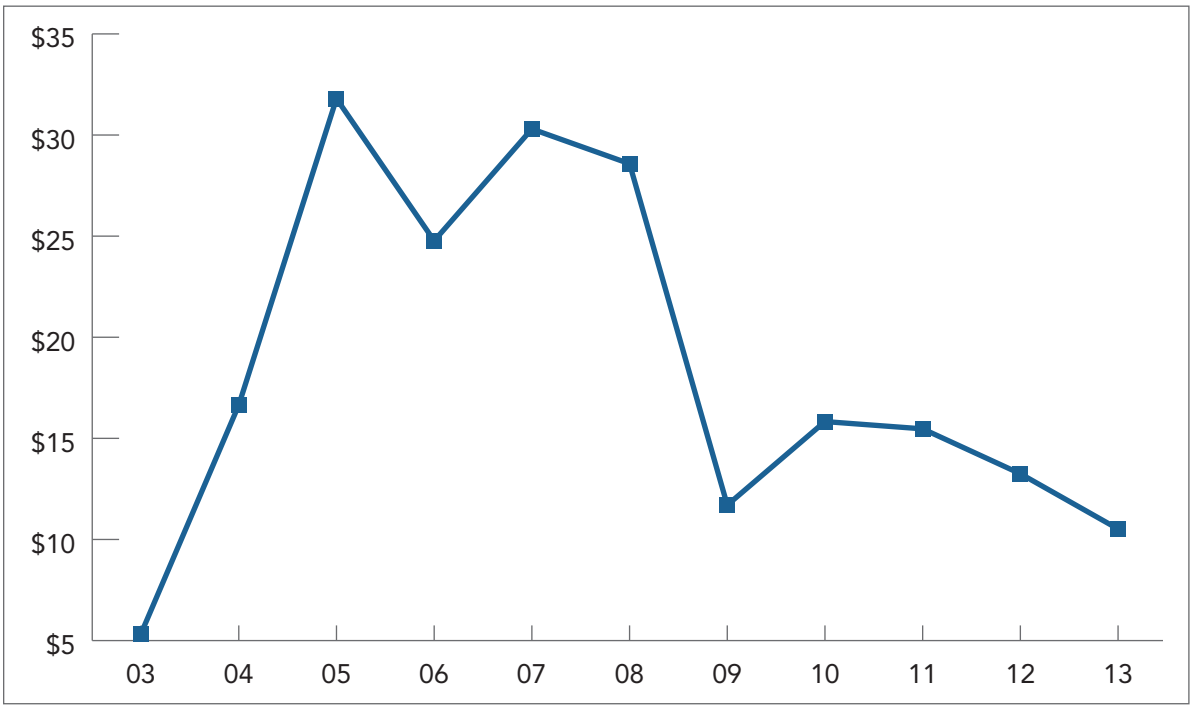
(Price Data from Platinum Today)

Average Annual Tin Price (Dollars per Pound)



(Price Data from USGS)

Average Annual Molybdenum Price (Dollars per Pound)



(Price Data from USGS)

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Abbreviations and Acronyms

AEA – Alaska Energy Authority
ACOE – U.S. Army Corps of Engineers
BIF – Banded Iron Formation
BMP – Best Management Practice
Cg – Graphitic Carbon
DGGS – Alaska Division of Geological and Geophysical Services
DNR – Alaska Department of Natural Resources
DOE – Department of Energy
EPA – U.S. Environmental Protection Agency
JORC – Joint Ore Reserves Committee (Australia)
LMPT – DNR Large Mine Permitting Team
Ma – million years (ago)
MW – megawatt(s)
MVT – Mississippi Valley Type (lead-zinc deposit)
OPMP – DNR Office of Project Management and Permitting
POW – Prince of Wales (Island)
THM – Total heavy minerals
TLO – Alaska Mental Health Trust Land Office
USGS – United States Geological Survey
USDA – United States Department of Agriculture
VMS – Volcanogenic Massive Sulfide (copper-lead-zinc-silver-gold deposit)

Program-Related Real Estate Management Plan

Program-Related Real Estate Management Plan

Introduction

The use of Alaska Mental Health Trust Authority (The Trust) land for a Trust beneficiary or organization acting on behalf of Trust beneficiaries to directly benefit persons is consistent with Congress' intention to create a mental health trust for the state of Alaska. The Alaska Mental Health Enabling Act (1956) obligated the Territory of Alaska to administer the lands granted as a public trust. Congress further declared that proceeds and income from the land shall "first be applied to meet the necessary expense of the mental health program of Alaska." Although most Trust natural resources have traditionally been used to generate revenue for the state's integrated mental health program, it is consistent with the formation of The Trust to use its lands to directly benefit beneficiaries. This potential direct use is anticipated in the Trust Land Office (TLO) regulations:

> ***11 AAC 99.110 Direct use by beneficiaries.***
>
> *A Trust beneficiary, or an organization acting on behalf of a Trust beneficiary wanting to use Trust land to directly benefit persons as part of, or to fulfill, the Trust authority's purpose to ensure a plan for an integrated, comprehensive mental health program prepared under AS 47.30.660 (a)(1), may be granted use of Trust land. Trust land use to be granted under this section must be approved by the authority before consideration by the executive director.*

The above provision is interpreted to allow the use of properties acquired by The Trust for program and beneficiary purposes.

This plan serves to provide general guidance on the use of Trust land for beneficiary programs but is limited in scope to real estate or land use related issues. Decisions related to beneficiary programs or policies are made by Trust staff or trustees. In addition, the plan identifies policies, procedures and other considerations relative to Trust land use or property/land acquisition for beneficiary programs.

From time to time, Trust staff, working on behalf of or with a beneficiary group, may bring a proposal to the TLO for real estate consideration. Proposals may identify the need to acquire select properties and/or the need to identify a parcel of Trust land that would be appropriate for the development of a beneficiary program or facility. TLO staff can provide technical and professional assistance and service to Trust staff by identifying existing Trust land or other available land for potential consideration by Trust staff and/or trustees.

This scenario was employed for the development of the Fairbanks Enhanced Detox Facility (2004-2008). TLO worked with a team of stakeholders representing nonprofits, tribal organizations, and state and federal agencies to acquire raw land, develop a subdivision with road and utilities, and contract for the design and construction of a 10,500-square-foot treatment facility. TLO's role included land and entitlement acquisition, project management and procurement for subdivision development, oversight of the construction contract and negotiation of the facility and land lease with Fairbanks Community Behavioral Health Center (FCBHC). Although initially the facility was owned by FCBHC to support funding its construction, it is now owned by The Trust, and the TLO contracts a property manager to manage the building and provide ongoing maintenance. This model, or a variation thereof, can be implemented when facilities need to be acquired or constructed for Trust-funded program purposes.

Program-Related Real Estate Management Strategy

Upon initiation of The Trust, TLO will research, analyze and conduct due diligence relative to proposed beneficiary uses of Trust land to make recommendations to The Trust and its board of trustees. TLO will consider those issues related to The Trust acquiring lands or buildings for beneficiary purposes but will defer to The Trust for direction and decisions related to program needs and program development. TLO will consider long-term and short-term risk to The Trust, financial risks and considerations, investment implications and due diligence findings and provide recommendations to Trust staff and the Trustees when appropriate. Any proposed beneficiary program on Trust land will be treated by the TLO as it would any other project – all recommendations will consider the best interest of The Trust and its beneficiaries. TLO will not consider or verify the merits or values of a beneficiary program but defer to Trust program officers and the Trustees for these decisions.

The use of Trust land for beneficiary interests at times may conflict with the TLO's mission to maximize revenue from Trust land. As a result of the settlement agreement of 1994, The Trust received some lands that were encumbered by long-term leases or other management agreements established under the Department of Natural Resources' (DNR) management of the lands as "general state land." Although the TLO has an ongoing obligation to honor valid existing rights, such as public and charitable leases, the long-term management goal of these lands will be to maximize revenue generation over time. Each scenario will need to be considered

and reviewed on a case-by-case basis, as lease conditions vary. In the case of nonprofit organizations that may also serve beneficiaries of The Trust, the TLO should always consider the potential revenue opportunities that a parcel of Trust land may offer and be ready to manage for other uses in the event that a beneficiary- or nonprofit-oriented lease expires or the occupant abandons the property or changes its need for the land.

Risk Management

The primary consideration of risk to The Trust for beneficiary-related uses of Trust land includes, but may not be limited to, the following:

- Loss of potential revenue from alternative/ competing development projects;
- Holding costs associated with program development when The Trust advances a program-related investment (PRI) acquisition;
- Instability in operating budgets or loss of beneficiary program funding for an existing program;
- Management or administrative issues that could negatively impact beneficiary program operations; and
- Loss of TLO staff time focusing on revenue-producing opportunities.

These potential risks vary depending on the scenario at hand. Some beneficiary-related uses of Trust land were granted prior to the reconstitution of The Trust (for example: ASSETS located in the Community Park Alaska Subdivision, Anchorage). Generally, these land use rights were granted by DNR under a limited rights conveyance document (such as a management agreement) or other long-term lease document that granted exclusive use rights, at times without an expiration date. In some instances, these land use rights were assignable to other non-profits or beneficiary groups. As in the case of Catholic Social Services (CSS), also located on Trust land in the Community Park Alaska Subdivision, the land lease originally had been granted by the Municipality of Anchorage to the Sisters of Providence for a 40-year term. In 1991, the lease was assigned to Catholic Social Services. The CSS programs at this location serve some of the Trust's beneficiaries, but are not considered solely "mental health programs." The complexity of existing land use rights coupled with the need for program services makes the identification of risk and consequent management of these existing rights and assets more difficult. As such, the TLO will work with Trust program officers to advance the mission of the TLO and The Trust subsequently, when possible.

Policies

In order to balance beneficiary needs with the TLO's mission to maximize revenue for The Trust, proposed beneficiary related uses of Trust land should be initiated by Trust staff. Requests from beneficiary related groups or mental health providers operating or proposing to operate on Trust land should be considered on a case-by-case basis.

Decisions to use Trust land to directly benefit beneficiaries or to fulfill the Trust Authority's plan for an integrated comprehensive mental health program must be approved by the trustees.

The Asset Management Policy Statement (AMPS) gives the following guidance on this issue (Trust Land Management Objectives):

> Specific Trust land management objectives are: …to use Trust non-cash assets for Mental Health Trust beneficiary purposes, when such use is found to be in the best interest of The Trust and its beneficiaries.
>
> The TLO will defer to the board of trustees for requests to use Trust land for less than market values. (See AMPS, Revised September 2011, Non-Cash Asset Manager, Trust Land Office.)[1]

When appropriate and approved by the board of trustees, TLO staff may seek reimbursement from The Trust for time and funding spent for projects initiated by Trust staff.

TLO and Trust staff will work together to set priorities for specific beneficiary-related projects with the direction of the board of trustees.

The Trust may also request instruction and approval of the board of trustees to incorporate program-related investment (PRI) or the use of Trust resources to loan or otherwise financially support designated projects utilizing principal resources. See Appendix A.

[1] AMPS, page 9: If beneficiary-related uses of Trust lands are proposed at rents that are below fair market value, the increment between proposed rents will be considered an allocation of Trust revenue and must be approved by the board.

Goals and Objectives

Goal 1:

Assure the real estate needs of mental health programs sponsored by the Alaska Mental Health Trust Authority are met as appropriate.

Objective 1: TLO will provide expertise to Trust staff relative to program-related real estate projects or land use authorizations on Trust land.

Objective 2: TLO will provide expertise and services to The Trust to acquire land or property for beneficiary programs.

Goal 2:

Manage Trust land for the long-term preservation of The Trust's land base while supporting and enhancing The Trust's mission to promote a comprehensive integrated mental health program.

Objective 1: TLO will manage land and facilities owned by The Trust to serve the best interest of The Trust and its beneficiaries.

Objective 2: TLO will provide professional property management and other real estate and stewardship services to protect the value of program-related Trust investments.

Goal 3:

Develop Trust land inventory and long-term management plans related to beneficiary programs.

Objective 1: TLO will inventory all existing beneficiary-related uses of Trust land.

Objective 2: As a function of maintaining the land base, the TLO will develop individual long-term management plans for existing mental health programs located on Trust land. The plans will identify opportunities and potential scenarios for future revenue generation.

Objective 3: The inventory will identify all Trust land that is currently zoned consistent with potential Trust beneficiary needs.

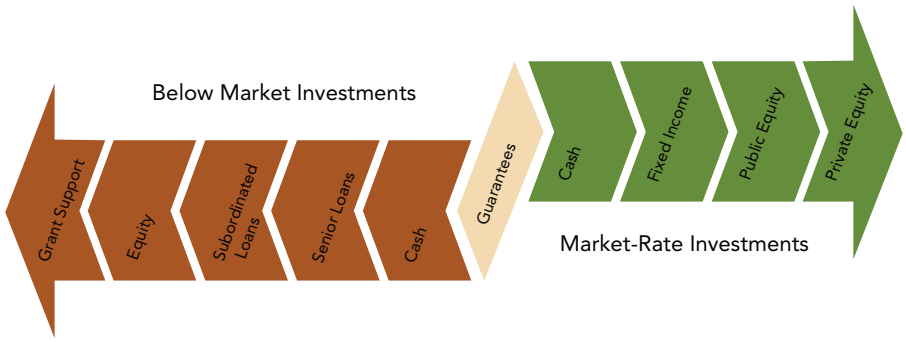
Appendix A: Program-Related Investments

(This appendix has been provided for Trust Authority staff and trustees for potential policy and decision making limited to program-related investments.)

A program-related investment (PRI) is a financing tool used by many foundations and funders to increase the impact of their limited resources on achieving priority activities. These investments have been in development by such foundations as the Ford Foundation and the F. B. Heron Foundation since the late 1960s. Assistance may be structured in several forms as demonstrated by the diagram below.

The F.B. Heron Foundation

Mission-Related Investing Continuum



The Trust has been examining PRIs as a way to achieve greater impact in the area of housing for beneficiaries. The following outlines some of the parameters that may be used to examine and develop a potential program in order to facilitate the discussion by trustees.

1. Definition and strategy goals
   Housing has been discussed as one potential area for using PRI. This is likely a good place to begin with a program for The Trust: specifically, assisting nonprofit organizations in acquiring property and holding this property until they are able to apply for grant funding has been the focus of our work. Other targets may be identified to benefit the overall nonprofit sector. Example:
   a. Social programs
      Trust resources may be used for other programs than housing. One use may be to incentivize areas of interest, such as programs demonstrating fuel efficiency or pairing PRI resources with projects moving forward in the legislative process as an incentive for general fund/mental health investment
   b. Potential markets
      Trust investment needs to be in areas where traditional financing will not operate – i.e., guarantee of loans to nonprofits that are unable to secure traditional financing due to the increased risk caused by target populations (such as housing loans to augment capital funding for project targeting individuals below the market income thresholds).

2. Potential programmatic uses to benefit beneficiaries
   There are a number of factors trustees should consider prior to approving individual PRIs or a PRI program. Subsequent potential projects may contain a larger amount of risk once a base program is in place. Any program should be developed to maximize Trust resources with regard to the following factors:
   a. Highest and best use opportunities
   b. Size and duration of investment
   c. Expected returns

3. Risk tolerance and mitigation
   a. Corporate veil: additional corporate entity(ies)
   b. Define sound investment matrix
   c. Solicitation for acquisition process
   d. Holding cost and impact

4. Financial Strategy
   a. Principal versus income
   b. Distribution mechanism
      i. Grants
      ii. Debt instruments
      iii. Leverage of external funding through other philanthropic organizations and private, revenue-generating companies
      iv. Legislative and advocacy assistance
   c. Accounting treatment to The Trust

5. Structuring and monitoring of programs
   a. Management of funds
   b. Legal counsel review of agreements, contracts and banking accounts
   c. Staff time
   d. Organizational responsibilities of the process

6. Time horizon
   a. Timeline and terms for repayment
   b. Timeline for review and financing decisions

Forest Resource Management Plan

Forest Resource Management Plan

Introduction

Timber revenue has been a major source of financial contributions to the Alaska Mental Health Trust Authority (The Trust). Managed by the Trust Land Office (TLO), timber was the primary source of revenue when the TLO was initially formed. The TLO held its first timber sale at Icy Bay in 1995. Timber sales were then offered near Thorne Bay, Sitka and Ketchikan. From 1995 until the present, timber has provided more than $45 million in revenue to The Trust. Timber revenues are allocated between principal (85 percent) and income (15 percent) per Trust regulation.[1]

The Trust's forest resources have primarily generated revenue from traditional large tract timber sales in Southeast Alaska. While The Trust has benefitted from harvest of the "low-hanging fruit" within its timber portfolio, those opportunities are mostly depleted. The harvest of The Trust's remaining timber has been met with great public opposition; in addition, the geographic location of The Trust's timber assets cannot accommodate a sustainable timber harvest plan over time. TLO's pursuit of a land exchange with the U.S. Forest Service (USFS), if successful, will provide The Trust with a timber basket that under current conditions can provide a continuous rotation and cycle of timber harvest revenues and opportunities.

Inventory of Forest Resources

TLO has recently begun efforts to inventory The Trust's forest resources. Individual timber cruises have been performed prior to timber sales in the past, but the TLO has not previously conducted a comprehensive inventory of The Trust's forest resources. This effort, although currently underway, will take several years to complete. This will be accomplished through contracting with forest employees in the Department of Natural Resources (DNR) Division of Forestry. An outline of the inventory is attached in Appendix B.

Development Issues

Original land selection under the 1956 Alaska Mental Health Trust Enabling Act included lands located in and around existing communities. In the 1950s, the USFS oversaw a robust timber harvest program on federal lands. Consequently, timber harvest on new Alaska Mental Health Trust lands was not a priority. Multi-use and community growth were more important factors in selecting Trust lands than the presence of timber resources. Even so, much of the acreage ultimately selected for The Trust does, in fact, include harvestable stands of timber.

The close proximity of Trust land to communities has had an apparent positive effect on land values, provided parcels were subdivided prior to Trust ownership. Parcels not subdivided have in some cases been subject to local zoning ordinances that restrict certain types of development or mandate improvements such as roads, sewer, power and water. These development costs influence the economic decision as to when and if parcels can be profitably subdivided. Trust land often borders private residences, and some lands have traditionally been used by the public for subsistence, recreation, water sources, view sheds and other activities. These traditional uses are often viewed by the public as conflicting with development. In recent years, objections over proposed Trust timber harvests from adjacent communities have made it difficult to monetize timber values. TLO often faces opposition when implementing development projects in proximity to communities, whether related to timber or to other resources on Trust land. Over the years, the TLO initially focused first on timber harvest in more remote areas. Over time, as more remote parcels have been harvested, the TLO has been required to develop timber projects closer to communities.

In 2005, a proposed TLO timber sale in Petersburg was strongly opposed by a local group. At issue was the question of whether the logging of timber on steep slopes created a public safety hazard. The proposed sale included logging units located on steep ground above the Mitkof Highway and some residential subdivisions. The group contended that harvest of trees could result in increased soil erosion and landslides. The TLO proposal utilized selective harvest by helicopter to reduce required road construction and impacts such as landslides. While the TLO still believes the Petersburg timber sale area could be harvested, using appropriate safeguards, in a safe and responsible manner, the controversy provided an opportunity to re-craft the Trust timber harvest program to be less impactful while still profitable. TLO decided to postpone the timber sale while it pursued a new alternative – an exchange of the Trust's timberlands near communities for USFS lands in more remote areas. That effort has led to the proposed land exchange outlined below.

[1] 20 AAC 40.160

Land Exchange

There are two basic types of federal land exchange: legislative and administrative. The legislative exchange requires Congress to pass a bill that directly instructs a federal agency to conduct a specific land exchange. An administrative exchange is negotiated between a federal agency and a non-federal party for the exchange of lands. Both processes require the parcels be of equal value. The process of value equalization is conducted through a closely monitored appraisal system. The appraisal considers the highest and best uses of each of the parcels. The same appraisal criteria is applied used for both ownerships.

The current Trust land exchange proposed with the USFS is the result of several prior proposals. Initially TLO sought a legislative exchange, but that route did not lead to significant progress. Consequently, in 2011, TLO began pursuing an administrative land exchange with the USFS. A committee of interested parties was formed, including the USFS, Tongass Futures Roundtable[2] (TFR), and the TLO, to identify suitable lands for exchange. Organizations represented also included the Nature Conservancy, Trout Unlimited, Southeast Conservation Council, Audubon Society, Sealaska Corporation, and the Landless Natives.[3] The committee selected lands from a pool of six alternatives. In September 2012 the TFR voted by consensus to endorse the USFS-AMHT Land Exchange,[4] as it had been identified through the committee's work. The recommendation included about 18,000 acres of Trust land and a pool of approximately 21,000 acres of USFS land.

As of May 2013, TLO and USFS are working jointly toward the signing of an Agreement to Initiate (ATI) the proposed land exchange. Tasks required prior to execution of the ATI include verification of title to the lands, determination of compliance with the Tongass Land and Resource Management Plan, determination that the exchange is in the best interest of the public, mineral review, list of encumbrances and Washington office review. These individual steps and reports must be completed by both landowners. After the signing of the ATI, the federal process for finalizing the exchange includes National Environmental Policy Act (NEPA) compliance,[5] timber cruises, land appraisals and environmental assessments. TLO will participate in the federal process but must also receive state legislative approval.[6] The average time to closing of an administrative exchange after the ATI is signed is three years.

TLO will be better positioned to fulfill its mandate of maximizing Trust timber assets after the exchange is complete. If successful, The Trust will own forest resources in areas more suitable for timber harvest, mitigating the known significant public opposition to monetizing its current assets.

Alternative Plan

Under a scenario in which the TLO is not successful in full conveyance of the lands identified in the USFS-AMHT Land Exchange, an alternative plan will be pursued to generate revenue from The Trust's timber portfolio. Toward that end, extensive planning has been conducted on The Trust's current timber holdings. Although several of the parcels in the exchange were logged in the past by TLO contractors, other Trust parcels (also in the exchange) would net significant volumes and revenue to The Trust.[7]

The following parcels will be analyzed for resource development and extraction if the proposed USFS-AMHT Land Exchange is not successful:

Juneau

This parcel on Douglas Island includes uplands above the Treadwell Mines and other claims. These lands will be assessed for potential timber and mineral production. This area is also considered important for public recreation to Juneau residents, so it is anticipated to be controversial.

Petersburg

These parcels have gone through the TLO's administrative process for the disposal of Trust assets. A large timber sale was negotiated

[2] The Tongass Futures Roundtable brings together a diverse group of stakeholders long involved in the Tongass to discuss how to incorporate our economic, cultural, and ecological values in public policy issues throughout the region. The Roundtable seeks to explore how a broad range of stakeholders can address these public policy issues and work together to achieve a long-term balance of healthy and diverse communities, vibrant economies, responsible use of resources - including timber, while maintaining the natural values and ecological integrity of the forest. [http://www.tongassfutures.net/about] The TFR was disbanded May 2013.

[3] The Landless Natives represent groups of Alaska natives left out of the Alaska Natives Claims Settlement Act of 1971 from Wrangell, Petersburg, Tenakee Springs, Haines and Ketchikan.

[4] More information about the details of the exchange is available online: [http://www.mhtrustland.org/index.cfm?section=Press-Room&page=Media-Releases&viewpost=2&ContentId=745]

[5] NEPA or the National Environmental Policy Act, includes the Environmental Assessment (or EIS) of the lands included in the exchange. In addition, NEPA requires a Phase I Environmental Assessment, conducted as part of the resource reports, to identify potential contamination on parcels in the exchange.

[6] Exchanges of state land are subject to AS 38.50.

[7] Appendix A, Table 1

and then canceled due to local opposition. These lands would be reconsidered for a competitive commercial timber offer.

Sitka

Parcels will be assessed for subdivision or other revenue generation. The Katlian Bay parcels were previously helicopter harvested for timber. There are known recreational trail use issues and potential conflicts on the parcels adjoining Sitka.

Wrangell

Parcels have had prior harvesting by the TLO or harvest prior to conveyance to The Trust. Areas not previously harvested have local zoning restrictions that may require variances for timber harvest.

Myers Chuck

These parcels will be difficult to develop for timber due to a lack of necessary infrastructure. There is no road system or log transfer facility. TLO anticipates significant public opposition to a timber sale in Myers Chuck. The small area (169 acres) will most likely not provide sufficient volume to cover development and mobilization costs.

Ketchikan

There are several parcels identified for exchange in this area. A large timber sale conducted by a TLO contractor in 2004 generated more than $4 million in revenue. This sale was performed by helicopter rather than through a ground harvest that would have required road construction. One particular large parcel not harvested, Deer Mountain, has excellent timber. This parcel has been cruised and initial plans for sale are in place. TLO anticipates the proposed harvest of this parcel, which is located within the view shed of Ketchikan and cruise ship traffic, will produce significant revenue but will continue to be very controversial.

Forest Resource Management Strategy

Forest management is defined as the planning and implementation of sustainable production of forest crops and other forest resources and uses. Key decisions in forest management include land allocation to different uses or combination of uses, silviculture[8] method and practices, intensity of management, timber harvest scheduling and environmental protection.[9]

Timber is a renewable resource that has various rotation ages (length of time to raise merchantable trees after harvest). Although in Alaska the rotation can be as short as 50 years, in some areas it can take as long as 100 to 125 years depending on species and site conditions. The rotation age of timber stands in Southeast and Icy Bay is typically between 50 and 100 years. On Trust land, the TLO will use 70 years as an average for the purpose of estimating target harvest or rotation age. This number can be adjusted as additional information becomes available. Portions of Trust land at Icy Bay were logged in the early 1970s, making the current second growth about 40 years old. Other stands in the same area are maturing after late glacial recession (about 75 to 125 years old). Recently, areas at Icy Bay that were not viable for a profitable return in the past are becoming feasible due to markets that have developed in China. This new market development may make it possible to re-enter Icy Bay with a viable timber operation in the near future.

TLO has employed a number of forest management strategies over the last five years to advance the goals and objectives state above. Some of these strategies were new efforts, such as forest stewardship plans, while others were holdovers from previous planning and management. However, as markets and the economy have changed, the TLO continues to analyze and develop programs and policies to respond to changing factors that influence the timber business.

TLO has completed forest stewardship plans for Trust lands at Icy Bay and Thorne Bay (Kasaan). These plans outline a long-term management plan for timber that includes silvicultural treatments such as pre-commercial thinning (PCT). PCT adds value to future forest resources by reducing stand competition and improving growth potential. It is difficult to amortize the investment associated with this type of thinning, which typically costs about $350 per acre, using traditional financial analysis. This investment will not be recouped for 40 years or more. Even though the resulting timber stands are proven to be measurably more valuable, net present value calculations of expenditure do not typically warrant such an investment. However, federal funds are sometimes available for PCT on non-federal lands. TLO will continue to seek outside funding for PCT when possible and may propose the use of Trust funds in some cases where significant long-term value can be achieved.

[8] Silviculture is the practice of controlling the establishment, growth, composition, health and quality of forests to meet diverse needs and values.
[9] http://www.answers.com/topic/forest-management#ixzz2U3wcpa4Av

TLO will complete a stewardship plan for the Leask Lake tract near Ketchikan in the next two years. Efforts are currently being focused first on the most profitable timber parcels; as time allows, additional plans will be developed for all Trust timberlands. Parcels will be prioritized in order of the profitability of development as identified in the financial strategy of this plan.

Financial Strategy

The Trust's forest resource assets are as varied as the topography, soil types and climates of the state. To successfully manage The Trust's forest resources with the expectation of long-term revenue generation, it is important to understand the forest products industry. This requires knowledge relative to the diversity of products derived from fiber, markets and prices associated with these products and the quality of the timber required in producing a given product.

Management of Southeast Forest Lands

It is the TLO's goal to provide a sustainable[10] revenue source from The Trust's timber resources. This can be accomplished in Southeast Alaska by consolidating the timber asset base through the proposed land exchange with the USFS. Once consolidation takes place these new timber assets can then be managed on a sustainable basis. An example, under the current land exchange proposal The Trust will acquire new timberlands. The new land, coupled with existing timberlands including Icy Bay, totals about 48,000 acres of Southeast Trust timberlands. These lands will be harvested over time. A harvest plan based on a 70-year rotation provides 686 acres of harvestable land each year. This process creates a continuous cycle of mature trees. For example, an average yield of 20,000 board feet (20 mbf) per acre[11] can be applied. The resulting annual harvest is about 14 million board feet (14 mmbf) of wood per year.[12] TLO will manage The Trust's timber assets to maximize long-term revenue from Trust land while preserving the long-term viability of the resource. In practice, annual harvest rates vary and should be project-specific.

Management of Other Forest Lands (Interior, Mat-Su and Kenai Peninsula)

TLO uses a basic economic exercise to determine if a given parcel of Trust land with a timber component is viable for harvest. The process identifies potential profitability by evaluating whether the project generates revenue greater than the cost of the operation. One of the primary factors that determine the amount of revenue generated by a project is the volume per acre of merchantable material. In Southeast Alaska, volumes per acre can be as high 30,000 board feet per acre (30 mbf/acre) or more for four merchantable species (hemlock, Sitka spruce, red and yellow cedar). In Alaska's Interior, volumes of spruce (desired saw log) in a stand are much lower (2 to 5 mbf/acre) with no other viable species, based on current markets. The average price in the Interior paid for saw log stumpage is $100 per mbf to a limited domestic market. In Southeast, the average price paid for all species is $100 to $300 per mbf to a virtually unlimited export market (prices are from recent timber sales.)[13]

The following considerations are measured when testing the viability of a timber harvest:

a. Cost of operation (access to resource, road construction, infrastructure and harvest costs)
b. Cost of transporting timber to point of sale
c. Quality and quantity of the timber being produced
d. Price the market will pay for timber

The market price (d) must be greater than the sum of the first three values (a-c) or development of the parcel or resource is not feasible (i.e., there is no profit). If the projected selling price is not adequate to cover access, harvest, transportation and administrative costs, the project is not considered viable. If a harvest project is not viable, TLO must decide either to wait for more favorable markets or to consider developing the parcel for a purpose other than timber.

TLO must also determine if the revenue derived from the sale of the specified asset will be higher or lower in the near future. Harvest opportunities often swing with market conditions. Typically, many Alaska regions are viable for timber harvest only at extreme high markets. This is primarily due to access difficulties and expensive harvest costs, low volumes per acre and distance from markets. A thorough knowledge of industry and product trends, as well as market conditions, is essential to determine when and how to sell a given commodity. It is also crucial to maintain flexibility to take advantage of high market conditions. The ability to accurately

[10] Sustained Yield; State of Alaska Constitution Article VIII, Sec IV: Fish, forests, wildlife, grasslands, and all other replenishable resources belonging to the State shall be utilized, developed, and maintained on the sustained yield principle, subject to preferences among beneficial uses. State law defines maximum sustained yield as "the achievement and maintenance in perpetuity of a high level annual or regular periodic output of the various renewable resources of the state land consistent with multiple use." http://w3.legis.state.ak.us/infodocs/constitution/citizens_guide.pdf
[11] Tongass National Forest Average
[12] Table 2, Appendix A
[13] Table 2, Appendix A

assess commodity market cycles is not an exact science. TLO attempts to work closely with industry and keep resources available for desirable market conditions.

Risk Management

The Trust owns about 250,000 acres of land that could be categorized as "timberlands." However, only a small portion of these lands are commercially viable, or currently able to provide a return of revenue beyond development cost. Most of The Trust's viable timberlands are in Southeast and Icy Bay. TLO monitors the current industry, proposals, and developments that could favorably affect the harvest of Trust assets statewide. The viability and profitability of various contingencies are often analyzed to determine if and when it would be in The Trust's best interest to participate in a market or offer a resource for development.

One example is the recent interest in small biofuel projects around Fairbanks. To date, none of these proposals have produced sufficient demand to increase values enough to make timber sales viable for The Trust. Staff continues to monitor the timber industry in Alaska and collaborate with the Alaska Board of Forestry, DNR/Division of Forestry, Department of Commerce, Community & Economic Development and the Alaska Energy Authority, as well as the commercial timber industry.

Risks associated with market fluctuations and high operating costs can typically be mitigated by holding an asset over time. As a commodity, timber is subject to market fluctuations. The differences in these prices can be dramatic, and market fluctuations are often the decisive factors in determining the feasibility of a project. Extending contract lengths is a method that can help mitigate market fluctuations. Many of The Trust's assets are located in areas where transportation costs to large markets are very high. Patience and positioning are required to successfully capitalize these resources to sell at market highs. It is crucial that both the TLO and its contractors work together to their mutual benefit to be able to develop and market Trust resources.

Challenges and Changes

The long-term management of Trust timberlands requires consistent oversight, resource monitoring and knowledge of timber markets. The following plan outlines a strategy to manage Trust assets in Southeast Alaska after completion of the proposed land exchange with USFS. It involves strengthening the TLO's relationship with what remains of the timber industry and creating relationships that will better allow joint response to market conditions. This approach will ultimately increase The Trust's share of timber harvest revenue while creating a more consistent revenue stream. The management of timber assets in other regions of the state will be similar when viable projects are presented.

This new management strategy as proposed below has many precedents. The long-term USFS contracts with Ketchikan Pulp Company and Alaska Lumber and Pulp are examples of providing a resource to private enterprise in return for predictable results.

Although the quantities of land and timber considered by this plan are much less, the basic management parameters are the same:

1. Managing a resource for a specific objective over an extended period of time;
2. Addressing the need to amortize investment;
3. Addressing the need to develop markets; and
4. Addressing the need to develop products.

The timber industry in Southeast Alaska has been in a severe state of decline since closure of two USFS long-term, 50-year contracts in the 1990s. These contracts allowed for the operation of pulp mills in Sitka and Ketchikan that provided employment for thousands of workers while supporting a year-round economy.

As a result, the current Southeast timber industry has dwindled to include only three significant players: Sealaska (an Alaska Native regional corporation), Viking Lumber and Alcan Forest Products (an independent exporter). These operators require substantial logistical and financial resources to operate over a large geographic area and must conduct their business on a regional basis in order to maintain a timber base large enough to supply their operations. They face continuous shortages of timber in meeting their operational needs. This condition has persisted for many years and makes the purchase and amortization of new equipment and processing facilities unfeasible.

USFS has released a new transition plan that calls for the Tongass National Forest to conduct future timber harvests on young growth timber only. It has also recently stated its intention to aid the current industry's challenges through this transition by conducting a mixture of old and young growth timber sales as a bridge to the time young growth stands will mature.

Harvest-Market Strategy

In the past, the TLO has typically offered timber sales based on a fixed stumpage rate; that is, bids were solicited on a competitive basis and generally, the high bid set the price of the timber for the life of the contract. This model was designed around the harvest of large parcels of 500 acres or more. Timber projects in areas such as

Icy Bay, Kasaan (Thorne Bay) and Leask Lake were offered primarily with the rights to harvest entire parcels consisting of thousands of acres. Initial contracts were usually for a three-year term to incentivize quick harvest to maximize revenue for The Trust. Several of these contracts were extended beyond the initial term for longer periods of time (five years or longer).

Through experience and working closely with industry partners and the known limitations and challenges previously discussed, the TLO has developed a new harvest strategy that capitalizes on market highs. TLO's experience with this harvest-market strategy (HMS)[14] has demonstrated that cooperating with a reliable partner in a long-term business relationship can provide higher revenue returns for both parties. When this relationship is employed in the timber industry it allows the operator to find specific markets suited for the type of timber to be harvested. Most purchasers are looking for long-term dependable supplies and will pay premium prices to guarantee stability. This vertically structured marketing can provide higher returns for all parties involved. TLO has determined it to be in the best interest of The Trust to employ this new strategy utilizing a harvest marketing agreement model in select instances.

The HMS concept is based on a shared risk and shared profit scenario. The Trust receives a percentage of the net profit rather than a fixed stumpage rate. This contractual relationship requires close scrutiny by the TLO but provides a means to increase volume as well as revenue. This maximizes revenue to Trust beneficiaries and fulfills a TLO mandate.

Whereas the traditional fixed stumpage price puts the risk solely on the purchaser, the HMS is based on net profit. Operating costs incurred by the contractor are deducted from the sale of the resource. (The TLO must closely monitor these costs, but this effort can be mitigated.) The contract negotiation can fix the pricing of overhead and development costs such as road construction per mile, thereby reducing risk to The Trust. Other costs can be negotiated on a board foot basis. These include logging costs based on system (cable and shovel), landing costs, haul costs on a per mile basis, sort yard and scaling costs, rafting, transportation to ship loading, stevedoring, shipping and administration.

HMS was applied most recently on a 2011 addition to the Leask Lake Timber Sale; this sale provided a significant increase to The Trust as compared with the traditional fixed stumpage scenario. Utilizing this strategy, The Trust received 66 percent of the profit while the contractor received 34 percent. This contract change resulted in a 37 percent increase over the initial contract stumpage return.

Contrarily, it is possible that employing HMS could negatively affect The Trust's timber revenue. However, if timber markets crashed during the term of an HMS contract, it is most likely that both The Trust and the contractor would agree to cease timber harvest until such a time as the markets recovered.

Primary Benefits

Previous TLO timber contracts have demonstrated that contracting for extended terms maximizes revenue. Long terms provide time for contractors to develop markets and then sell the resource at optimum market rates. Contractors involved in international and domestic trade also deal with multiple factors that affect price, including government fiscal policies, changes to international transactions such as currency fluctuations, market expectations and supply and demand.

Economics can force a contractor to decide not to harvest low-end material. This decision is typically based on a likelihood of poor or negative return on investment. If the sale price of the product does not cover costs including road construction, stumpage, harvest and transportation, the resource will not be harvested. The contractor may be able to realize a profit by developing new markets or waiting for prices to increase. A change in economic factors could make the same material profitable at another time. The extended term of a harvest marketing agreement can be used as a vehicle to provide such economic opportunities.

HMS provides tools, such as adjustable stumpage rates, that can mitigate risk and provide economic opportunities. The longer contract term and adjustable stumpage rates encourage greater utilization of material; this, in turn, helps the economics of scale and provides more volume to amortize infrastructure development. Further, it is possible to negotiate terms for predictable costs such as road construction, yarding, hauling, sort-yard and ship loading with periodic adjustments. This then limits variables prone to continuous fluctuation such as shipping costs and market prices. HMS provides incentives for the contractor to market the full spectrum of the resource.

Another advantage to The Trust in utilizing HMS is to transfer maintenance costs and responsibilities for road systems and other infrastructure to an entity other than The Trust. The Trust is not currently in the position to maintain roads and other infrastructure improvements on Trust parcels. Within the HMS framework,

[14] The TLO has received industry support for the management concepts outlined in the HMS.

the contractor will be required to leave the infrastructure in a condition directed by the TLO at the close of the agreement. The ability to access parcels on a long-term basis for other revenue-producing projects such as mineral exploration, recreational opportunities, real estate development, tourism opportunities or material sales, only adds to the potential for economic opportunities. Although the obligation for road access and maintenance under HMS may be confined to the term of the harvest marketing agreement, it allows the TLO time to consider and plan for alternative development opportunities other than timber harvest. If parcels are closed after a timber sale is concluded, the infrastructure will have to be "put to bed," cutting off access to the resources.

Proposed Timber Units

Under the scenario of a successful land exchange with the USFS, The Trust will acquire new lands on Prince of Wales and Revilla Islands. Together with existing timber resources at Icy Bay, The Trust's timber portfolio in Southeast Alaska will be approximately 48,000 acres. These three units could be managed under separate long-term contracts as provided in this strategy.

TLO would offer harvest rights for a timber unit on a competitive basis. The harvest marketing agreement would allow for 10-year terms, with a right of extension upon mutual agreement. The proposed long-term agreements will maximize revenue while minimizing expenditures to The Trust. These agreements will also provide ongoing access to the areas.

A typical harvest marketing agreement contract will require sale layout, timber harvest, marketing and maintenance of infrastructure but may also require the application of silvicultural treatment (pre-commercial thinning). The operator will have rights to construct road, harvest and market timber, and perform activities associated with timber harvest. The timber units may be open for mineral exploration, mining or other economic activities that are not in conflict with timber harvest operations. The harvest marketing agreement requires an annual review and adjustment of revenues.

Roads, camps, log transfer facilities, shop facilities and other infrastructure constructed during the timber sale represent substantial capital expenditures. When left in place, these capital improvements may provide future economic opportunities unknown at the time of the initial timber sale contract. The presence of roads, bridges and camps can greatly enhance mineral exploration, recreational opportunities, real estate development, tourism opportunities, material sales and other economic revenue generation. In addition, long-term maintenance of this infrastructure is necessary to support access for future silviculture activities, and potentially for other development projects.

The HMS method of timber sale administration will be implemented on all Trust timberlands when viable projects have been identified. TLO plans to competitively offer Trust timberlands at Icy Bay in the near future under this new strategy. The Ketchikan and Prince of Wales timber units will also be offered after the USFS land exchange is completed. This will allow operators to have a "bank" of timber that can be used to supplement timber from other landowners.

This concept has been endorsed by the Alaska Forest Association, Southeast Conference, and the USFS and should provide strong support for the USFS-AMHT Land Exchange. Over the past two decades, since the closure of the two pulp mills in Southeast, employment in the region's forest products industry has dropped dramatically. Forest industry employment peaked in 1990 at 3,500[15] direct jobs. Current forest products employment is estimated at about 300. Many observers believe this drop in employment is primarily due to a lack of timber supply; this is an issue that state, federal, and local governments would like to resolve. Although the HMS will not solve all the timber problems in Southeast, it would certainly provide a predictable and steady supply of timber needed by the remaining industry participants.

Implementing this proposed plan will allow amortization of large projects that typically require a 20-year guaranteed fiber supply. One such project is a proposed biofuel power plant that could be situated on Trust land near Ketchikan at Leask Lake. This facility would utilize wood waste from logging, as well as municipal waste, to provide 4 to 6 megawatts of electric power. Projects like this require a long-term commitment by an operator who must demonstrate financial viability as well as have a long-term fiber source. Other biofuel development projects, designed for a heat and power source, may present The Trust opportunities in the Fairbanks and Matanuska-Susitna Borough. By participating in this type of development, the TLO is fulfilling its regulatory obligation of Trust land management[16] and staying consistent with the overall TLO Resource Management Strategy.

[15] http://commerce.alaska.gov/ded/dev/forest_products/forest_products1.htm
[16] 11 AAC 99.020

Goals and Objectives

The goals for managing Trust timber and forest resources are fairly simple. It is important, however, to recognize the need for flexibility and the ability to respond to market, political and environmental changes. It is also important to remember that The Trust's forest resources extend beyond the traditional timberlands in Southeast Alaska. These goals and objectives are intended to recognize all of these considerations.

Goal 1:

Maintain, manage and develop forest resources to maximize revenue for The Trust.

Objective 1: Provide sustainable revenue for The Trust from a timber portfolio acquired through the USFS-MHT Land Exchange.

Objective 2: Time harvest activities with best market conditions.

Objective 3: Develop timber programs throughout the state when viable.

Objective 4: Encourage domestic processing and/or use of forest products while preserving maximum revenue to The Trust.

Objective 5: Manage and develop non-timber forest resources.

Goal 2:

Manage for long-term preservation of The Trust's forest resources.

Objective 1: Implement forest stewardship plans to preserve the inherent value of The Trust's timber portfolio.

Objective 2: Focus on timber or other forest resources on Trust land in the Interior and Southcentral areas to determine potential value and viability.

Appendix A

Sustained Yield Under Harvest-Market Strategy

HMS	Acres	Rotation Period	Annual harvest (acres)	Vol/acre mbf	Annual harvest Vol/mbf
Icy Bay	17,193	70	246	25	6,150
Carroll Inlet	13,586	70	194	20	3,900
Prince of Wales	17,929	70	256	25	6,400
Totals	48,708		696		16,450

Regional Viability of Economic Return From a Timber Sale on Trust Land

Area	Vol/acre	Value/mbf	Value/acre
Interior	4	100	$400
Mat-Su	2	100	$200
Southeast	25	175	$4,375

Appendix B: Outline of Trust Forest Resources Inventory

The Trust's Forest Resource Inventory uses the following large-scale assumptions for the purpose of organizing the data and information included in the Trust's Forest Resources Inventory:

1. Alaska has distinct geographic regions, which are defined by climatic, topographic and vegetative parameters.
2. These regions also share similarities such as transportation, population, economics and politics.
3. The State of Alaska recognizes similar sub-regions for administrative purposes.

I. Geographic Subdivisions

a. Northern Region
   i. Tok/Delta Junction
   ii. Fairbanks
   iii. Nenana

b. Southcentral Region
   i. Tyonek
   ii. Mat-Su
   iii. Kenai

c. Southeast
   i. Icy Bay/Yakutat
   ii. Juneau
   iii. Southern Southeastern

II. Parcel Inventory

The following parameters will be used to collect, organize, measure and inventory forest resources.

a. Initial inventory
   i. Stratification of vegetation types
   ii. Orthorectification (correction of ground distortion on satellite imagery)
   iii. Timber cruise and ground truthing
   iv. Application of processing of types to stratified layers
   v. Production of type maps with metadata

b. Diameter (size of trees), species, and volume of fiber by parcel

c. Follow-up of inventory by TLO personnel or contractor

d. Transportation plan for parcel
   i. Proximity of parcel to transportation corridor
   ii. Cost per mile of road construction
   iii. Quantity of fiber/cost of road construction
   iv. Cost of transport from parcel to market
   v. Regulatory issues
   vi. Local zoning issues
   vii. Community/area plan compatibility
   viii. Public safety concerns/mitigation measures

III.Markets and Products

The forest resources inventory will also identify potential markets, purchasers and products that may utilize Trust timber.

a. Export market
   i. List of exporters
   ii. Markets – current and future values
   iii. Harvest and transportation costs (ship loading included here)

b. Domestic processing
   i. Sawmills – number, types, size, annual demand
   ii. Lumber
   iii. Cants and flitches
   iv. Demand – current and projected future
   v. Current and future value
   vi. Harvest cost
   vii. Revenue return to landowner

c. Biofuels
   i. Firewood
   ii. Pellets and/or chips
   iii. Non-timber forest products (birch syrup, mushrooms, etc.)
   iv. Demand – current and projected future
   v. Current and future value
   vi. Harvest cost
   vii. Revenue return to landowner

Real Estate Management Plan

Real Estate Management Plan

Introduction

When formed, the Alaska Mental Health Trust Authority (The Trust) was endowed with approximately one million acres located in Alaska. This acreage consists of both fee simple and partial land estates. The Trust's non-cash assets are most commonly described as "land"; however, this is a misnomer. It is important to identify these assets by their highest and best use. In terms of the Real Estate Management Plan, it is critical to distinguish real estate from all other resources, specifically land.

For the purpose of this plan, real estate is defined or identified under the following criteria.

1. All of the following must apply:
   a. Includes only the surface estate of a parcel;
   b. Be surveyed;
   c. It is property that has a material investment (basis) intended to add value; and
   d. Not currently being used for Alaska Mental Health Trust programmatic purposes.

2. Some of the following may apply:
   e. The highest and best use is determined to be income generation through commercial development;
   f. Identified potential in the near term for generation of positive cash flow; and/or
   g. Specifically identified by the executive director of the Trust Land Office (TLO) as real estate.

The information and policies stated above will guide trustees and TLO as they build and manage the real estate portion of The Trust's non-cash asset portfolio.

The Investment Criteria and Goals & Objectives must accompany any review of the plan. The Investment Criteria serves as a quick reference for scope, mission, and authority given under the plan. The Goals & Objectives highlight the methodology used to implement the plan. Together they synthesize the strategies and guidelines in the plan narrative and will serve to achieve the plan objectives.

Real Estate Management Strategy

There are several methods The Trust can use to generate cash flow from real estate. These may include:

1. Acquisition of existing income properties;
2. Leasing land;
3. Developing and leasing its own real estate; and
4. Acquisition of land to develop income properties.

Of these options, acquiring existing income properties offers the best balance of risk and return. Leasing and developing Trust land offers a high level of value conversion to The Trust. Leasing is low risk but is not always a marketable solution. Development adds a significant level of risk. Acquiring and developing land is the highest risk option and does not offer the value conversion of developing Trust land.

By acquiring existing income property, decisions can be made based on current information and historical data. Typical development risks associated with entitlements, permits, construction and market timing are all removed from the equation.

Owning any type of real estate involves risk; income property is no exception. However, detailed due diligence and conservative investment guidelines will reduce much of the risk.
Leasing land owned by The Trust is always an attractive alternative, since it requires no new capital investment and easily turns a nonperforming asset into a performing asset. However, this method is not always in demand and is affected by the availability and cost of financing. From a building owner/developer perspective, land leasing is an attractive alternative to paying cash for land when interest rates and the cost of money are high.

Clearly more risk is associated with developing property as an investment strategy. The factors mentioned above add multiple opportunities for a project to be derailed or for costs to increase. Conversely, the value of development to the investor is the ability to maximize the value of the land and the opportunity to build exactly the type of structure that fits the investor/user's needs. The most common risk, and the one most difficult to control, is construction cost. Demand for new space has to outstrip the supply of current space before rents can rise to support the cost of a new building.

Risk Profile

Investment risk can be mitigated using a number of techniques. At its most basic, mitigation involves avoidance of concentrated exposure. This includes avoiding too much exposure to any single investment type and/or avoiding too much concentration in one location. Mitigation of risk may also involve sharing risk and/or assigning risk to others. The TLO will consider all of these techniques in managing The Trust's risk to new real estate investments.

1. Asset Type

There are a variety of income property types that provide varying levels of return and risk. Properties that produce income or cash flow are generally assigned a capitalization rate or "cap rate"[1] by the real estate market. In fact, the cap rate of income properties is possibly the single best way to judge the risk level of a property.

In general, there are four major income property types: office, retail, industrial and multifamily residential. Nationally, the risk levels and cap rates are lowest on office properties and multifamily residential. Retail has the highest cap rate and is generally considered the highest risk of the major income properties.

The Trust should invest in high quality properties with durable cash flow. Further, The Trust is not equipped to manage apartments or other multifamily properties. Retail properties can suffer higher vacancy rates and often require creative and non-standard arrangements with tenants. Office and industrial properties are often the most secure and are, consequently, the lowest risk and easiest to manage investments.

2. Asset Location

Concentrating investment in one location or local economy is to be avoided. This is to minimize the effects of impacts from factors outside The Trust's control, such as an economic downturn or an oversupply of property type. There are also practical limits on the number of separate markets that a small staff can adequately manage.

Project Profile

Based on the guidelines above, The Trust is planning to develop a commercial income property portfolio composed primarily of high quality commercial and industrial projects. As that portfolio is assembled, the following factors will be considered:

1. Single investments should not be too large in order to maintain diversity within the portfolio. No single project should represent over 25 percent of the basis of the real estate portfolio five years into the plan.
2. Properties within The Trust's portfolio should be above average in terms of quality, design and location.
3. Construction type should be of the most permanent materials, generally concrete and/or steel.
4. Tenant profile will be examined closely. In buildings with multiple occupants, the tenant mix should be compatible and the financial strength of the tenants should be very high. In single-tenant buildings, vacancy risk takes on a new dimension. Consequently, the quality of that tenant is the primary factor in deciding to make the investment. Only long-term leases with credit-worthy tenants would be acceptable for single-tenant buildings.
5. Variations from these principles can be allowed, but only after careful review.

[1] Cap rates are used to estimate the investor's potential return on his or her investment. This is done by dividing the income the property will generate (after fixed costs and variable costs) by the total value of the property. If property is being evaluated for purchase using a cap rate analysis, the income would be divided into the total cost of the property.

Investment Return

There are several return factors to consider when underwriting a potential investment. The methods of determining if an investment fits the needs of The Trust for this plan will be cash-on-cash return,[2] net present value (NPV),[3] internal rate of return (IRR)[4] and return multiple.[5] Each factor defines the return on an investment in a unique and meaningful way and has its place in determining the overall fit of an investment with the plan.

Cash-on-cash return and cap rate will be the same at the time an asset is purchased. The two return factors will begin to diverge as a project progresses and cash flows change due to changes in revenue, expenses and financing. Financing will generally improve cash-on-cash return, as less principal is required to provide the cash flow, even when the payment of interest is considered.

NPV is an important tool when considering investment in an asset that produces a long-term income stream. Dollars in the future are not as valuable as dollars today, and NPV defines that future income stream into today's value based on a given rate. The rate used will affect the value of a given income stream, and the longer the income stream, the greater the effect of a change in rate. It is possible to have a negative NPV when other factors are indicating a good investment.

IRR and return multiple are quick tools to evaluate the strength of an income stream. Although IRR doesn't consider the time value of money, it is a good indicator of the value of a cash flow stream in relation to investment in its entirety. Return multiple is an easy expression of whether an investment will pay out more than was invested. Financing will also generally positively affect IRR and return multiple as less principal is used to generate the cash flow.

For the purposes of evaluating the success of this investment plan, the primary measurement should be the cash-on-cash percent of return followed closely by NPV. This is a result of the income nature of the investment returns; the cash will be used to fund programs in the future periods. The base rate to be used as the "hurdle" for new projects should be the current cap rate for commercial properties of the type being considered for acquisition. The NPV of projects should always be at or as close to positive as possible.

[2] Cash-on-cash return is a measure of cash return on principal invested for an individual time period, generally a year. It does not consider the time value of money. It is expressed as a percentage where a higher percentage is desired.
[3] Net present value (NPV) is a measure of a series of cash flows in current dollars based on a discount rate. The higher the rate, the lower the value. It is expressed in current dollars, and a positive value of even $1 is desirable.
[4] Internal rate of return (IRR) is a measure of a series of cash flows expressed as a percentage; it does not consider the time value of money.
[5] Return multiple is a measure of the cash flow for a given investment as a whole. It is expressed numerically where a value of 1 means return is even with investment.

Real Estate Investment Criteria

1. Focus

For the foreseeable future, the TLO will focus primarily on acquisition of income revenue generating real estate. This does not exclude acquisition of property for strategic purposes to enhance the value of other Trust assets or provide for long-term income generation. If development opportunities arise on Trust Land, development should focus on minimizing risks to the maximum extent possible.

2. Prudent Investor

Investments will be measured against the prudent investor rule. AS 13.36.230 & AS 13.36.235; see Appendix A.

3. Asset Allocation

The principal investments in income property will be determined by the trustees and is currently $40,000,000. The desired allocation will be reexamined by the trustees on a periodic basis and may be expressed as deemed appropriate at the time. The goal of the allocation is to achieve a distribution of investments that maximizes long-term principal appreciation while yielding income levels deemed appropriate for program needs. Rebalancing of the portfolio will be based on current market assumptions and property appraisals. As non-recourse debt will be used, the Trust's investment will be counted as the Trust principal at risk at any given time. The current asset allocation of $40,000,000 of Trust principal combined with $40 to $80 million of debt will result in a portfolio valued from $80 to $120 million.

4. Asset Type

The Trust will focus on acquisition of commercial and industrial properties as well as lands with long-term ground leases. They should be of high quality and have strong tenant mixes. Variations from this direction should only occur in the case of very strong tenants and should include long-term leases.

5. Asset Location

To minimize concentration of risk, The Trust should consider the location of its assets as a whole. Investing in a variety of real estate markets will protect Trust assets from the fluctuations of a particular market.

6. Underwriting

Potential income opportunities should be measured based on their financial merits to include Net Present Value (NPV), cash on cash return, Internal Rate of Return (IRR), and cap rate. All parameters will have "hurdle" rates based on current market conditions and needs of The Trust.

7. Tenant Type

The business activities of the investment property tenants must not be inconsistent with the mission of The Trust.

8. Financing

Financing may be used to fund the investments, in order to mitigate risk and increase return. The loan to value ratio should be no greater than 66 percent, unless special circumstances can be clearly identified that justifies a higher ratio. In no case should the loan to value ratio be higher than 75 percent. The debt load for the overall portfolio should be targeted at 50 percent. By staggering the financing of properties over time, the debt load of the portfolio will always remain significantly under the initial debt of any one property. Additional consideration will be made as to the cost of financing in relation to return on the potential investment under the then current market conditions. The Trust will only use financing that is nonrecourse to The Trust.

9. Ownership

The Trust will utilize single purpose entities when deemed appropriate to hold its ownership interest in the projects.

10. Joint Ventures

The Trust will, from time to time, enter into joint ventures with appropriate partners. These partnerships should always be for the benefit of The Trust. The Trust should always strive to exercise control of the partnership and not hold less than a 50 percent interest, unless it benefits The Trust to do so.

Goals and Objectives

Goal 1:

Provide a stable and predictable stream of income revenue.

Objective 1: Hurdle return rate of 7.5 percent

Objective 2: Purchase core properties that are:
- i. Well constructed
- ii. Located in performing markets
- iii. Suited to the market
- iv. Attractive and appropriate for current tenants
- v. Available with attractive in-place lease structure

Objective 3: Use non-recourse leverage as appropriate to:
- i. Increase total return for both the subject property and portfolio as a whole
- ii. Reduce risk
- iii. Provide capital for other investment

Goal 2:

Protect the Trust from unnecessary risk.

Objective 1: Use single purpose entities to:
- i. Own the property
- ii. Operate the property
- iii. Obtain non-recourse debt

Objective 2: Obtain the appropriate insurance to protect the:
- i. Asset
- ii. Owner/entity
- iii. Trust

Objective 3: Use non-recourse leverage to decrease The Trust's principal investment

Objective 4: Source the best professionals to manage the property, including:
- i. Day-to-day operations
- ii. Leasing
- iii. Capital planning
- iv. Construction

Goal 3:

Grow the invested principal.

Objective 1: Identify and pursue properties located in markets that are:
- i. In long term growth cycles
- ii. Have high barriers to entry

Objective 2: Actively manage the properties
- i. Ensure that maintenance is managed to maximize long-term return
- ii. Balance expenses to maximize long-term returns
  1. Meet user needs
  2. Take an economical approach
- iii. Make capital project decisions to maximize long-term return
  1. Meet users needs
  2. Take an economical approach

Appendix A: Prudent Investor Rule

AS 13.36.230. Standard of Care; Portfolio Strategy; Risk and Return Objectives

(a) A trustee shall invest and manage trust assets as a prudent Investor would by considering the purposes, terms, distribution requirements, and other circumstances of the trust. In satisfying this standard, the trustee shall exercise reasonable care, skill, and caution.

(b) A trustee's investment and management decisions respecting Individual assets shall be evaluated not in isolation but in the context of the trust portfolio as a whole and as a part of an overall investment strategy having risk and return objectives reasonably suited to the trust.

(c) Among circumstances that a trustee shall consider in investing and managing trust assets are those of the following that are relevant to the trust or its beneficiaries:

(1) General economic conditions;
(2) The possible effect of inflation or deflation;
(3) The expected tax consequences of investment decisions or strategies;
(4) The role that each investment or course of action plays within the overall Trust portfolio, which may include financial assets, interests in closely held enterprises, tangible and intangible personal property, and real property;
(5) the expected total return from income and the appreciation of capital;
(6) Other resources of the beneficiaries;
(7) Needs for liquidity, regularity of Income, and preservation or appreciation of capital; and
(8) An asset's special relationship or special value, if any, to the purposes of the trust or to one or more of the beneficiaries.

(d) A trustee shall make a reasonable effort to verify facts relevant to the investment and management of trust assets.

(e) A trustee may invest in any kind of property or type of investment consistent with the standards of AS 13.36.225 - 13.36.290.

(f) A trustee who has special skills or expertise, or is named trustee in reliance on the trustee's representation that the trustee has special skills or expertise, has a duty to use those special skills or expertise.

AS 13.36.235. Diversification

A trustee shall diversify the investments of the trust unless the trustee reasonably determines that, because of special circumstances, the purposes of the trust are better served without diversifying.

Energy Resource Management Plan

Energy Resource Management Plan

Introduction

Alaska Mental Health Trust (Trust) lands have considerable potential for traditional energy reserves, especially in Southcentral Alaska in the Matanuska-Susitna Borough, western Cook Inlet, and the Kenai Peninsula. Some production has already been realized, principally from natural gas on the Kenai and in west Cook Inlet. The importance of that production is growing as more wells are drilled. As gas supplies in the Railbelt decline, these resources will become all the more prized. Coal (both thermal and coking coal), lignite and peat exist on many of The Trust's properties in Southcentral Alaska, and potential exists for recovery of hundreds of millions of tons of conventionally minable coal. Also present and likely abundant are nonconventional energy resources such as coal bed methane (CBM) and coal too deep for conventional mining methods but amenable for underground coal gasification (UCG). Modest potential exists as well for non-traditional energy sources such as wind and geothermal.

Authorities and Responsibilities

The Alaska Mental Health Enabling Act of 1956 provided The Trust with a land endowment of one million acres. Specific to that grant is the statement that "all grants made or confirmed under this section shall include mineral deposits"[1] subject to prior existing rights. It is inherent in the enabling act that the minerals were to be conveyed with the land in order to be utilized by The Trust for its beneficiaries. Today, The Trust finds itself with a mixture of lands, some of which are owned fee simple (meaning The Trust owns both surface and subsurface rights), while other holdings are mineral rights only, hydrocarbon rights only, or surface rights only. Approximately 441,232 acres of the holdings are some form of mineral estate only with the surface managed by the state of Alaska or another entity. In these instances, if the Trust Land Office (TLO) cannot develop the valuable mineral or energy resources present, then the holding is of no value to The Trust.

Management of Alaska Mental Health Trust Lands is guided by Title 11, Chapter 99 of the Alaska Administrative Code. These regulations outline mining rights on Trust land as follows:

11 AAC 99.100. Mining rights

(a) Rights to locatable minerals on trust land are available only as provided in this section. To the extent that a statute or regulation applicable to other state land, including AS 38.05.185, 38.05.195, 38.05.205, and 38.05.245, contains a requirement that provides for or permits the acquisition of mineral rights, rights to prospect, or rights that open land to claim staking, mineral location, or leasehold location, that provision of law is considered inconsistent with 11 AAC 99.020, and does not apply to trust land.

(b) The executive director, in consultation with the trust authority, shall open areas of trust land under one or more of the following methods, or under (c) of this section, which the executive director determines to be consistent with 11 AAC 99.020: (1) competitive lease; (2) exploration license; (3) negotiated agreement; (4) prospecting permit; (5) mineral entry; or (6) by other methods that the executive director considered appropriate.

(c) If an area is not opened for the disposal of rights to locatable minerals under (b) of this section, a person may apply under 11 AAC 99.030 for an authorization to explore and prospect for or lease locatable minerals in that area.

(d) Terms and conditions of an authorization under (b) of this section, applicable to mining rights on trust land, shall be developed in consultation with the trust authority.

(e) The rent, royalty, and assessment work credit provisions of law applicable to other state land, including AS 38.05.211 and 38.05.212, do not apply to trust land unless determined by the executive director, on a case-by-case basis, to be consistent with 11 AAC 99.020. The determination shall be stated in a written finding.

(f) Nothing in this chapter affects valid mineral rights on trust land that existed at the time the land was designated as trust land.

Under this code, the normal methods of acquiring mining rights on state land do not apply to Trust land. Instead, the TLO executive director will open land for mineral development as dictated under (b) above. The development of minerals must be consistent with the overall general management of Trust lands as outlined in 11 AAC 99.020, which states that "management shall be conducted solely in the best interest of the Alaska mental health trust and its beneficiaries." Mineral exploration, development and production on Trust lands are permitted through the state and federal regulatory agencies that have the appropriate authorities and adequate and

[1] Sec. 2.2 (c)

trained staff to manage the myriad aspects of mine development.

In the state of Alaska, the Department of Natural Resources (DNR) is the lead agency for all mining and energy resource matters, while the Alaska Department of Environmental Conservation (DEC) has various authorities affecting mineral and energy activities, especially with regard to controlling degradation of air and water quality. DNR also regulates the coal industry under the auspices and oversight of the federal Office of Surface Mining. DNR and DEC share oversight on acid mine drainage and ensure that appropriate financial assurances are in place to guarantee that reclamation can be completed even if the miner is unable or unwilling to conduct the work. The financial assurances of the various large mines and large mine projects are continually updated; as of June 30, 2013, the total bonding was equal to $511 million. Various federal agencies may also have jurisdiction over aspects of a mining project; for example, the U.S. Army Corps of Engineers oversees disturbance to wetlands, and the Environmental Protection Agency manages issues related to water injection wells.

The Trust Land Office (TLO) is not a regulatory agency but rather depends upon the appropriate state agencies to permit and regulate the mining and energy industries in Alaska, including those on Trust land, and upon the companies with which it conducts business to implement best management practices that address matters such as storm water handling, cultural resources, solid waste management, wetlands, spill prevention and control, and spill contingency plans. Large mine permitting in Alaska is primarily coordinated through the state's Office of Project Management and Permitting (OPMP) and Large Mine Permitting Team (LMPT). The team consists of members of state and federal agencies with permitting authority over various aspects of a particular mine's development, production, and reclamation. TLO interaction at various junctures in the permitting process allows for input into important parameters such as reclamation and post-mining land use to fulfill the Trust's responsibilities for "protection and enhancement of the long-tem productivity of trust land" and "encouragement of a diversity of revenue-producing uses of trust land."[2] For instance, this could mean the introduction of a commercial tree growing and harvesting project on lands reclaimed by mining.

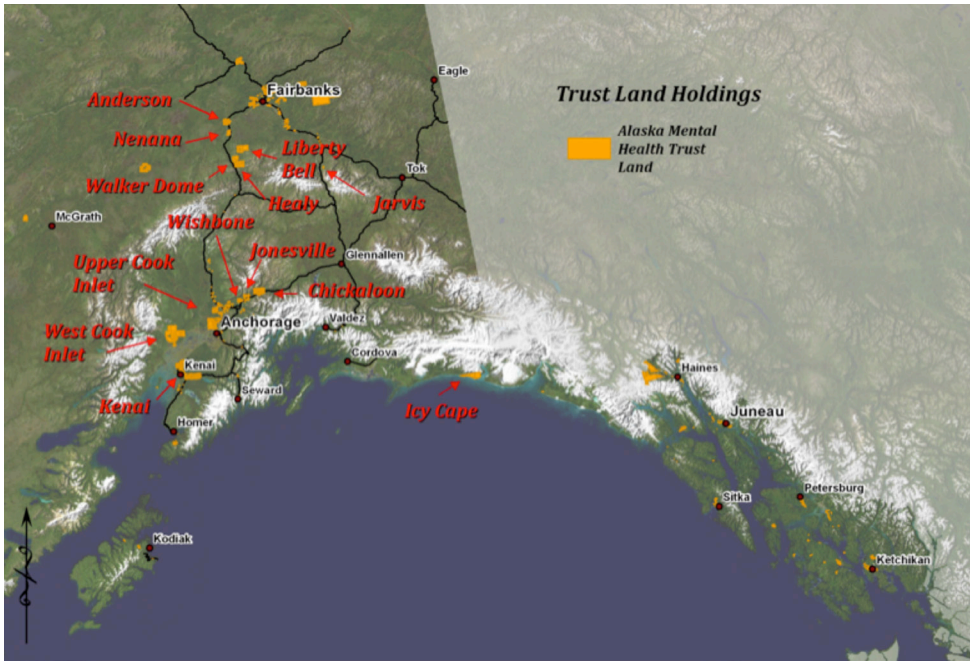
The Trust's mineral and coal leases contain provisions that reinforce the state's requirements for timely and concurrent mining reclamation, bonding, insurance, reporting, inspection, and adherence to laws and regulations governing mining in the state of Alaska.

Inventory of Energy Resources

General

Subsurface energy resources are extremely difficult to inventory. At a minimum this requires at least some data compilation, geologic mapping, sampling and geophysical surveys, followed by drilling. Such programs are extremely expensive. Rather than attempting to inventory resources on Trust lands, the TLO leases the prospective energy assets to interested developers who put up the risk capital to explore and assess the lands. In return, The Trust receives various revenue streams from property rentals and production royalties. Over decades, as work is conducted, whether leading to production or not, the lands develop an energy resource database.

One objective of this plan is to develop a comprehensive resource database of Trust land resources. The database should contain all



Select Trust Land Parcels with Energy Resource Potential

[2] 11 AAC 99.010(C)(3) and (4)

published and confidential information on Trust parcels so that an inventory of resources can be developed and categorized – i.e. potential, inferred, indicated and measured resources or, where appropriate, possible, probable and proven reserves.

Oil and Gas

Oil and gas resources are largely restricted to the Railbelt. The terrains of southeast Alaska are not good candidates for oil and gas development, with most of the potential lying northwest of Haines and south of Fairbanks. Most land parcels in the area, including the Gulf of Alaska, Icy Bay, the Kenai Peninsula and west and upper Cook Inlet, as well as the Susitna and Nenana Basins, have at least a modicum of oil and gas potential. In very few places has this potential been actually measured, except for the embryonic work at the Kenai Loop gas field.

The Kenai Loop field is currently producing 10 million cubic feet of gas per day (MMCFD) and is anticipated to increase to 11 to 11.5 MMCFD. In March 2013, Buccaneer Energy received a revised reserve estimate from Ralph E. Davis Associates for the proved developed producing (PDP) and proved developed non-producing (PDNP) components of the Kenai Loop reserves. The PDP reserves increased to 19.9 billion cubic feet (BCF) of gas, which is equivalent to 3.3 million barrels of oil (BOE); the PDNP reserves were estimated at 2.4 BCF or 400,000 BOE. The total proved developed reserve category is therefore 22.3 BCF or 3.7 MMBOE. The reserve estimate calculated the PDP and PDNP reserves to have a future net income of approximately $100 million and a present value (at a 10 percent discount rate) of $70 million. The Trust's share of this reserve is roughly 10 percent, which means a future net income value of approximately $10 million and a present value of $7 million.

The Trust holds leases with production from a small part of the Nicolai Creek field in west Cook Inlet through an agreement with Aurora Power. Nicolai Creek still actively produces gas; however, as is typical for Cook Inlet, the field contains several distinct reservoirs in various sand bodies. Aurora wants to use a relatively depleted reservoir in the upper Tyonek sands for storage while also continuing to produce new gas from other reservoirs in the field. The Nicolai Creek field is estimated to contain approximately 1 BCF of gas. It is a small field with little upside potential. The Trust's current allocation from this field varies but overall is about 2.3 percent (28 percent of 12.5 percent)of approximately one half of the field. Given the known reserves, The Trust's portion is thus 2.3 percent of 0.5 billion cubic feet of gas with a value of approximately $740,000 (based on a gas price of $6.40 per thousand cubic feet).

The Cook Inlet basin is capable, given sufficient continued investments, of supplying regional natural gas needs until 2018 or 2020. Demand approximates a yearly average of 90 BCF; proven reserves are estimated at 661 BCF. In 2009, the total PDP reserves remaining to be produced from all existing fields in the Cook Inlet was estimated by the Division of Oil and Gas at 863 BCF. However, demand requirements will necessitate alternative sources (imports) of natural gas to be made available sooner, and a transition to alternative sources of natural gas may begin to occur before the 2018-2020 timeframe as part of a comprehensive supply and risk management plan. Natural gas storage will play an increasingly important role in optimizing and managing deliverability and economics of the natural gas supply for southcentral Alaska. Just-in-time production (reducing the amount of time between investment and return) improves the economics of supplying natural gas. If gas purchases can be made in summer in advance of peak winter needs, storage will allow production in summer to exceed the seasonal demand while building gas reserves for winter, when energy demands increase.

Field/Area	Volume	Gas Value ($/MCF)	Certitude	Resource Value to Trust (millions)
Kenai Loop		$6.40	Proven	$7.0
Nicolai Creek		$6.40	Probable	$0.7
Cook Inlet undiscovered gas	475 BCF	$6.40	Highly speculative	$3,800
Cook Inlet undiscovered oil	14.5 MMBO	$100.00/bbl	Highly speculative	$181

To date, Cook Inlet has produced 7,800 BCF of gas and 1,300 million barrels of oil (MMBO). In 2011, the U.S. Geological Survey (USGS) completed a revised estimate of undiscovered oil and gas resources in the Cook Inlet region. They estimate these resources to average 19,037 BCF of gas and 599 million barrels of oil. If these numbers are accurate, and if exploration and development are successful, enough resources are present to support continued community growth and an expansion of the industrial base for decades. Most of the energy resources are in the Tertiary Sandstone Oil and Gas Assessment Units. This category contains 12,178 BCF of gas and 372 MMBO. The assessment unit contains 21,800 square kilometers or 5,386,897 acres. The Trust holds 209,000 acres within this area, or 3.9 percent of the prospective area. As such, these undiscovered resources on Trust land would total 475 BCF of gas

and 14.5 MMBO.

The Nenana Basin is an interior rift basin that lies east of Nenana. The deepest part of the basin is defined by an elongate trough trending northeast-southwest that is 55 miles long and 8 to 10 miles wide. Three oil and gas wildcat exploration wells have been drilled on the shoulders of the basin: Unocal Nenana #1 (1963) on the west side, Totek Hills #1 (1984) on the southwest end, and Nunivak #1 (2009) on the east side. The Trust owns a 9,468-acre package of land northwest of Nenana that is currently leased to Doyon, Ltd. Nunivak #1 was drilled on Trust Land. The drill data and geophysics now show the basin to be deeper than originally envisioned – something on the order of 25,000 feet. Results from the Nunivak #1 well show the upper 4,500 feet to consist of Nenana gravel. The late Paleocene coal and coaly shale has excellent source potential for hydrocarbons, and the coaly source rocks below 13,000 feet have expelled billion of barrels of oil and support the potential for prolific expulsion. The well apparently had some gas shows, although not enough to support commercial development. Nonetheless, the lands near Nenana have potential for oil and gas, but no resource values can be assigned. The greatest exploration potential on Trust land is probably in the extreme northwest portion of the land block.

Coal and Lignite

Chuitna Proposed Mine Reserves

The coal-bearing sediments in the proposed mine area are part of the Tertiary Tyonek Formation of the Kenai Group. The Tyonek Formation is a sequence of fluvial and deltaic silts, clays and sands with occasional gravel beds and coal seams. It exhibits marked lateral and vertical facies changes, as well as extreme thickness changes, sometimes within very short distances. Although at least 18 coal seams (including stringers) are known to occur within the proposed mine area, four are of adequate areal extent and thickness to be significant to mining: Red 1, Red 2, Red 3 and Blue seams. A fifth seam, the Green Seam, is present in isolated areas and is potentially significant to mining only at several locations in the northwest area. The remaining seams are thin, discontinuous or of low heat value. The Chuitna Project's estimated minable reserve is approximately 300 million tons. Given a conservative coal price of $30 per ton, the Trust's 5 percent royalty has a value of $450 million.

Coal Resources on Trust Lands

Coal Project or Area	Resource (Million Tons)	Coal Value per Ton	Resource Category	Resource Value to Tust (Millions)
Chuitna Mine	300	$30.00[1]	Minable	$450
Wishbone Hill	0.3[2]	$35.00	Minable	$0.5
Jonesville	103.7[3]	$35.00	Measured, Indicated, Inferred	$229
Chickaloon	24.3[4]	$150.00	Indicated, Inferred	$225
Rosalie	6.7[2]	$35.00	Minable	$12
Greater Chuitna Area	700	$30.00[1]	Inferred	
Healy Creek Area (all)	2,000		Hypothetical	
Jarvis	18.4[5]		Hypothetical	

[1]PacRim Coal; [2]UCM Inc.; [3]Black Range Minerals; [4]USGS; [5]DGGS

Other Coal Resources

Wishbone Hill Reserves: Usibelli Coal Mine Inc. estimates the surface minable reserves at Wishbone Hill at 14.4 million tons.

Jonesville Reserves: Coal-bearing rocks in the Jonesville area belong to the Paleocene- to Eocene-aged Chickaloon Formation, which is 1,000 to 1,500 meters thick. The main coal measures occur in the upper 500 meters of this formation. At the Jonesville project, these coal measures are found from surface through to around 800 meters depth. There are 12 coal seams of thickness greater than one meter at the Jonesville coal project. Of these, seams #3 and #5 both reach a maximum thickness of 7 meters, with seam #5 averaging 6 meters thickness and seam #3 averaging 4 meters thickness. The thickness of seven other coal seams averages greater than 1.5 meters, with seams #7b, #6 and the lower Shaw bed locally exhibiting thicknesses of 6 meters, 3 meters and 3 meters, respectively. The Jonesville coal project hosts the Joint Ore Reserve Committee-compliant measured, indicated and inferred resources of 130.7 million tons of coal (17 measured, 17.3 indicated, and 96.4 inferred). Coal at the Jonesville coal project is a quality high volatile B bituminous rank. It has excellent steam or thermal combustion qualities and has been used in the past for power generation. Its heat content averages 10,400 to 13,400 Btu/lb. One of the coal's key attributes is its low sulfur content (0.3 to 0.4 percent), making it valuable as a compliance coal. Given at coal price of $35 dollars per ton, The Trust's 5 percent royalty has a value of approximately $229 million.

Chickaloon Resource: In the Chickaloon-Castle Mountain coal district, Barnes (1967) reported total coal resources of 25 million short tons (23 million metric tons) based on apparent rank of

bituminous coal, with thicknesses greater than 14 inches (35 cm) and between 0 and 2,000 feet (0 to 610 m) of overburden. Total resources were divided into 0.0 measured coal resources, 0.7 million short tons (0.6 million metric tons) indicated coal resources and 24.3 million short tons (22 million metric tons) inferred coal resources. Given a coking coal price of $150 per ton, The Trust's 5 percent royalty would have a value of approximately $225 million.

Rosalie: The Trust has considerable land holdings north and south of the Usibelli Coal Mine's (UCM) operations. UCM has leased approximately 3,400 acres of Trust land, mostly in the Healy Creek area, including the historic Rosalie mining area. UCM estimates 6.7 million tons of minable tons of coal at Rosalie.

Jarvis Creek: The Trust owns the subsurface estate of two contiguous sections in the central portion of the Jarvis Creek coalfield, or about 10 percent of the known field. This field is the easternmost extent of the Central Alaska-Nenana coal province. The unnamed coal-bearing rocks are Tertiary in age and they uncomformably overlie Birch Creek Schist. The field is estimated to contain a measured resource of 17.3 million tons, an indicated resource of 37.0 million tons, an inferred resource of 227.4 million tons and a hypothetical resource of 533.5 million tons. Data indicate that The Trust's acreage is underlain by 4 feet of coal and thus contains approximately 18.4 million tons of coal.

Underground Coal Gasification (UCG)

The Trust has an agreement as of May 2011 with Linc Energy Alaska Inc. to explore approximately 167,917 acres of Trust land to determine the potential for UCG production. Two-dimensional seismic exploration has been conducted on Trust lands in the Anderson and Healy (Walker Dome, Poker Flats, and Healy Creek) areas, and some drilling has been completed in west Cook Inlet. The lands under license have good potential of hosting coal-bearing strata at depths of 600 to 3,000 feet below the surface where UCG could take place. The potential is enormous. For instance, 9 square miles of land with a 25-foot coal seam is capable of producing sufficient synthesis gas, or syngas, for a gas-to-liquids plant to produce 20,000 barrels of diesel fuel per day for 40 years. Stated another way, engineers calculate that a 100 megawatt power plant will use the same thickness of coal under one square mile of land during its 30-year life.

Coalbed Methane (CBM)

The coal resources of Alaska contain significant potential coalbed methane (CBM) resources. The gas currently produced in Cook Inlet is methane derived from coal that has migrated and is stored in sandstone reservoirs; CBM is gas stored in the coal itself. If Alaska coals retain methane similar to coals in the Powder River Basin, Alaska's in-place coalbed methane resources might be approximately 500 trillion cubic feet.

Cook Inlet:

A 2011 USGS estimate for Cook Inlet placed undiscovered CBM at 4,674 BCFG, or approximately 4.7 trillion cubic feet of gas. This is encompassed in an assessment area totaling approximately 13,243 square miles (8,475,520 acres), which excludes a portion of the Kenai Peninsula and areas of Cook Inlet where the principal coal-bearing units are buried deeper than 6,000 feet. Given The Trust's land holdings in this area (3.1 percent), it can be estimated that these holdings may possess 145 BCFG of undiscovered CBM. However, it is significant to note that to date 20 to 25 exploration wells have been drilled and none have been successful. The extraction of CBM is highly dependent upon the degree to which the methane-bearing coal units can be dewatered and that water successfully disposed of at surface or injected back underground. Past attempts in the heavily populated Wasilla area by companies such as Union and Ocean Energy were not successful.

Peat

The U.S. Dept. of Agriculture (USDA) estimates that Alaska contains 110 million acres of muskeg and marshy grassland where peat is an identifiable resource. In northern regions of Europe and in Great Britain the high demand for electricity has locally stimulated the development of large electric power plants fueled by peat. Peat appeared especially competitive in the 60- to 200-megawatt power plants, which necessitated the reclamation of vast areas of peat for large scale peat extraction, particularly in Ireland, Finland and the former USSR. Specialized technology was developed for these reclamation efforts. Recently, peat has been used for electricity generation in small units in the range of 20 to 1,000 kilowatts. Early in the century, considerable interest was given to using peat as a fuel source in the United States, especially after a strike by anthracite coal miners from 1902 to 1903. Some small peat power plants did operate intermittently throughout the century, but abundant U.S. resources of wood, coal, oil, and natural gas made it difficult for peat to be a cost-effective fuel source, except in those areas where such resources are scarce. For these same reasons it is doubtful, given the abundance of these other energy sources, that peat would be of economic interest for energy development in the Alaska Railbelt.

Peat is widely used as a plant growth medium in a variety of agricultural and horticultural applications where its fibrous structure and porosity enable a unique combination of optimum water retention and drainage characteristics. Commercial applications include lawn and garden soil amendments, potting soils, and turf maintenance on golf courses. In industry, peat is used primarily as a filtration medium to remove toxic materials from process waste streams, pathogens from sewage effluents, and deleterious materials suspended in municipal storm drain water. In its dehydrated form, peat is a highly effective absorbent for fuel and oil spills on land and water. Potting soil and general soil improvement mixes are the two leading usage categories, accounting for 72 percent of domestic sales tonnage and 70 percent of the volume. Other significant uses, by quantity of sales, include golf course applications, nursery applications and seed inoculants. There are no known estimates for the amount of peat that might exist on Trust lands. However, a rudimentary estimate could be attempted should any interest in the commodity become evident using existing vegetation mapping data. The most likely potential for the economic use of peat from Trust lands would be peat for horticultural uses.

Hydropower

Potential may exist on some Trust lands for sites suitable for development of run-of-river hydro projects; however, no assessments have been undertaken to evaluate this potential. It may be possible to conduct a large-scale assessment of such hydro power potential using geographic information software (GIS) developed specifically for such an analysis. An undertaking in British Columbia was reported on in 2013 in which some 10 million sites were evaluated using a rapid hydropower assessment tool that automates the process of site selection. Such a methodology can be used to select and screen potential sites.

Geothermal

Alaska, perhaps more than any other single region in North America, has the greatest number of potential geothermal energy sites. There are more than 25 igneous-related systems and thermal areas in the state that are of interest for potential geothermal development. While the geothermal resources of Trust lands have not been assessed, an examination of the map of Alaska geothermal resources indicates that a number of parcels in the areas northeast of Fairbanks, the lower Susitna River Valley, Chichagof Island and areas near Ketchikan have at least some geothermal potential. A simple analysis to assess this potential can be made using GIS to simply overlay Trust parcels on the geothermal resources map of Alaska to screen out those that lie within the regions of known or potential geothermal resources.

Wind

Trust land parcels have not yet been assessed for wind power potential; however, the study is easily undertaken and can be accomplished in-house using GIS analysis to overlay the land parcels on the wind power potential map of Alaska. Parcels can then be assigned potential in a classification system that has seven potential classes: (1) poor, (2) marginal, (3) fair, (4) good, (5) excellent, (6) outstanding, and (7) superb. Even a cursory review of such a compilation demonstrates that certain areas contain significant acreage with an excellent to superb rating. This specifically includes portions of Trust lands in the Liberty Bell Block north of Healy, the lands around the Usibelli Coal Mine near Healy and lands northwest of Tyonek in west Cook Inlet.

Development Issues

Land Use Conflicts

Resource conflicts on fee simple Trust lands are rare, largely because the marketplace usually quickly resolves the relative value of resources on a merit basis. For instance, most parcels in an urban or suburban setting have high real estate values and little chance of being developed for mineable resources due to their location in densely populated areas – and thus the mineral resources are not pursued. For those areas where resource conflicts do occur, such as timber and mineral resources at Icy Bay, active management is required by TLO to ensure both resources' value can be realized without sacrificing either.

More common are conflicts on lands with a split estate – where The Trust owns the subsurface mineral estate and another entity, like the state of Alaska, owns the surface estate. In such cases, the public has become habituated to using the land as if it were typical state-owned land and is not aware that The Trust has a right to eventually develop the subsurface resources. In addition, in some instances the state has contributed to conflicts by selling the surface estate for residential use and thus has severely compromised The Trust's ability to develop its resources. In these instances, The Trust should aggressively seek to return these lands to the state and receive replacement lands that have a reasonable chance to be developed, thus meeting the original intent of Congress in granting minerals to The Trust.

This is the situation with regard to the subsurface estate in the Buffalo Mine Road area and lands to the west of Buffalo Mine Road where, in order to develop its coal resources, The Trust will find itself at odds with residential users who acquired their surface estate from the state. The residents should fully support The Trust in its efforts to return these lands to the state in exchange for developable lands elsewhere.

Environmental Conflicts

In recent years, coal energy has become increasingly controversial, and new and ongoing development projects are routinely met with objection, particularly from environmental groups. However, the world continues to consume approximately 7 billion tons of coal per year. Much of the energy resource value of Trust lands is contained in coal resources. And on much of its land, The Trust possesses only subsurface estate. As The Trust is mandated to manage the economic development of its resources for the best interest of its beneficiaries, it will continue foster and support the responsible development of these resources.

Energy Management Strategy

Energy resource development projects are guided by the following management principles:

1. Must be accomplished while protecting and enhancing the non-cash asset value and productivity of Trust land
2. Maximize revenues from Trust lands over time
3. Initiated as resources are at the high end of the market values within a 10-year price cycle
4. Maximize return at prudent risk levels, embrace a diversity of resource projects, provide ancillary values such as enhanced access to Trust lands, and prevent liability risks
5. Competitive lease offerings are preferred, but non-competitive leases can be used where competitive lease sales have failed or where a non-competitive lease agreement benefits The Trust in other ways.

Risk Management

Natural resource projects are subject to many risks: future commodity prices; uncertainties about the quality and quantity of the resource base; developing technology; input prices; and external or domestic political developments. Such risks must be assessed and classified. Typically, investors bear operational or market risk since they can better manage or control it. The Trust shares in bearing certain political risks since natural resource development projects often have some measure of controversy.

Capital Risk

Without a doubt, The Trust has the potential to make much more profit on a large-scale mining operation if it were to successfully explore its land, discover a deposit, prove the deposit capable of being profitably extracted, successfully permit the facility, construct the facility, operate it until exhaustion of the resource, and conduct reclamation. However, each step is fraught with risk and requires expertise and personnel that would have to be acquired on a large scale. A commitment to explore Trust lands would reasonably require millions of dollars per year with no assurance of successful development. Thus risk is reduced by not investing Trust capital in resource exploration and development but rather by marketing the properties to attract others to invest in this high-risk segment of the energy business.

Partnering

The characteristics of major natural resource projects – longevity, scale, capital requirements, social and environmental impacts, specialized and demanding technology, and exposure to commodity market risks – mean that development of large projects is most efficiently achieved in cooperation with partners that possess both significant financial capacity and the necessary technical and managerial skills. Attracting such partners while still securing full value for The Trust's resources requires carefully designed leasing policies and contractual terms. TLO follows well-established and transparent procedures for leasing and seeks to establish financial terms that are competitive with the private marketplace (while recognizing that each property has its own set of merits dependent upon location, access, geology, available information and commodities). Additionally, where leasing is employed, eligibility is restricted to those entities that have demonstrated possession of, or access to, sufficient capital resources as well as appropriate management and technological capabilities.

Diversification

Another method for reducing risk is to diversify the commodity portfolio as much as possible. Most commodities have price cycles that are difficult to predict but nonetheless are cyclical with established trading ranges. Commodity prices seldom rise and fall together, so it is advantageous and reduces risk to be involved with a wide selection of resources including non-energy ones. Since some commodity prices fall as others rise, the TLO seeks to be involved with as many commodities as are available on Trust land – oil, gas, coal, UCG, CBM, wind energy, etc.

Royalty Type

There are a number of options regarding financial return to The Trust in resource extraction. These are usually in the form of royalties, typically either a net-type royalty or a gross-type royalty. The state of Alaska, for the most part, receives benefits from resource extraction on state land through net royalties and also has the advantage of taxing operations and benefiting from the jobs and support industries that are created. The state usually takes a 12.5 percent gross royalty from oil and gas production and a 5 percent adjusted gross royalty and 7 percent net profits mining license tax from coal mining operations. Most operations are also subject to corporate income taxes at 9.5 percent of net profits. For leases of Trust land that originate from the TLO, a gross-type royalty is preferred so a steady revenue stream is available from the outset of production and continues whether the operator's profits are high or non-existent. This minimizes risk to The Trust's income stream.

Inventory Tracking

Current Leases

Current or active leases are managed through a traditional paper filing system with indexing based upon an assigned internal tracking number. The physical files are housed in the TLO office and stored electronically on a dedicated TLO server that utilizes a software system, modified for TLO use, called "Document Locator." In addition, the Energy section maintains a spreadsheet of active leases with field heading that include serialized file numbers, origin date, acreage, rental rate, annual rental amount, initial term, renewals and royalty. Currently the active list contains approximately 59 agreements representing both mineral and energy leases including coal (18), underground coal gasification (3), mineral (6), and oil and gas (32). The spreadsheet is updated as agreements are added or expire.

Financial Strategy

General Considerations

This section will discuss the terms and structure of the business arrangements the TLO enters into when disposing of minerals and energy resources on Trust land. "Disposal" here means the issuance of a lease that grants the lessee the right to explore for, develop, remove and market a particular Trust resource that might be located on Trust land. A typical "granting clause" from a Trust oil and gas lease reads as follows:

> **Grant of Lease.** Lessor does hereby lease, let, and demise to Lessee for the term as set out in Paragraph 2 hereof, without warranty, the exclusive right to drill for, extract, remove, save, clean, process, and dispose of all oil, gas, and associated substances in and under the following described tract of land;_____, containing _____ acres, more or less, subject to the royalty interest reserved under paragraph __ hereof, together with the non-exclusive right to conduct within the Leased Area geological and geophysical exploration for oil, gas, and associated substances; and the non-exclusive right to install pipelines and build structures on the Lease Area to find, produce, save, store, treat, process, transport, take care of, and market all oil, gas, and associated substances and to house and board employees in its operations on the Lease Area subject to all the terms and conditions hereof…

Clauses in TLO coal leases grant similar rights to explore for and develop coal resources. Note that land use licenses are not considered a disposal of interest in Trust land because they do not allow for the acquisition of an interest in Trust land or resources. A license is issued to authorize a particular use of Trust land. An example of a license issued for activities associated with oil and gas exploration is an authorization to conduct a geophysical exploration program. Compensation received for the issuance of a land use license might be in the form of a land use fee, as outlined in the TLO fee schedule, or it could be in the form of data or other forms of information received as a result of the authorized activity, such as data gathered by the licensee during the aforementioned geophysical exploration program.

Disposals of Trust mineral resources have occurred and continue to exist that are not the result of specific TLO actions. This is because Trust land is subject to prior existing rights; that is, rights that existed before the land was conveyed to The Trust. Examples are: all or portions of a limited number of oil and gas leases on the west side of Cook Inlet; the upland mining lease at Fort Knox; the coal leases at Chuitna; and approximately 1,100 state mining claims, all of which were established before the land was conveyed to The Trust. While these legacy leases and claims were not negotiated through TLO, The Trust receives revenue in the form of rents and royalties according to the terms and conditions of the agreements as established by state statutes and regulations in effect at the time of disposal.

Disposal of Trust Energy Resources

11 AAC 99.020 describes the management responsibilities that are

[3] 11 AAC 99.020(c)

consistent with trust principles accepted by the Territory and state of Alaska under the Alaska Mental Health Enabling Act. When taking land management actions, including disposals of resources, the executive director must make a number of considerations to be consistent with these principles. These considerations are:[3]

1. Maximization of long-term revenue from Trust land;
2. Protection of the corpus of the trust;
3. Protection and enhancement of the long-term productivity of the land;
4. Encouragement of a diversity of revenue-producing uses of Trust land; and
5. Management of Trust land prudently, efficiently and with accountability to The Trust and its beneficiaries.

11 AAC 99.020(d) reads:
The disposal of trust land shall be on a competitive basis unless
(1) the executive director, in consultation with the trust authority, determined in a written decision required by 11 AAC 99.040 that a non-competitive disposal is in the best interest of the trust and its beneficiaries; or
(2) an existing law that is applicable to other state land and that is consistent with (a)-(c) of this section allows for a negotiated transaction.

This is the key regulation that determines how an interest in Trust land may be disposed. Disposal of resources on Trust land can be initiated in several ways, such as the expression of interest from a prospective purchaser, the acceptance of an application, or the opening of an area by the executive director for leasing, but the actual disposal is conducted based on 11 AAC 99.020(d).

Oil and Gas

The Trust owns approximately 300,000 acres that are considered to be prospective for oil and gas resources. Most of this acreage is located in the Cook Inlet Basin, but some acreage exists in the Nenana Basin. Trust land was first offered for oil and gas leasing in 1996, when the Department of Natural Resources, Division of Oil and Gas included Trust acreage in a lease sale it was conducting for state land in the Cook Inlet area. Twenty leases were issued in this initial effort. No development occurred on these leases and they subsequently expired. In January of 2001, the TLO contracted with Petrotechnical Resources of Alaska (PRA) to define leasable tracts of Trust land in the Cook Inlet area with oil and gas potential that the TLO could offer for lease in its own offerings. Fifty-seven tracts were delineated by PRA, including tracts on the Kenai Peninsula, the west side of Cook Inlet near Tyonek and Beluga, Point MacKenzie, and an area north of Big Lake. These tracts do not include the Nenana acreage. The TLO conducted its first lease sale in the fall of 2001 and has held seven sales since then. As of May 2013, the TLO has 21 tracts under lease as well as four additional leases, including the Nenana lease that covers approximately 96,000 acres.

Most TLO oil and gas leases are competitive as required by 11 AAC 99.020(d). The leasing process used by the TLO closely resembles the process followed by the Division of Oil and Gas, except that the TLO does not operate according to a five-year schedule nor does it conduct an annual sale, simply because The Trust does not have enough acreage to warrant an annual offering, especially if most of the more prospective tracts are already leased.

The competitive leasing process consists of:

1. Completion of Trust adjudicatory process, including consultation, best interest decision, and public notice;
2. Assembly of a lease prospectus that includes the legal description of the available tracts, a description of the bidder qualifications, the basic lease and bid terms, a draft lease, and a bid packet that includes a bid form;
3. Establishment of a deadline for submittal of bids;
4. Advertisement or direct mailing of sale notice to prospective bidders;
5. Opening of bids that have been timely submitted;
6. Determination of highest bonus bid per acre;
7. Determination of whether highest bidder is qualified and has included correct deposit (20 percent or more of total cash bonus bid);
8. Issuance of award letter to highest qualified bidder;
9. Issuance of lease upon receipt of remainder of bonus bid and first year's annual rental.

This is a sealed bid process, and the successful lessee is selected based on the highest bonus bid per acre submitted for each tract. Bonus bids in past sales have been based on a minimum of $10 per acre. The total cash bonus is the bid per acre times the number of acres in the tract. Tracts sizes range from approximately 1,900 acres to more than 6,000 acres. The most recent Cook Inlet areawide lease sale, held in May 2013 by the Division of Oil and Gas, required a minimum bonus bid of $25 per acre. Based on this, the minimum bid per acre for the next Trust lease offering will also be $25 per acre.

Typical lease terms for a Trust oil and gas lease include the following:

1. **Primary term.** The lease is issued for a primary term of five years. It is extended automatically " if and for so long as oil or gas is produced in paying quantities from the leased area. It can also be extended if the lease is committed to an approved unit.
2. **Annual rental.** Annual payments starting at $1 per acre are required to maintain the lease. These payments increase by $0.50 per acre each year. Payments may be increased at TLO's discretion if the lease is extended beyond the primary term. Annual rental paid in advance is a credit against royalty due for that year.
3. **Royalty on production.** Except for oil, gas and associated substances used on the lease area for development and production, or unavoidably lost, Lessee shall pay to Lessor as royalty 12.5 percent in amount or value of the oil, gas, and associated substances saved, removed, or sold from the Lease Area. The TLO, in an attempt to incentivize production, has used a production royalty rate of 10.5 percent for production in the primary term only. Beyond that, the rate increased to 12.5 percent.

Terms are subject to change based on current industry practices. For example, in the 2013 Cook Inlet areawide lease sale, the Division of Oil and Gas offered leases for a term of 10 years, with rental rates of $10 per acre per year for the first seven years, increasing to $250 per acre per year for years eight through 10, subject to reduction if production occurs during the primary term.

A TLO oil and gas lease provides for the development of coal bed methane (shallow gas) as well as conventional oil or gas deposits. It does reserve for TLO the right to lease oil, gas and associated substances if the lease is extended beyond the primary term based solely on the development and production of coal bed methane.

TLO has also issued oil and gas leases on a negotiated basis as allowed by 11 AAC 99.020(d)(1). In these instances, all the terms of the lease, including payment of cash bonuses, may be subject to negotiation, depending on the circumstances. However, the significant difference in issuing a lease of this nature is that the lessee is required to complete a work commitment on the lease in a specific period of time. It usually involves drilling a well. The applicability of this type of negotiated agreement is limited to individual lease tracts or smaller acreage tracts. It is not appropriate when numerous tracts are offered for lease on an areawide basis.

Also in the Trust portfolio are leases, or portions of leases, issued by the Division of Oil and Gas that were in place when land was conveyed to The Trust. The leases, termed "legacy leases," are very limited in number and include a portion of a lease in the Beluga River Unit, portions of leases in the Nicolai Creek Unit, and leases at Three Mile Creek. The Trust receives rent and royalty revenue according to the terms of these state leases.

Coal

There are 19 coal leases on Trust land that cover approximately 38,000 acres. These leases consist of a competitive lease issued to Riversdale Alaska for land at Chickaloon, two negotiated leases with Usibelli Coal Mine (UCM) at Healy, two legacy leases with UCM at Healy, six legacy leases (or portions of leases) with UCM at Wishbone Hill (Sutton), one legacy lease with Ranger Alaska at Jonesville (Sutton), one negotiated lease with Hobbs Industries at Chickaloon, and six legacy leases with PacRim Coal at Chuitna.

Similar to the oil and gas leases, the legacy coal leases were in place when the land was conveyed to The Trust. The Trust is subject to the terms of these existing leases, which include an indefinite term, rentals of $3 per acre per year (which may be subject to adjustment, depending on the effective date of the lease), and a production royalty of 5 percent, adjusted by limited deductions for beneficiation and transportation, as defined in 11 AAC 85.225.

While the lease at Jonesville is a legacy lease, it has some unique requirements associated with it as a result of having been assigned three separate times since The Trust has owned the land. In addition to the rent and royalty provisions mentioned above, this lease has an annual "payment in lieu of production" requirement that started at $16,000 per year and is subject to adjustment by the Producer Price Index. This payment is now approximately $22,000 per year. Other conditions imposed in the different assignments include an initial assignment fee, certain indemnification language, and the clearing of various liens against the property.

The Hobbs lease covers a small tract of land (180 acres) that had been historically mined adjacent to the Riversdale lease at Chickaloon. It originally consisted of two legacy leases that were combined into a negotiated Trust lease as the result of a court order. Terms of this lease include a lease term of four years extendable by commercial production, annual rental payments of $3 per acre, 5 percent gross production royalty, and adherence to a defined work plan.

The competitive coal lease entered into with Riversdale Alaska at Chickaloon is the result of a competitive leasing process similar to that used in oil and gas leasing. An initial application period resulted in the receipt of applications from several interested

and qualified parties. The application process established a competitive interest in the property to be leased, so a sealed bid procedure was conducted to determine the successful applicant. Bids were submitted based on a dollar per acre value, with a minimum bid set at $5 per acre. Riversdale Alaska submitted the winning bid of $300 per acre for the entire acreage being offered. The lease issued to Riversdale has the following terms: an initial lease term of 10 years, extendable by commercial production; an annual rental payment of $4 per acre, adjusted every five years by the Producer Price Index; a work commitment that escalates from $20 per acre per year for lease years one through three to $40 per acre per year for lease years four through six to $60 per acre per year for lease years seven through 10; and a production royalty of 5 percent of the gross value of the coal sold, less transportation expenses, as outlined in 11 AAC 85.225.

Underground Coal Gasification

The Trust currently has 167,000 acres of land under license for UCG exploration. The license is issued to Linc Energy (Linc), and it allows Linc to conduct various exploration activities on Trust land in order to locate specific areas that would be suitable for UCG development. If such areas are located, the license allows Linc to convert that specific acreage to a lease, which would grant it the right to develop the coal to produce products through the UCG process.

The authorization process used for this resource involves the initial issuance of an exploration license rather than a lease because of the large amount of acreage involved and the significant expenditures required to explore that acreage. Such large acreage is needed because development of coal in place, and in particular the gasification of coal in place, requires that the coal possess certain characteristics, such as proper depth, acceptable moisture content, and a location that has particular geologic parameters. While these characteristics are thought to exist in the Cook Inlet area, the location of specific areas will require extensive exploration. The exploration licensing process is a competitive process, and the successful applicant is selected based not on a bonus bid per acre but on the quality and value of the exploration program the applicant proposes. Factors used to determine the successful licensee include the nature of the exploration program proposed, the expenditures associated with that program, and the schedule in carrying out the program.

Other terms of the license issued for this program include a license term of seven years; a one–time, non-refundable license fee of $1 per acre; and compliance with the work program submitted as part of the application process. The licensee is required to relinquish acreage at various points during the license term so that the entire license area does not remain encumbered, preventing other potential land uses. It is anticipated that the exploration program, if successful, will lead to a reduced, more focused land package that the licensee will lease for coal gasification development without the need for and additional leasing process. If a lease is executed, it will be on a standard Trust coal lease form, with an initial term of five years with one five-year extension. Rental will be $4 per acre per year, and royalty will be negotiated based on a mutually agreed upon method of determining coal consumption and value.

Wind Energy

To date TLO has not authorized the development of wind energy on Trust land, although the office has received inquires regarding the potential development of this resource and has issued licenses authorizing the installation of towers and equipment to capture data on wind speed and direction in several areas. For example, licenses were issued to Golden Valley Electric Association (GVEA) to collect data on Trust land in the vicinity of the recently constructed Eva Creek Wind Farm. Data was collected for several years before GVEA decided to construct their project on adjacent state land. A license was issued to First Wind to install equipment near Nikiski on the Kenai Peninsula, but the tower was never built and that company left the state. Currently, an agreement is in place to allow for the collection of wind data by The Boutet Co. on the west side of Cook Inlet in the vicinity of Tyonek.

It is anticipated that if and when an authorization is issued to allow for the development of this resource on Trust land that the terms of the lease agreement would resemble those that the state has with GVEA for the Eva Creek project. These include a 25-year extendable lease term with annual lease payments based on appraised value of the land plus $3,000 per megawatt installed capacity, adjusted every five years by the Consumer Price Index. There is also a one-time installation fee of $1,500 per megawatt. Questions exist as to the actual leasing process since 1 AAC 99.020(d) requires the disposal of Trust land to be on a competitive basis.

Hydroelectric Energy

No hydroelectric energy-generating projects are currently authorized on Trust land. It is anticipated that a prospective project would be authorized through a competitive leasing process with lease terms including annual land payments based on appraised value plus a fee for power produced, similar to that of a wind project lease.

Peat

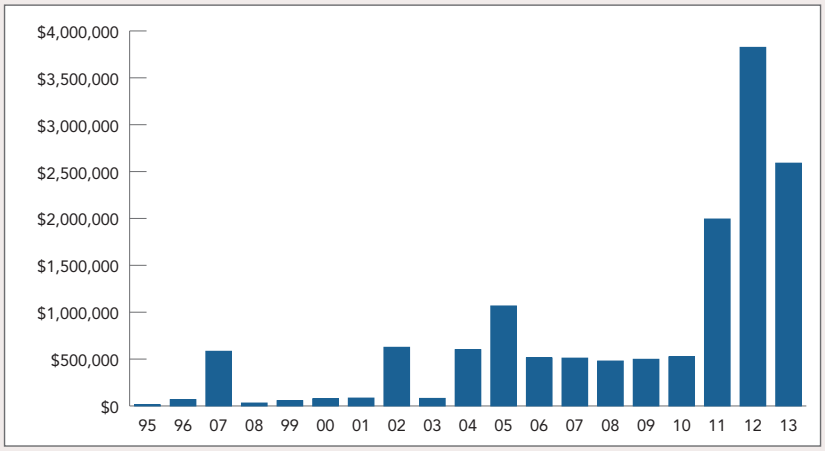
While peat is used as an energy source as well as for horticultural uses in other parts of the world, there are no projects known to exist in Alaska that have utilized the extensive peat resources in the state on a commercial basis. If interest were expressed in pursuing such a project on Trust land, the leasing process and lease terms would be developed based on a competitive process and lease terms developed from research of existing projects elsewhere and adapted to Alaska and the interests of The Trust. It is likely for horticultural peat that a simple royalty scheme would be employed based on the sales value of the peat product.

Geothermal Energy

Like wind energy, leases for geothermal energy would involve fees related to surface access, surface uses, and annual rental based upon an acreage basis commensurate with other typical energy and mineral lease rates. The royalty would be based on a percentage of the gross revenues derived from the production, sale or use of the geothermal resources under the lease. There are specific state regulations that pertain to the permitting and leasing of geothermal resources, and it is anticipated that any leasing program on Trust land would follow these regulations to the extent that they are not in conflict with trust management principles. An example of terms of an existing geothermal lease on state land include a primary lease term of 10 years; rental of $3 per acre per year; and a royalty of 10 percent of the gross revenue derived from the project.

Goals and Objectives

Trust lands have a significant but undetermined amount of valuable energy resources, predominantly in the form of oil, gas and coal. The current program of aggressively leasing land for oil and gas development is already returning good revenues. The goal is to manage these resources to provide a relatively steady and increasing stream of revenue until such time as they are exhausted. Energy revenues have risen over the past two decades from less than $3,000 to more than $2 million for FY13.



Coal, Oil and Gas Revenue to The Trust, 1995-2013

Goal 1:

Develop a diversified portfolio of energy products that can contribute significant revenue to The Trust.

Objective 1: Conduct leasing programs utilizing the plan guidelines for resource development on lands permissive of coal, oil, gas, underground coal gasification, coalbed methane, geothermal, wind, peat and other energy resources.

Goal 2:

Continue with the current program of managing oil and gas leases to encourage exploration and development.

Objective 1: Conduct a lease sale for Horseshoe Lake parcels and others that have become available for leasing again.

Objective 2: Manage the Kenai Loop leases to encourage production of a minimum 10 million cubic feet per day; work with the company to encourage development of additional wells on parcels to the east.

Objective 3: Manage the Cook Inlet and Aurora leases in west Cook Inlet to encourage additional well drilling at Nicolai and Olson Creek.

Objective 4: Conduct additional Cook Inlet oil and gas lease sales. Hold lease sales for tracts as they become available or as new tracts are delineated.

Objective 5: Develop a scheduled oil and gas lease sale for new leases and leases that have expired.

Goal 3:

Continue with the current coal program of managing leases to encourage exploration and development in the near term.

Objective 1: Support PacRim's permitting efforts for the development of the Chuitna coal project.

Objective 2: Specify conditions in the Chuitna ASCMCRA permits regarding reclamation and post-mining land use that allow for retention of roads and a reclamation plan that will support a commercial forest products industry or other suitable use to be developed on reclaimed Trust land.

Goal 4:

Dispose of mineral- or coal-only portions of the land estate that have little chance of development because of surface use conflicts.

Objective 1: Petition the state of Alaska, either through the replacement lands process or through legislative solutions, to allow for replacement of lands that contain coal resources that cannot be developed due to surface conflicts.

Goal 5:

Continue with periodic lease offerings of coal-bearing lands.

Objective 1: As land is evaluated by UCG exploration, those lands that are excluded from further exploration are to be evaluated for surface mining potential and offered for lease; coal lands in the vicinity of the Usibelli Coal Mine operations at Healy are high-value coal lands and should be offered for competitive leasing first.

Goal 6:

Promote the development of The Trust's deep coal reserves for underground coal gasification.

Objective 1: Monitor Linc Energy's proposed demonstration test burn in Wyoming. The feasibility of the UCG process using coal of similar quality in Alaska is to be demonstrated in a test burn in Wyoming by Linc Energy in 2013-2014. TLO representatives will monitor the final permitting of the test burn, travel to the site for initiation of the burn, and monitor the shut-down and post-burn rinsing of the combustion chamber to assess its application to Trust lands.

Objective 2: Monitor the state's work to develop a UCG guidance document to be used by developers seeking to advance UCG projects and by regulators as a road map for the permitting process. TLO will continue to participate in the state's UCG working group as it plans and writes the UCG guidance document.

Objective 3: Promote UCG evaluations of Trust land through identification of additional Trust lands with potential for UCG and conduct a lease offering.

Objective 4: Establish UCG royalty provisions for leases. Research royalty provisions in other jurisdictions and develop provisions for Trust leases. Consideration should be given to establishing the royalty on either a BTU basis or a coal value basis.

Bonding Goal:

The state and federal government are only marginally effective at establishing appropriate bonding levels on oil and gas developments. Ensure adequate bonding for oil and gas developments on Trust land.

Objective: Establish bonding criteria, in concert with state and federal bonding requirements, that protect The Trust while maintaining competitiveness.

Coal Bed Methane Goal:

Promote the development of The Trust's deep coal reserves for underground coal gasification.

Short Term: Evaluate Matanuska Valley Trust lands for CBM potential.
Objective: Research data from historic CBM evaluation programs on Trust land in the Matanuska Valley for usefulness.

Long Term: Evaluate Trust lands for CBM potential and as a revenue source.
Objective: Using TLO and published geologic information, develop a leasing strategy for CBM in the Railbelt and conduct a lease offering as appropriate.

Wind Energy Goal:

Near Term: Work with Tyonek Village Corporation for development of nearby wind energy projects.
Objective: Monitor progress on opportunities of Tyonek to secure funding for wind energy projects and provide leasing opportunities on Trust land with high wind energy potential.

Short Term: Evaluate opportunities to develop wind energy on Trust land in the greater Cook Inlet region and the Railbelt.
Objective: Utilizing GIS data and the Wind Atlas, rank Trust land for applicability for wind energy development.

Long Term: Seek development of wind energy projects on Trust land.
Objectives: Evaluate potential demand, users and developers of wind energy and offer Trust land for evaluation, testing and development through leasing. Develop competitive business terms for wind energy leasing.

Replacement Lands Goal:

Seek replacement land for those mineral-estate-only lands where development cannot take place due to surface conflicts.

Objectives: Identify and compile a list of these impaired lands; identify potential replacement lands; seek a remedy through administrative, legislative or legal proceedings so that the intent of Congress can be met.

Resource Inventory Goal:

Develop an inventory of energy resources and periodically update.

Objectives: Continue to develop a resource database of geological and resource information that is linked in a electronic relational database to Trust land parcels. Continue to expand resource inventory tables for the various resource commodities on Trust land that provides information on the amount of resources present and their value. Update the inventory annually.

Appendix A: Energy Commodities/Assets–Descriptions and Uses

Oil and Gas

General Background:

Oil or petroleum is recovered mostly through the drilling of wells. This comes after the studies of structural geology (at the reservoir scale), sedimentary basin analysis, reservoir characterization (mainly in terms of porosity and permeable structures). It is refined and separated, most easily by heating to the boiling point, into a large number of consumer products, from petrol (or gasoline) and kerosene to asphalt and chemical reagents used to make plastics and pharmaceuticals. Petroleum is used in manufacturing a wide variety of materials, and it is estimated that the world consumes about 88 million barrels each day. In its strictest sense, petroleum includes only crude oil, but in common usage it includes all liquid, gaseous, and solid hydrocarbons. Under surface conditions, the lighter hydrocarbons such as methane, ethane, propane and butane occur as gases, while pentane and heavier ones are in the form of liquids or solids. However, in an underground oil reservoir the proportions of gas, liquid, and solid depend on subsurface conditions and on the phase diagram of the petroleum mixture.

An oil well produces predominantly crude oil, with some natural gas dissolved in it. Because the pressure is lower at the surface than underground, some of the gas will come out of solution and be recovered as associated gas or "solution gas". A gas well produces predominantly natural gas. However, because the underground temperature and pressure are higher than at the surface, the gas may contain heavier hydrocarbons such as pentane, hexane, and heptane in the gaseous state. At surface conditions these will condense out of the gas to form natural gas condensate, often shortened to "condensate". Condensate resembles petrol in appearance and is similar in composition to some volatile light crude oils.

Natural gas is often informally referred to simply as gas, especially when compared to other energy sources such as oil or coal. Natural gas is a naturally occurring hydrocarbon gas mixture consisting primarily of methane (with other hydrocarbons), carbon dioxide, nitrogen and hydrogen sulfide. Natural gas is an energy source often used for heating, cooking, and electricity generation. It is also used as fuel for vehicles and as a chemical feedstock in the manufacture of plastics and other commercially important organic chemicals.

Natural gas is found in deep underground natural rock formations or associated with other hydrocarbon reservoirs in coal beds and as methane clathrates. Petroleum is also another resource found in proximity to and with natural gas. Most natural gas was created over time by two mechanisms: biogenic and thermogenic. Biogenic gas is created by methanogenic (methane producing) organisms in marshes, bogs, landfills, and shallow sediments. Deeper in the earth, at greater temperature and pressure, thermogenic gas is created from the heating of buried organic material.

Before natural gas can be used as a fuel, it must undergo processing to remove impurities, including water, to meet the specifications of marketable natural gas. The by-products of processing include ethane, propane, butanes, pentanes, and higher molecular weight hydrocarbons, hydrogen sulfide (which may be converted into pure sulfur), carbon dioxide, water vapor, and sometimes helium and nitrogen.

Cook Inlet Oil and Gas:

Seven producing oil fields on the Kenai Peninsula produce 30,000 barrels of oil per day. There are 17 gas fields which currently produce more than 485 million cubic feet of gas per day. In 1999, nearly 11 million barrels of oil and 177 billion cubic feet of natural gas were produced from Cook Inlet gas fields. Offshore fields in Cook Inlet are tapped by 15 production platforms. Operations at three of the platforms have been temporarily suspended due to market conditions and low production volumes. Fields on the Kenai Peninsula and offshore in the Cook Inlet have produced a cumulative total of 1.2 billion barrels of crude oil and 5.6 trillion cubic feet of natural gas.

All oil from Cook Inlet is refined at a Nikiski refinery producing gasoline, propane, butane, jet fuel, heating fuel, and asphalt for Alaska markets. The Agrium chemical plant in Nikiski used to use Cook Inlet natural gas as a feedstock to manufacture more than 5,000 tons of fertilizer per day. The plant was the largest fertilizer complex on the West Coast and major supplier to the agriculture industry in the Western United States. The fertilizer plant closed in 2007 due to dwindling gas supplies. A gas liquefaction plant at Nikiski, the only one of its type in North America, supplied 1.3 million barrels of liquefied natural gas to Japan each month. This plant is now closed but the cryogenic circuit is still operating and occasional batch shipments are made when gas supplies are available.

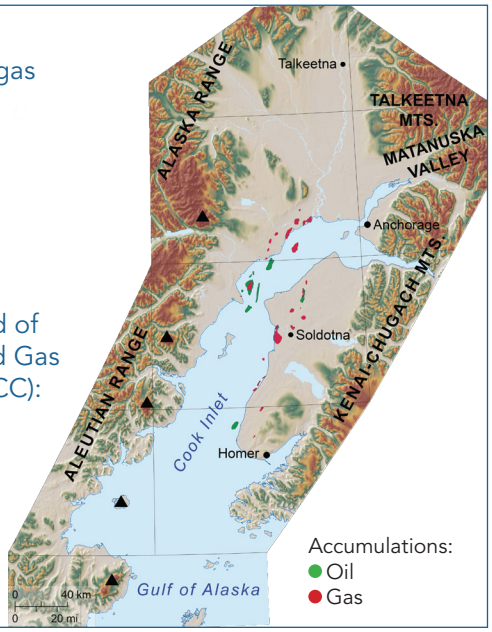
33 discovered fields with oil and gas production:

- 8 mostly oil
- 25 mostly gas

Cumulative production to the end of 2010, according to Alaska Oil and Gas Conservation Commission (AOGCC):

- Oil, ~ 1.3 BBO
- Gas, >7.8 TCFG

USGS



Cook Inlet Oil and Gas Fields (from USGS Open-File Report 2011-1237)

Cook Inlet Exploration History:

Aggressive exploration for oil in Upper Cook Inlet began in 1955 and continued to 1968, at which time the discovery of oil at Prudhoe Bay shifted the focus of oil exploration to the North Slope, where it is still concentrated today. Twenty (20) of the twenty-nine (29) gas fields in Upper Cook Inlet were discovered during this initial 13 year period. The exploration, however, was focused on oil, not gas, and all the gas fields discovered were incidental to the oil drilling. Since 1968, the exploration effort in Cook Inlet has been modest, resulting in the basin being under-explored. Only in the late 1990's did gas-first exploration begin in the Cook Inlet. During this aggressive phase of exploration, 94 percent of the current gas reserves were discovered. Because the early focus was on oil, some wells drilled early in the exploration history were plugged and abandoned and later re-examined and found to contain 'by-passed' or 'missed' gas or gas that was purposely left un-tested because gas was not an economic objective.

There is a trimodal distribution of gas field sizes in the Cook Inlet. The estimated ultimate recoverable reserves for the largest four fields range from 1.1 to 2.3 trillion cubic feet (TCF), six fields range from 100 to 250 billion cubic feet (BCF) and the remaining fields range from 3 to 90 BCF. This gap in field sizes suggests there should be more mid-sized fields yet to be discovered. Exploring, discovering, producing and developing new fields is a multi –year process. Even if an aggressive exploration effort were undertaken immediately, it would not bring new gas to market quickly enough to provide the gas that will be needed when demand exceeds supply, even in the most optimistic forecasts.

As discussed in the 2003 Cook Inlet Gas Study, recognized gas reserve volumes increase as a result of continued evaluation and development of the fields. In early 1980 the proved reserves in Cook Inlet were considered to be 3,544 BCF. In January of 1998 the proved reserves were 6,730 BCF, an increase of over 3 TCF. Such increases are accomplished through enhanced recovery techniques, new seismic acquisition and reprocessing, and infill and extension drilling. Additional reserve growth will probably continue to occur in the Cook Inlet fields as development continues (although continued development depends on economic factors), but these cannot be quantified and considered proven for supply/demand assessment purposes.

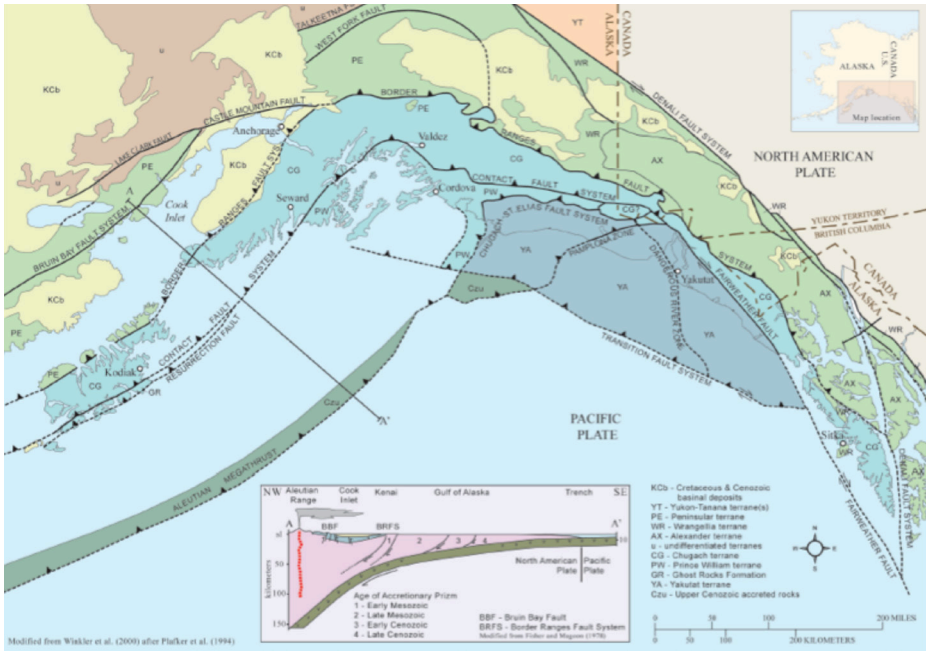
Twenty nine gas fields have been discovered in Upper Cook Inlet and a total of 7 TCF of non-associated gas has been produced from these fields through December of 2008. The gas is biogenic methane generated from extensive coal beds in the Tertiary non-marine stratigraphic section. Solution gas production associated with Cook Inlet oil fields is not included in these totals. The four largest gas fields, Beluga River, Kenai, McArthur River and North Cook Inlet have yielded 6.35 TCF or 90 percent of the produced gas.

Cook Inlet Geology:

Cook Inlet is a forearc basin formed by subduction of the Pacific tectonic plate beneath the North American plate. The basin is filled with Mesozoic dominantly marine andTertiary non-marine rocks. The Upper Cook Inlet basin sedimentary rocks are separated from the igneous arc rocks to the west by the Bruin Bay fault, the sediments in the Susitna Basin to the north by the Castle Mountain fault, the metamorphic rocks of the Chugach Terrane to the east by the Border Ranges fault and the Lower Cook Inlet sediments to the south by the Augustine-Seldovia arch.

Stratigraphy. The Mesozoic section was penetrated by some of the deeper wells in Upper Cook Inlet and was a primary objective during the early basin exploration in the 1950's and 1960's. The section contains oil prone source rocks but poor reservoirs. No oil or gas has been produced from the Mesozoic section.

The Upper Cook Inlet Tertiary locally exceeds 25,000' in thickness and consists of five non-marine formations, the West Foreland, Hemlock, Tyonek, Beluga and Sterling. The type sections for these formations are defined in 5 different wells in the basin. The section is thickest in the north central part of the basin and thins to both the east and west sides. The formations overlap in age and do not form a simple layer-cake stratigraphy.



Geology of the Southern Alaska Coastal Margin (from USGS Open-File Report 2011-1237)

The Eocene and Oligocene aged West Foreland is the basal formation and has generally poor reservoir quality but does locally contain some oil. The Oligocene aged Hemlock Conglomerate is the main oil reservoir and ranges in thickness from 570' in the Swanson River Field to 750' at Middle Ground Shoal. It consists dominantly of sandstone and conglomerate with good reservoir quality. The Oligocene and Miocene aged Tyonek is 7,650' thick in the type section well and consists of thick sandstone beds and thick (30-40' up to 80') bituminous and sub-bituminous coal beds separated by siltstone and claystone interbeds. Because of their thickness, the coals tend to be laterally continuous over tens of miles. The Tyonek sandstones are both oil and gas bearing with oil in the lower and gas in the upper part of the formation. The Miocene aged Beluga formation is 4150' thick in the type section well and is removed by pre-Sterling erosion on the east and west sides of the basin. It consists predominantly of siltstones interbedded with channelized sandstones and lignitic to sub-lignitic thin (5'thick) coal beds and tuffs. The Upper Beluga channel sands are gas reservoirs. The Miocene and Pliocene aged Sterling Formation is 4,490' thick in the type section well and consists of massive sandstones and conglomeratic sandstones interbedded with siltstone and thin coals. The sandstones are stacked fluvial channels that are excellent gas reservoirs.

Cook Inlet Supply/Demand Relationship:

The Cook Inlet gas market is in transition. Current gas fields are in serious decline and the loss of industrial customers (like Agrium and the Conoco Phillips Kenai LNG facility) has reduced the producers' incentives to do anything but meet existing contractual obligations. In order for the utilities to be able to continue to supply current customers and to accommodate future growth, south central utility companies and others must take action. Over the last 10 years, the deliverability profile of gas supply in Cook Inlet has changed. Historically Cook Inlet utilities were not impacted by deliverability shortages. However, in recent years, deliverability shortages have occurred on the coldest winter days. Cook Inlet gas production has declined and if the trend continues, average annual gas production will be less than annual average gas demand before 2020. To meet demand, new sources of gas must be identified. New gas must either come from undeveloped or undiscovered Cook Inlet reserves or from non-Cook Inlet sources, such as the importation of liquefied natural gas (LNG) or other in-state resources.

The demand for gas is approximately 90 BCF per year or 246.6 million cubic feet per day, and growing. As recently as 2005 Cook Inlet gas production was in excess of 200 BCF per annum. However, production is now at or near the demand threshold. Furthermore, because of the harsh climate, gas demand varies from average daily highs in winter of 300 million cubic feet to daily lows of 150 million cubic feet per day in summer. The recently completed CINGSA gas storage facility has helped accommodate these demand swings that used to be ameliorated by the Conoco Phillips Kenai LNG facility.

Coal and Lignite

The Trust has considerable coal resources from its holdings in the Central Alaska-Nenana coal province and the Cook Inlet coal province. Coal is a fossil fuel created from the remains of plants that lived and died millions of years ago when parts of Alaska were covered with huge swampy forests. Coal in south central Alaska is predominantly Tertiary in age. Coal, which by definition contains more than 50 percent by weight and more than 70 percent by volume of organic matter, is composed of plant remains deposited as peat. The vegetal remains accumulated under mainly reducing conditions beneath the ground-water table in mires or swamps. The high acidity of the water killed bacteria and fungi that would otherwise have digested and completely oxidized the peat.

Peat-forming mires developed mainly in alluvial and coastal plains that were drained by fluvial and deltaic distributary channels. Commonly, the coastal plains were barred seaward by barrier-bar systems that protected back-barrier mires from active marine sedimentation, permitting accumulation of peat deposits. The peat that accumulated in Alaska mires formed low-sulfur (average 0.3 percent) coal deposits, whereas in many other regions of the world, encroachment of the sea over peat-forming environments commonly brought sulfate-bearing sediments that transformed the peat into high-sulfur deposits. This low sulfur characteristic of these coals increases its value in electrical generating plants due to lowered costs of emission control to meet air quality standards.

The rank of a coal is a measure of the metamorphism that took place since deposition of the peat, due primarily to depth of burial, temperature, time, and pressure. The Earth's temperature increases with depth of burial (geothermal gradient), and the temperature necessary to metamorphose the peat to coal probably does not exceed 300˚–390˚ F. Time also plays an important role in coal rank because it controls coal composition. For example, peat coal buried for 50–65 Ma will contain higher volatile matter (subbituminous rank) than coal buried for 200 Ma, which contains low volatile matter (bituminous rank). Thus, Tertiary coals are generally subbituminous, and Cretaceous and Carboniferous coals are usually bituminous. This broad generalization, however, is not applicable in many geologic settings in Alaska. Along ancient plate margins and volcanic island arcs, heat produced either by igneous intrusions and volcanism or by increased pressure caused by tectonic compaction and compression, can increase coal rank, such as in the Matanuska coalfield and especially the coking coals found at Chickaloon.

The main use of coal in the United States is to generate electricity. In 2010, 91.9 percent of all the coal in the United States was used for electricity production. Coal generates almost half of the electricity used in the U.S. Other energy sources used to generate electricity include uranium (nuclear power), hydropower, natural gas, biomass, and wind. Another major use of coal is in iron and steel making. The iron industry uses coke ovens to melt iron ore. Coke, an almost pure carbon residue of coal, is used as a fuel in smelting metals. The United States has the finest coking coals in the world. These coals are shipped around the world for use in coke ovens. Coal is also used by other industries. The paper, brick, limestone, and cement industries all use coal to make products. Coal is no longer a major energy source for heating American homes or other buildings. Less than half of one percent of the coal produced in the U.S. today is used for heating. Coal furnaces, which were popular years ago, have largely been replaced by oil or gas furnaces or by electric heat pumps.

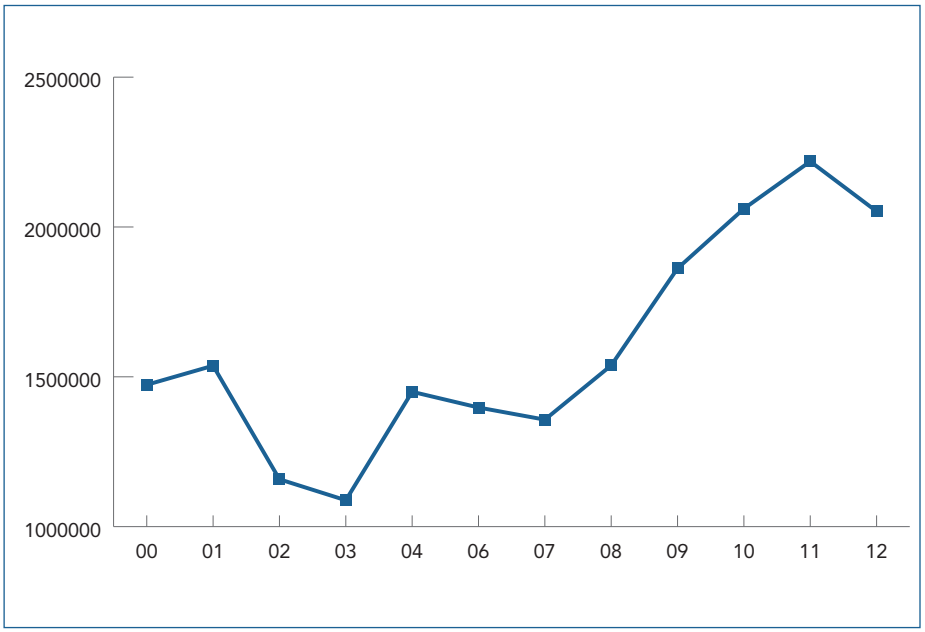
Coal Use in Alaska:

The coal produced by UCM in Alaska is utilized within the state for electrical generation, byproduct heating, and exported to Pacific Rim countries. The coal is sold to six electrical generation power stations in Alaska at: Fort Wainwright for electricity and heat; Eilson Air Force Base for electricity and heat, Clear Air Force Stations for electricity and heat; Aurora Energy for electricity and heat in the core district of Fairbanks, the University of Alaska for electricity and heat; Golden Valley Electric Association for electricity; and Northland Fuels and Energy for retail sales of coal for residential and commercial heating. Coal is exported to South Korea and Chile for electrical power generation. In the future coal

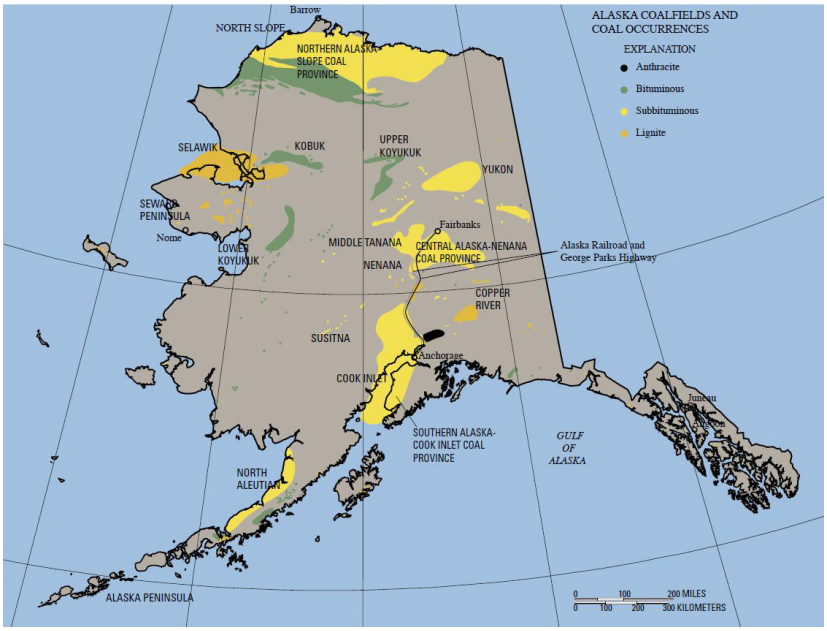
could be provided to the Healy Clean Coal power plant. In-state demand uses approximately one million tons per year and the remainder is exported.

Coal is an important commodity to the Alaska Railroad. Approximately 70 percent of the railroad's operating revenue is derived from freight services and the shipment of natural resources (coal, sand and gravel, and petroleum) constitutes 52 percent of the freight revenue. Coal exports of one million tons per year require 500 coal-filled railcars a week be moved to the Seward coal export terminal. The export terminal is owned by the Alaska Railroad and operated by Aurora Energy Services.

Two coal provinces dominate southcentral Alaska – (1) the Nenana Province and (2) the Cook Inlet Province. The Cook Inlet Province is further divided into four coal fields – the Matanuska Coalfield, the Susitna-Beluga Coalfield, Kenai Coalfield, and Broadpass Coalfield.



Alaska Coal Production (tons), 2000-2012 (Production data from Alaska DGGS and U.S. Energy Information Administration)



Alaska Coalfields and Coal Occurrences (from USGS DDS-77)

Central Alaska-Nenana Coal Province

The Central Alaska-Nenana coal province is the smallest, most centrally located, and most thoroughly studied of the coal provinces on the north side of the Alaska Range. It has accounted for more than one-half of the coal mined in Alaska and is the only province in Alaska being currently mined. This coal province is in the northern foothills of the Alaska Range, extending from about 50 mi west to 50 mi east of the Alaska Railroad. It consists of several synclinal basins partly or wholly detached from each other by erosion of coal-bearing rocks from intervening structural highs. These coal-bearing synclinal basins are recognized as coalfields and include Jarvis Creek, East Delta, West Delta, Wood River, Mystic Creek, Tatlanika Creek, Lignite Creek, Healy Creek, Rex Creek, and Western Nenana. They extend as a discontinuous belt from 9 miles wide to 56 miles long.

The Healy Creek, Lignite, and Suntrana coalfields, where past mining occurred and most current mining occurs, lie along the Alaska Railroad and the Parks Highway. The railroad provided the needed transportation for marketing the coal. In 1918, underground coal mining by the Healy River Coal Corporation began at Suntrana, 4 mi east of the confluence of Healy Creek and the Nenana River. Horse-drawn sleds to the railroad camp in Healy originally transported coal until a

railroad spur was built to the mine in 1922. The Healy River coal mine accounted for one-half of the State's production from 1920 to 1940. The rest of the production was from the Evan Jones mine at Sutton in the Matanuska coalfield.

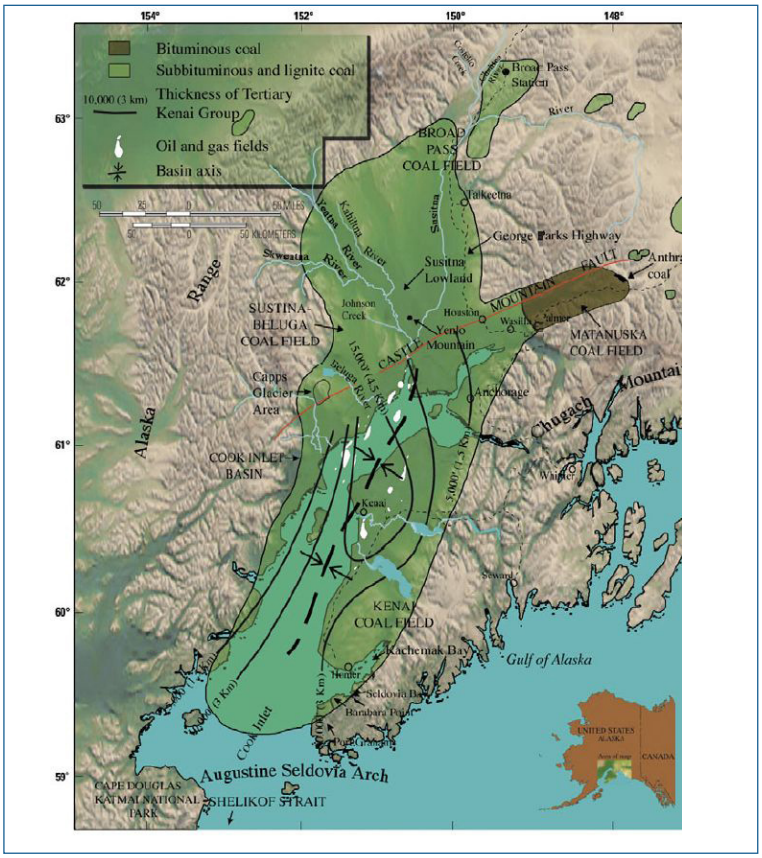
The military buildup in Alaska in the 1940s and after World War II provided a new market for coal that resulted in opening more mines to meet the demand. Usibelli Coal Mine, Inc. (UCM), opened the first strip mine in the coal province east of Suntrana in 1943. In 1961, UCM purchased the Healy River Coal Corporation and continued mining underground. The Arctic Coal Company opened a small mine on Lignite Creek and operated it until 1963. The Vitro Mineral Mine was opened in 1963 east of Suntrana and in 1970 was purchased by UCM. Golden Valley Electric Association opened a mine-mouth powerplant at Healy in 1968. Since that time UCM has supplied coal to the power plant and in 1985 entered the international market by supplying coal to South Korea. UCM is the only active coal mine in the State today.

Southern Alaska-Cook Inlet Coal Province

The Southern Alaska-Cook Inlet coal province is a large coal-bearing region that is as much as 100 mi wide and 225 mi long and covers an area about 22,500 mi2, half of which is beneath the waters of Cook Inlet. Many of the Tertiary coal-bearing rocks in the Southern Alaska-Cook Inlet Basin lie beneath the Cook Inlet, Susitna Lowland, Broad Pass Depression, Matanuska Valley, and Kenai Peninsula. In this coal province workers have identified four coalfields containing Tertiary coal deposits—the Broad Pass, Susitna-Beluga, Matanuska, and Kenai coalfields.

The Southern Alaska-Cook Inlet coal province is centered on the deep trough in the arc-trench gap between the Aleutian volcanic arc and the Aleutian Trench. The Cook Inlet Basin, which includes the onshore coalfields and offshore Cook Inlet, lies in the northwestern most part of this arc-trench gap. The basin, which contains the Southern Alaska-Cook Inlet coal province, is a subsiding, fore-arc basin that lies on the site of a middle Mesozoic open shelf between a volcanic arc and an ancient Pacific oceanic crust. The Lower Jurassic Talkeetna Formation and the Middle Jurassic Talkeetna batholith on the north of the basin represent the volcanic arc. The Kenai and Chugach Mountains represent the ancient Pacific oceanic crust south and east of the basin. Thick Tertiary coal-bearing rocks (Paleocene to Pliocene) overlie a thick, Middle Jurassic to Upper Cretaceous, terrigenous, epiclastic sequence, which accumulated on this shelf.

The Tertiary coal-bearing rocks in the Southern Alaska-Cook Inlet coal province accumulated in the subsiding Cook Inlet Basin, which was probably drained by a large, fluvial, trunk-tributary and alluvial fan system that flowed into the Pacific. Alluvial fans drained the basin margins, and the trunk (axial) stream drained a broad alluvial plain now occupied by the Cook Inlet. Two major tributary streams of the trunk river extended northward through the present Susitna Lowland and Broad Pass Depression and eastward through the present Matanuska Valley. A Susitna-Broad Pass tributary stream probably extended along the north side of the Alaska Range and drained the Central Alaska-Nenana coal province. The Yukon-Tanana Upland may have been in headwaters of this tributary stream. Thus, all the coal deposits in the Central Alaska-Nenana and Southern Alaska-Cook Inlet coal provinces are thought to have accumulated in mires related to this large, integrated fluvial drainage system.



Coalfields of the Southern Alaska-Cook Inlet Coal Province (from USGS DDS-77)

Matanuska Coalfield:

The Matanuska coalfield is the most important Paleocene coalfield in Alaska because it contains high-rank minable coal beds. This coalfield occupies a graben along the extent of the Matanuska Valley, between the Talkeetna Mountains on the north and the Chugach Mountains on the south (fig. 94). Coal beds of the Chickaloon Formation are distributed in an area about 62 mi (100 km) long, from Moose Creek on the west to Anthracite Ridge on the east (Capps, 1927).

Coal districts in the Matanuska coalfield were divided into leases under the Federal Coal Leasing Act of 1915. The Wishbone Hill coal district (about 15 mi2 in area) is on the north side of the coalfield between Moose and Granite Creeks. More than 20 coal beds, with thicknesses exceeding 3 ft, are known in the Wishbone Hill coal district. There, individual coal beds are as much as 23 ft thick, but average 8 ft thick. Mining began in 1917 at the west end of the district. The Federal Government operated the Eska mine in 1917 and started a second coal mine, the Chickaloon, on the Chickaloon River. At one time or another nine mines operated in the Wishbone Hill coal district between 1917 and 1970, and three or four coal mines operated in the Chickaloon-Castle Mountain coal district during the same period of time. The latter district was about 12 mi2 in the area around the old mining camps in the Chickaloon River Valley. Annual coal production in both districts averaged about 50,000 short tons from 1917 to 1940, 160,000 short tons from 1940 to 1951, and about 240,000 short tons from 1952 to 1970. A total of 3 million short tons was produced from open pit mines and the rest from underground mines. Total coal production was about 7.7 million short tons between 1915 and 1970, after which production of oil in the state eliminated the market for coal.

Coal beds within the Chickaloon Formation vary in thickness considerably or pinch out altogether within short distances. In this coal district, four groups of minable coal beds, one to six beds in each group, are separated by 49–295 ft of inter-burden rock in a section 1,180–1,510 ft thick. Combined, 12 minable beds totaled about 49 ft (15 m) in thickness. The thickest coal bed is about 10 ft thick.

The Anthracite Ridge coal district covers about 30 mi2 at the eastern end of the coalfield. The number of coal beds in this district is uncertain owing to poor exposures and complex structure. A few beds in the coal district are as thick as 3.9–6.5 ft and one reaches 39 ft; the coal beds are exceptionally lenticular.

The intensity of deformation and abundance of igneous dikes and sills in the Chickaloon Formation increase eastward. Heating induced by the igneous intrusions may be the main reason for the increase in coal rank from subbituminous to anthracite eastward in the coalfield. It has been noted that the natural coal became of coking quality adjacent to an intrusive diabase sill in which the contact temperature reached 1,020˚F. The coal bed along the contact was locally coked and raised to semianthracite. The coal rank in the Anthracite Ridge coal district also changes abruptly from low-volatile bituminous to semianthracite or anthracite within about 196 ft toward an intrusion.

Structures in the Matanuska coalfield are typically complex. Structural complications on its northwest flank make the coal beds in some structural blocks difficult to mine and preclude meaningful estimation of reserves. In the Chickaloon district, beds dip as much as 90˚; in the Chickaloon mine, coal beds are overturned and faulted. Anthracite occurrences on the south flank of Anthracite Ridge are bordered on the north by a high-angle fault of large displacement and are in tightly folded and locally overturned synclines cut by many faults.

Susitna-Beluga Coalfield:

The Susitna-Beluga coalfield is situated in the Susitna Lowland north of the Cook Inlet between the Talkeetna Mountains on the east and the Alaska Range on the north and west. Glacial and alluvial deposits mainly cover the Susitna Lowland. Coal beds are in the Kenai Group. The rocks are exposed in isolated areas but mainly along the banks and tributaries of the Susitna, Yentna, Beluga, and Chuitna Rivers. These coal-bearing rocks underlie an area of at least 3,440 mi2. The potentially minable coal beds are located in a 400-mi2 area at the southwestern end of the coalfield in the drainage basins of the Chuitna and Beluga Rivers. Here, the coal beds range from lignite to subbituminous and range to more than 50 ft thick. A few of the thick coal beds can be traced for distances of more than 7 mi along the course of the Chuitna River.

Broad Pass Coalfield:

The Broad Pass coalfield underlies a narrow trough extending northeastward from south of the divide of the Alaska Range, on the headwaters of the Chulitna River, to the north end of the Cook Inlet-Susitna Lowland. The coalfield is about 5 mi wide. Several small areas of coal-bearing rocks of the Kenai Group occur and two of these areas are known to contain coal resources -- Costello Creek and Broad Pass Station.

Coal has been reported south of these areas along the Chulitna River. The coalfield contains orange to yellow gravels exposed in railroad cuts and stream banks, which resemble the Nenana Gravel in the Central Alaska-Nenana coal province and the Sterling Formation of the Susitna Lowland.

Kenai Coalfield:

The Kenai coalfield lies on the lowland between the Kenai Mountains on the east and the Cook Inlet on the west, in the western part of Kenai Peninsula. The coalfield contains the thick, coal-bearing Beluga and Sterling Formations of the Kenai Group and is divided into two coal districts: the northern Kenai and southern Homer coal districts. The northern Kenai coal district includes mainly outcrops of the Sterling Formation, and the coal beds are exposed mainly along the coastal bluff from north of Clam Gulch to south of Ninilchik. The coal-bearing rocks are completely concealed by as much as several hundred feet of glacial and alluvial deposits, particularly in the northern Kenai coal district. However, where the Sterling coal beds are exposed along the coastal bluffs, they are as thick as 12 ft and are laterally continuous for more than 1.75 mi.

The Homer coal district is about 1,200 mi^2 in area and includes as much as 5,000 ft of the Beluga and Sterling Formations. These formations contain at least 30 coal beds. Coal beds of the Beluga Formation are thick and laterally continuous where they are interbedded with thick and extensive sandstones, which were deposited by meandering streams.

Coal was mined intermittently since 1888 along the north shore of Kachemak Bay by the Alaska Coal Company at Miller's Landing northwest of Homer. In 1891, the U.S. Navy mined 50 short tons on Kachemak Bay. In 1894, the North Pacific Mining and Transportation Company began development in Eastland Canyon and at least 650 short tons of coal was produced from this underground mine and shipped to San Francisco. Underground mines were also opened from 1894 to 1897 west of McNeil Canyon.

Coal mining shifted to the west of Homer along the beach bluffs of the Cook Inlet from 1899 to 1951. The Cook Inlet Coal Fields Company developed the Cooper coal bed from five mine shafts in the beach bluff on Bidarki Creek, about a mile west of Homer. In 1915, Bluff Point underground mine was opened near Bidarki Creek and produced about 1,400 short tons. In 1946, the Bluff Point mine was taken over by Homer Coal Corporation, which blocked out reserves of stripping coal. No reported production was recorded from this operation, which operated until 1951. Total production in the Homer coalfield is at least a few thousand tons.

Underground Coal Gasification

Underground coal gasification (UCG) is a promising option for the future use of deep or stranded coal deposits. UCG allows coal to be gasified in situ (in place) within the coal seam, via a matrix of connected wells. The coal is ignited and air or oxygen is injected underground to sustain burning, which is essentially used to "mine" the coal and produce a combustible synthetic gas (syngas – chiefly hydrogen and carbon monoxide) which can be used for industrial heating, power generation or the manufacture of hydrogen, synthetic natural gas, or diesel fuel.

As compared with conventional mining and surface gasification, UCG promises lower capital and operating costs and also has other advantages, such as no human labor underground. In addition, UCG has the potential to be linked with carbon capture and sequestration. The increasing demand for energy, depletion of oil and gas resources, and threat of global climate change have led to a growing interest in UCG throughout the world. The potential for UCG to access low grade, inaccessible coal resources and convert them commercially and competitively into syngas is enormous, with potential applications in power, fuel, and chemical production.

Gasification is the conversion of coal to a gas (called synthesis gas or syngas) through a series of reactions involving oxygen (or air), heat, pressure, coal and water. Coal gasification is not new. It has been used since the 1800s to supply heating gas to cities and towns, generate electricity from gas turbine power stations, and to produce synthetic liquid fuels. Syngas contains hydrogen and methane and can also be used to produce chemicals such as urea, ammonia, methanol, and dimethyl ether.

In its simplest form, the UCG process works like this: (1) Vertical wells are drilled into the coal and linked together horizontally. (2) The coal seam is ignited and air or oxygen is pumped into a well (the injection well) to allow for combustion of the coal. (3) Combustion produces heat, carbon dioxide and some syngas through partial combustion. (4) Through a series of chemical reactions involving pressure, heat and carbon dioxide from combustion, steam (generated from water in the coal) and carbon from the coal, syngas is produced. (5) The syngas flows from the gasification chamber through the horizontal connection in the coal seam and flows to the surface through another well (production well). The composition of the gas produced depends on many factors including coal type, operating pressure and temperature, water ingress to the process, and the type of oxidant used (air or oxygen).

Gasification and Gas Production:

Following ignition, oxidants are injected and the conversion of coal through gasification occurs by:

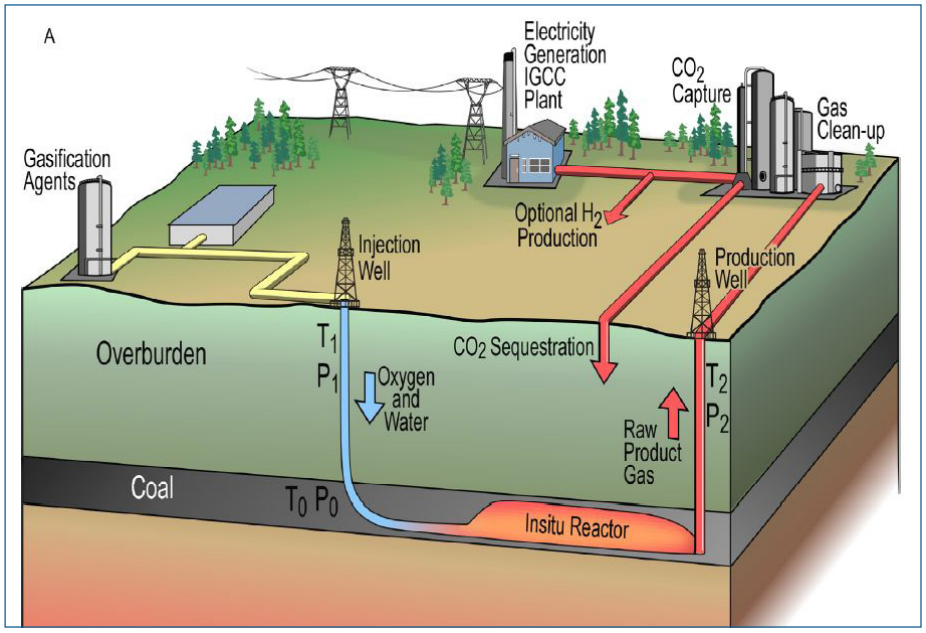
1. Oxidation and/or combustion reactions
2. Reduction
3. Pyrolysis producing gas, oils, char and vaporised tars.

Air (21 per cent oxygen), oxygen enriched air, or pure oxygen can be used as the oxidant in the process. Using pure oxygen (or oxygen enriched air) results in a higher temperature gasification reaction. The result is different production gas composition and volumes. The differences mainly relate to nitrogen, which is injected as an inert component when air is the oxidant of choice. The oxidant chosen will depend on economic considerations, including the end use of the gas. During the UCG process, exothermic (releasing heat) combustion reactions supply the energy required by endothermic (absorbing heat) reduction reactions.

The UCG process can be roughly divided into 'zones', with the oxidation or reduction zone near the oxidant injection point. This is followed by a gasification zone and pyrolysis zone where the coal is exposed to temperature as a result of radiant heat and hot gases passing over the coal.

Site Selection:

The main factors to consider for the selection of a UCG site are: (1) coal properties such as chemical nature, structure, depth and thickness; (2) hydrogeology, because groundwater plays an integral part of the UCG process since it supplies water for the gasification reactions and the hydrostatic pressure serves to contain the process. Operating the process below the hydrostatic pressure ensures there is movement of water towards the cavity, as well as movement of gas towards the production well; (3) geology, to ensure that good structure and low permeability of rock immediately overlying the coal is favorable to limit subsidence and provide a seal between the coal and overlying strata.



UCG Production Process (from Alberta Geological Survey open file report 2009-10)

Decommissioning:

Decommissioning is shutting down the gasification process and ensuring the spent gasification chamber does not contribute to groundwater contamination. It is a critical part in the lifecycle of a UCG operation. Decommissioning a UCG site involves a number of key principles: (1) while the process is still hot, allow groundwater to flow into the cavity to generate steam. This ensures any residual tars or liquid hydrocarbons that may have condensed on the walls are remobilized as gas and flow through wells to the surface for treatment or use; (2) the groundwater inflows quench the process; (3) the cavity is pumped out and flushed until the water is clean (usually once or twice).

The world's only commercial UCG facility, Yerostigaz (owned by Linc Energy) is located in Angren in Uzbekistan, and has been producing syngas for power generation since 1961. Yerostigaz produces UCG synthesis gas to be used for power generation. Since Linc Energy took a controlling interest in Yerostigaz, improvements to equipment and infrastructure have been made. Yerostigaz is a bench mark for other gasification proponents and continuously produces 1,000,000 m3 of synthesis gas per day, which is piped to the nearby Angren Power Station.

UCG development is potentially possible on any of the Trust lands that contain coal. The site must however, have the proper geology, low potential to contaminate fresh water aquifers, and be sited relatively close to pipelines needed to deliver the syngas to a power station or a gas-to-liquids plant.

Coal Bed Methane

Methane recovery from un-mined coal seams is often referred to as Coal Bed Methane (CBM). During the formation of coal, large quantities of methane-rich gas are generated and stored within the coal on internal surfaces. Because coal has such a large internal surface area, it can store surprisingly large volumes of methane-rich gas; six or seven times as much gas as a conventional natural gas reservoir of equal rock volume can hold. In addition, much of the coal, and thus much of the methane, lies at shallow depths, making wells easy to drill and inexpensive to complete.

Methane from unmined coal seams is gathered through recovery systems constructed by drilling a series of vertical or horizontal wells directly into the seam. Water must first be drawn from the coal seam in order to reduce pressure and release the methane from its adsorbed state on the surface of the coal particles and the surrounding rock strata. Once dewatering has taken place and the pressure has been reduced, the released methane can be drawn more easily to the surface via the wells. Disposal or reinjection of this water often presents the largest challenge in CBM projects.

The choice of vertical or horizontal wells is dependent on the geology of the coal seam. In the case of seams at shallow depths, vertical wells have been traditionally used. These vertical systems often use layers of fracture wells, which drain the methane from fractures in the coal seam produced as result of the increased pressure created during the dewatering process. At these shallow depths, the combination of high permeability and low pressure make the vertical systems ideal as extra methane flow enhancement is not required and the structure of the vertical and fracture wells remains stable.

At greater depths, the structure of the vertical and fracture wells may not be able to withstand the higher pressure levels, and extra flow enhancement may be required to produce the methane. This is often true in cases of CBM recovery due to the depths at which the coal is found. In these instances, horizontal drilling techniques may be used for increased accuracy and flexibility. Within these horizontal systems, flow enhancement techniques such as extra hydraulic fracturing - where water is pumped into the seam at high pressure - may be deployed to further facilitate the release of the methane from coals seams.

Although horizontal systems can recover much higher volumes of methane from coal seams at extreme depths than a vertical system possibly could, recovery efficiency is relatively low and heavily dependent on the overall length of the drill through the coal seam. Horizontal systems are still in their infancy and over time there may be increased movement towards their use as the technologies mature and efficiencies are improved.

The coalbed methane potential for the southern Alaska-Cook Inlet coal province is high. This resource potential varies from the Kenai, Broad Pass, and Beluga coalfields, which contain lignite and subbituminous coal, to the Matanuska coalfield, which contains bituminous and semi-anthracite coals. Thirteen out of 18 coal beds in the Tyonek Formation in the upper Cook Inlet Basin (northwest of Wasilla) have been determined to contain coalbed methane. Gas content ranges from 63 ft^3 per short ton at standard temperature and pressure (STP) for coal beds at a shallow depth of 500 ft

to 245 ft^3 per short ton at STP for coal beds at a depth of 1,200 ft. Attempts to develop Tyonek coal beds by energy companies (Union and Ocean Energy) in the Wasilla area were affected by co-produced water problems. Large amounts of ground water were encountered, which posed production problems in separating the coalbed methane from the co-produced water as well as water-disposal problems by reinjection.

Trust lands underlain by coal deposits all have significant potential for CBM. In 2001 several oil and gas tracts were leased to Evergreen Rsources for CBM exploration. Several pilot (exploratory) wells were drilled, but no commercial quantities of CBM were found.

Peat

Peat has been used as a form of energy for at least 2,000 years. It was useful as an alternative to firewood for cooking and heating in temperate and boreal regions of Europe, in particular Ireland, England, the Netherlands, Germany, Sweden, Poland, Finland and the USSR. The increasing use of gas and oil as cooking and heating fuels during the 20th century resulted in a diminishing use of peat for such domestic purposes. The high demand for electricity, however, locally stimulated the development of large electric power plants fuelled by peat. Peat appeared especially competitive in the 60-200 MW power plants which necessitated the reclamation of vast areas of peat for large scale peat extraction, particularly in Ireland, Finland and the USSR. Specialized technology was developed for these reclamation efforts. Recently, peat has been used for electricity generation in small units in the range of 20-1,000 KW. In Alaska the Donlin Gold Project examined the possibility of utilizing a peat-fueled power plant to provide electrical energy to the mine and processing plant being planned.

In addition to energy uses, peat can be mixed with mineral soil in horticulture to increase the moisture holding capacity of sands, to increase the water infiltration rate of clayey soils, and to acidify soils for specific pot plants. Industrial uses include the extraction of valuable hydro-carbons, and in the building industry it can be used as an insulator because of its poor heat conducting properties. Such uses are however relatively minor in relation to the large scale extraction for energy purposes.

Extraction of peat for energy purposes as an alternative to relatively expensive imported fossil fuels such as oil and natural gas, has become particularly attractive to developing countries since the first fuel crisis in the nineteen seventies. There often appears to be a strong natural link between the extraction of peat for fuel and agricultural development. It is likely that in the near future it will become possible to employ very small generators fuelled by peat for water control and water-table management in peat swamps used for agricultural purposes. If this can be done it would perhaps be economical and, from an income-generating point of view, desirable to stimulate integrated development of peat swamps.

Peat extraction is only one land use option for peat swamps and often competes with other land use alternatives such as agriculture or preservation. In some places peat extraction is desirable where the underlying mineral substrate is of good quality for arable use.

The economic viability of peat as a fuel depends on local conditions including availability of other fuels, labor, material costs, transportation distances, climatic conditions and the possible scale of operation. Peat utilization can have socio-economic impacts on rural areas and this should be considered during the land evaluation process which includes future agricultural uses of reclaimed wetlands.

Peat could prove to be of value, along with biomass, in providing fuel for power plants in the more remote locations in Alaska. However, since most of The Trust lands are located in the railbelt and Southeast, it is doubtful that peat, as used for fuel, would be of significant value. Peat for use as an agriculture or horticultural product has perhaps greater potential. In 2011 Alaska peat production was estimated at 61,500 cubic meters. Conterminous United State production was 626,113 tons; world production was estimated to be 26.3 million tons. The U.S. was a significant producer and consumer of peat for horticultural and industrial purposes. The potential for Trust lands in the railbelt would be for sphagnum moss for horticultural uses. Sphagnum moss has recently had unit value prices on the order of $52 per ton f.o.b. plant.

Hydroelectric

Run-of-the-river hydroelectricity (ROR) is a type of hydroelectric generation whereby little or no water storage is provided. Run-of-the-river power plants may either have no storage at all, or a limited amount of storage, in which case the storage reservoir is referred to as pondage. A plant without pondage has no storage and is, therefore, subject to seasonal river flows and serves as a peaking power plant while a plant with pondage can regulate water flow and serve either as a peaking or base load power plant.

Run-of-the-river hydroelectricity is ideal for streams or rivers with a minimum dry weather flow or those regulated by a much larger dam and reservoir upstream. A dam, smaller than that used for traditional hydro, is required to ensure that there is enough water to enter the penstock pipes that lead to the lower-elevation turbines. Projects with pondage, as opposed to those without pondage, can store water for peak load demand or continuously for base load, especially during wet seasons. In general, projects divert some or most of a river's flow (up to 95 percent of mean annual discharge) through a pipe and/or tunnel leading to electricity-generating turbines, then return the water back to the river downstream.

ROR projects are dramatically different in design and appearance from conventional hydroelectric projects. Traditional hydro dams store enormous quantities of water in reservoirs, necessitating the flooding of large tracts of land. In contrast, most run-of-river projects do not require a large impoundment of water, which is a key reason why such projects are often referred to as environmentally friendly, or "green power."

The use of the term "run-of-the-river" for power projects varies around the world and is dependent on different definitions. Some may consider a project ROR if power is produced with no storage while a limited storage is considered by others. Developers may mislabel a project ROR to sooth public image about its environmental or social effects. The Bureau of Indian Affairs describes run-of-the-river hydroelectricity as: A power station utilizing the run of the river flows for generation of power with sufficient pondage for supplying water for meeting diurnal or weekly fluctuations of demand. In such stations, the normal course of the river is not materially altered.

Many of the larger ROR projects have been designed to a scale and generating capacity rivaling some traditional hydro dams. When developed with consideration given to footprint size and location, ROR hydro projects can create sustainable energy minimizing impacts to the surrounding environment and nearby communities. Like all hydro-electric power, run-of-the-river hydro harnesses the natural potential energy of water, eliminating the need to burn coal or natural gas to generate the electricity needed by consumers and industry. Substantial flooding of the upper part of the river is not required for smaller-scale run-of-river projects as a large reservoir is not required. As a result, people living at or near the river don't need to be relocated and natural habitats and productive farmlands are not wiped out.

Run-of-the-river power is considered an "unfirm" source of power: a run-of-the-river project has little or no capacity for energy storage and hence can't co-ordinate the output of electricity generation to match consumer demand. It thus generates much more power during times when seasonal river flows are high (i.e., spring freshet), and much less during drier summer months.

For small scale hydropower project on drainages, the Pelton wheel system can be employed. The Pelton wheel is a water impulse turbine. It was invented by Lester Allan Pelton in the 1870s. The Pelton wheel extracts energy from the impulse of moving water, as opposed to the weight of water like the traditional overshot water wheel. Pelton wheels are the preferred turbine for hydro-power, when the available water source has relatively high hydraulic head at low flow rates, where the Pelton wheel is most efficient. Thus, more power can be extracted from a water source with high-pressure (i.e. high head) and low-flow than from a source with low-pressure and high-flow, even when the two flows theoretically contain the same power.

The largest units can be up to 200 megawatts. The smallest Pelton wheels are only a few inches across, and can be used to tap power from mountain streams having flows of a few gallons per minute. Some of these systems utilize household plumbing fixtures for water delivery. These small units are recommended for use with thirty meters or more of head, in order to generate significant power levels. Depending on water flow and design, Pelton wheels operate best with heads from 15 meters to 1,800 meters, although there is no theoretical limit.

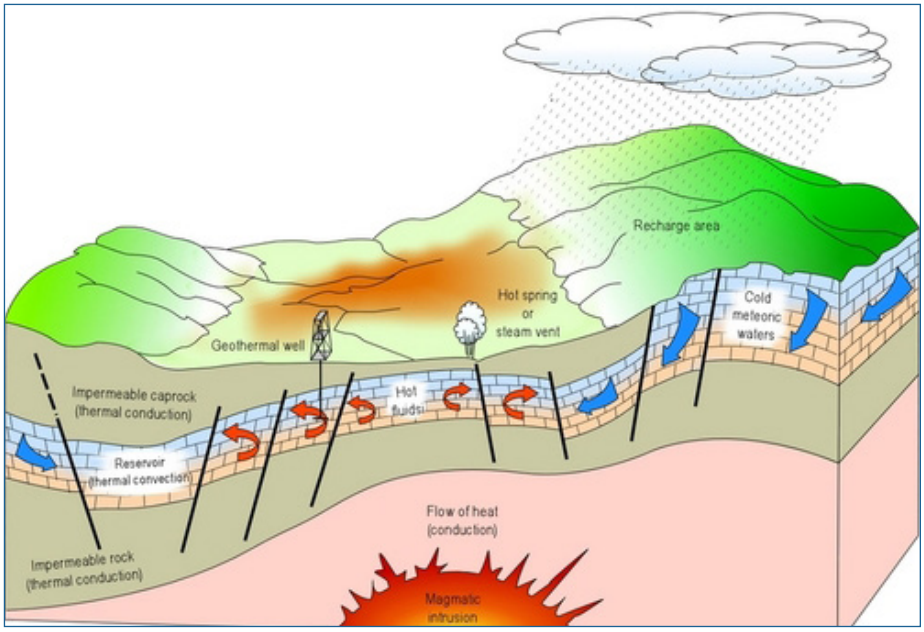
Many drainages on Trust land have potential for small scale run-of-river or pelton wheel type systems where unfirm power can be utilized.

Geothermal

Heat stored beneath the Earth's surface holds 50,000 times the energy of all the oil and gas in the world combined. If it could be harnessed, it would be an ideal source of base-load power: Geothermal is cleaner than fossil fuels, and more reliable than alternative sources like tidal, wind, wave and solar. Today, geothermal plants in the United States generate nearly 3,000 megawatts of electricity--enough to power South Dakota. Almost all of it comes from reservoirs that are at least 300 degrees F. [Popular Mechanics]

Geothermal energy is defined as heat from the Earth. It is a clean, renewable resource that provides energy in the U.S. and around the world in a variety of applications and resources. Although areas with telltale signs like hot springs are more obvious and are often the first places geothermal resources are used, the heat of the earth is available everywhere, and we are learning to use it in a broader diversity of circumstances. It is considered a renewable resource because the heat emanating from the interior of the Earth is essentially limitless. The heat continuously flowing from the Earth's interior, which travels primarily by conduction, is estimated to be equivalent to 42 million megawatts (MW) of power, and is expected to remain so for billions of years to come, ensuring an inexhaustible supply of energy.

A geothermal system requires heat, permeability, and water. The heat from the Earth's core continuously flows outward. Sometimes the heat, as magma, reaches the surface as lava, but it usually remains below the Earth's crust, heating nearby rock and water — sometimes to levels as hot as 700°F. When water is heated by the earth's heat, hot water or steam can be trapped in permeable and porous rocks under a layer of impermeable rock and a geothermal reservoir can form. This hot geothermal water can manifest itself on the surface as hot springs or geysers, but most of it stays deep underground, trapped in cracks and porous rock. This natural collection of hot water is called a geothermal reservoir.



Geothermal Energy Diagram (UAF-Alaska Center for Energy and Power)

Geothermal energy can be used for electricity production, for commercial, industrial, and residential direct heating purposes, and for efficient home heating and cooling through geothermal heat pumps. [For a video presentation on the different ways to use geothermal energy, visit http://geothermal.marin.org/video/vid_pt5.html.]

Geothermal Electricity:

To develop electricity from geothermal resources, wells are drilled into a geothermal reservoir. The wells bring the geothermal water to the surface, where its heat energy is converted into electricity at a geothermal power plant (see below for more information about the different types of geothermal electricity production).

Heating Uses:

Geothermal heat is used directly, without involving a power plant or a heat pump, for a variety of applications such

as space heating and cooling, food preparation, hot spring bathing and spas (balneology), agriculture, aquaculture, greenhouses, and industrial processes. Uses for heating and bathing are traced back to ancient Roman times. Currently, geothermal is used for direct heating purposes at sites across the United States. U.S. installed capacity of direct use systems totals 470 MW or enough to heat 40,000 average-sized houses, according to the GeoHeat Center Web site, http://geoheat.oit.edu/.

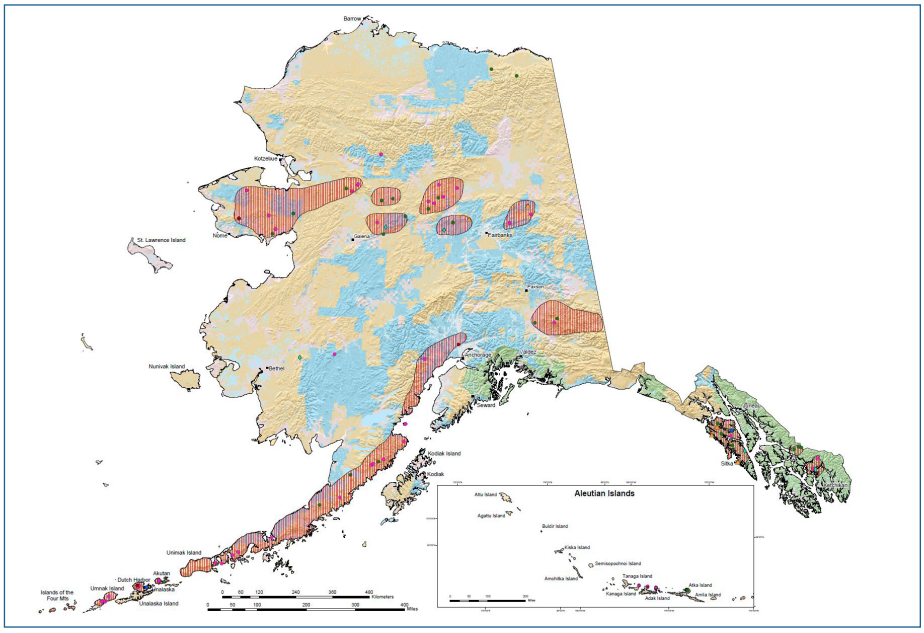
The Romans used geothermal water to treat eye and skin disease and, at Pompeii, to heat buildings. Medieval wars were even fought over lands with hot springs. The first known "health spa" was established in 1326 in Belgium at natural hot springs. And for hundreds of years, Tuscany in Central Italy has produced vegetables in the winter from fields heated by natural steam. (See the Geothermal Education Office Web site, http://geothermal.marin.org/). [Geothermal Energy Association]

Due to Alaska's geologic and tectonic history, substantial geothermal resources have been identified across the state. These resources can be classified into four general regions: (1) the "Ring of Fire" region including the Alaska Peninsula and the Aleutian Islands; (2) the Wrangell Mountain region located in eastern Alaska next to the Copper River Basin; (3) the Interior region ranging from the Seward Peninsula to Western Canada; and (4) the Southeast region ranging from Baranof Island to Ketchikan.

There are many active projects within the state. Chena Hot Springs was the first geothermal project to be completed in Alaska with a 400kw geothermal plant installed in 2006 that displaces approximately 160,700 gallons of diesel fuel each year. Other active projects include a ground source heat pump at the Dimond Aquatic Center in Juneau as well as investigations at Pilgrim Hot Springs (near Nome), and in Hot Springs Bay Valley on the island of Akutan.

Despite Alaska's significant geothermal potential, the attributes of Alaska's geothermal resources remain poorly defined. The Alaska Energy Authority (AEA) is involved in multiple activities to promote and develop the use of geothermal energy. AEA is coordinating a statewide geothermal working group of academic, industry, and government experts in geothermal energy.

The geothermal energy potential of Trust lands is unassessed, so it is not known whether the potential to develop this type of resource on a commercial basis exists.



Alaska's Geothermal Energy Potential (from U.S. Dept. of Energy Office of Energy Efficiency and Renewable Energy Geothermal Technologies Program; publication no. INEEL/MIS-2002-1623 Rev. 1)

Wind/Solar/Tide

Wind is the movement of air from an area of high to low pressure. Wind exists because the sun heats the surface of the earth unevenly. Cooler air fills the void left by hot air as it rises. According to the United States Department of Energy (DOE), wind energy is the most rapidly advancing source of energy worldwide.

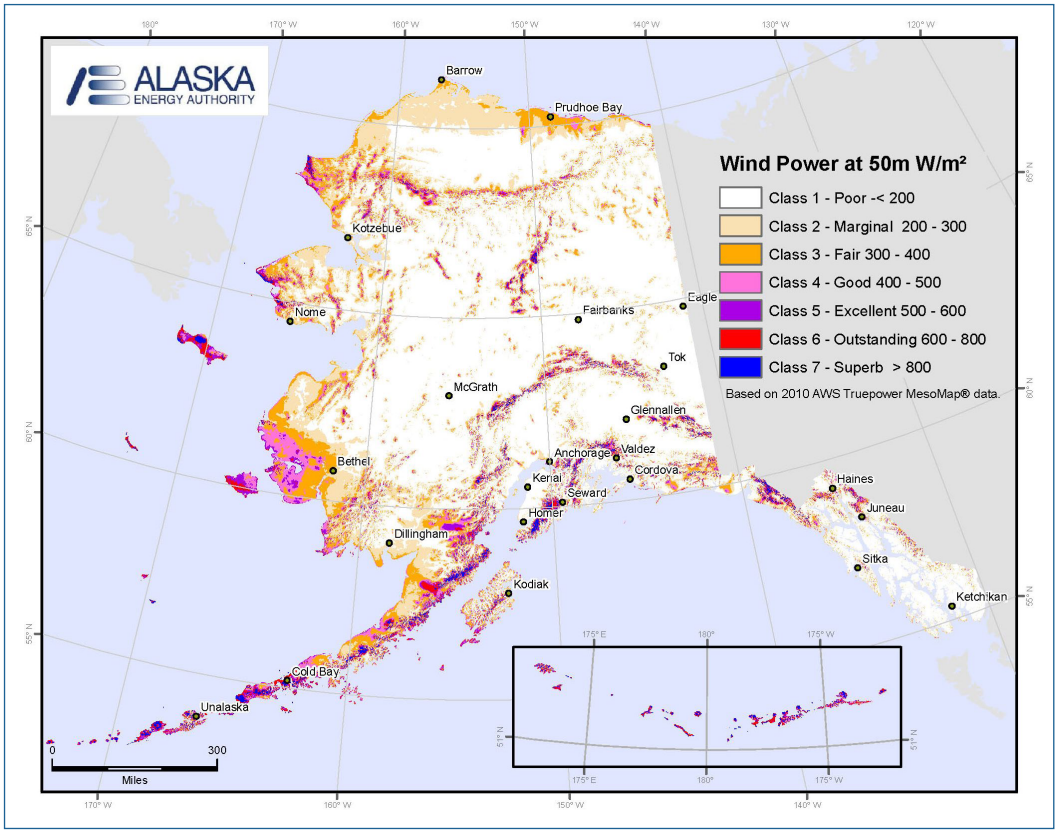
There are three major types of wind power: mechanical power, electrical power, and sail power. Each one of them generates power by using an airfoil. Airfoils are surfaces that create an aerodynamic force – causing a boat to move or rotor blades to turn. You can call a sail a simple airfoil; wind blowing against the sail creates a curved area of high

pressure, pushing the boat in a forwards direction. A windmill is made up of several airfoils in the shape of a fan; the wind drives them around in a circle, which rotates the shaft. The power of this rotation is what mechanical windmills use to do things such as turn a large stone for grinding grain into flour. An electrical wind turbine follows the same concept, but instead turns a generator. Inside the generator, a coil is moved in and out of a magnetic field by the rotation, which is what generates an electric current.

There is significant variation in wind turbine size depending on purpose. Smaller turbines are generally used to power a single household and have a capacity under 100 kilowatts – most commonly around 2 kilowatts. Commercially sized turbines have a capacity of up to 5 million watts. In order to convert wind energy into electricity an average wind speed of 14 mph is required. Wind turbine blade length and height are the main differences between commercial and residential turbines. Residential turbines generally stand at around 10 meters tall, while commercial turbines are anywhere from 30 to 100 meters tall.

The Trust has some experience with wind power projects. GVEA utilized Trust lands for a test program that eventually built a wind farm on adjacent state land – the Eva Creek wind farm which has a generation capacity of just under 25 megawatts from 12 generator towers. In 2013 the TLO signed a letter of intent to work with The Boutet Company and Tyonek Village Corporation to study potential development of a wind power project to be sited largely on Trust lands 19 miles west of the village.

An overlay of Trust lands on the wind atlas of Alaska show excellent potential on Trust lands in the Tyonek and Healy-Liberty Bell areas. Good potential also exists on a number of parcels in the Haines area.



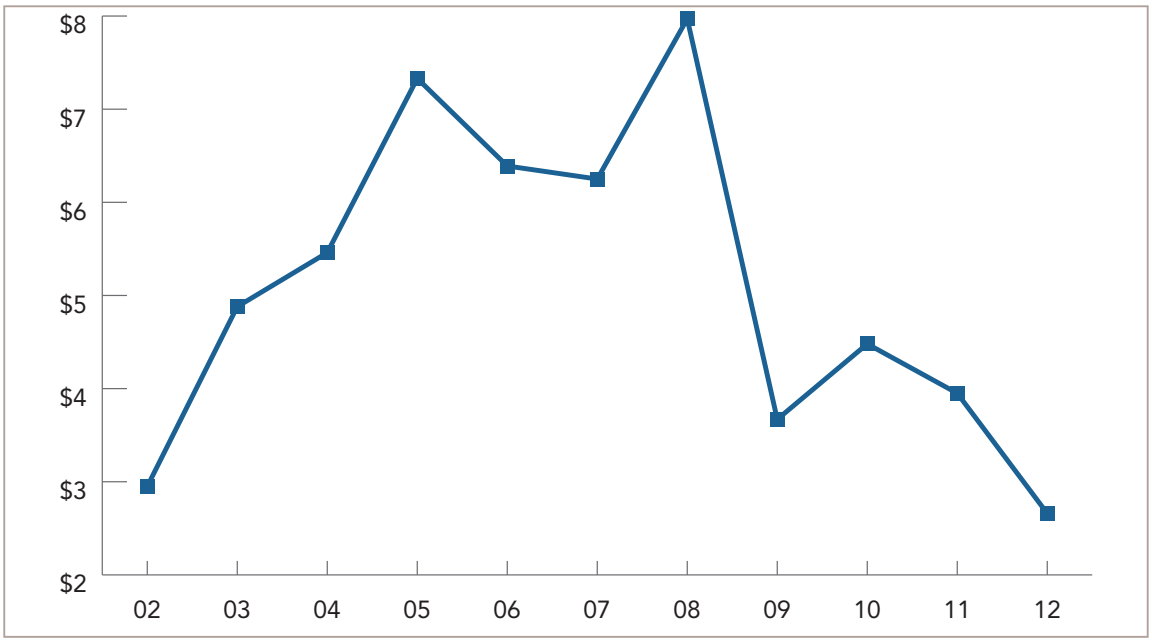
Wind Atlas of Alaska (from Alaska Energy Authority)

Biomass

See Forest Resource Management Plan.

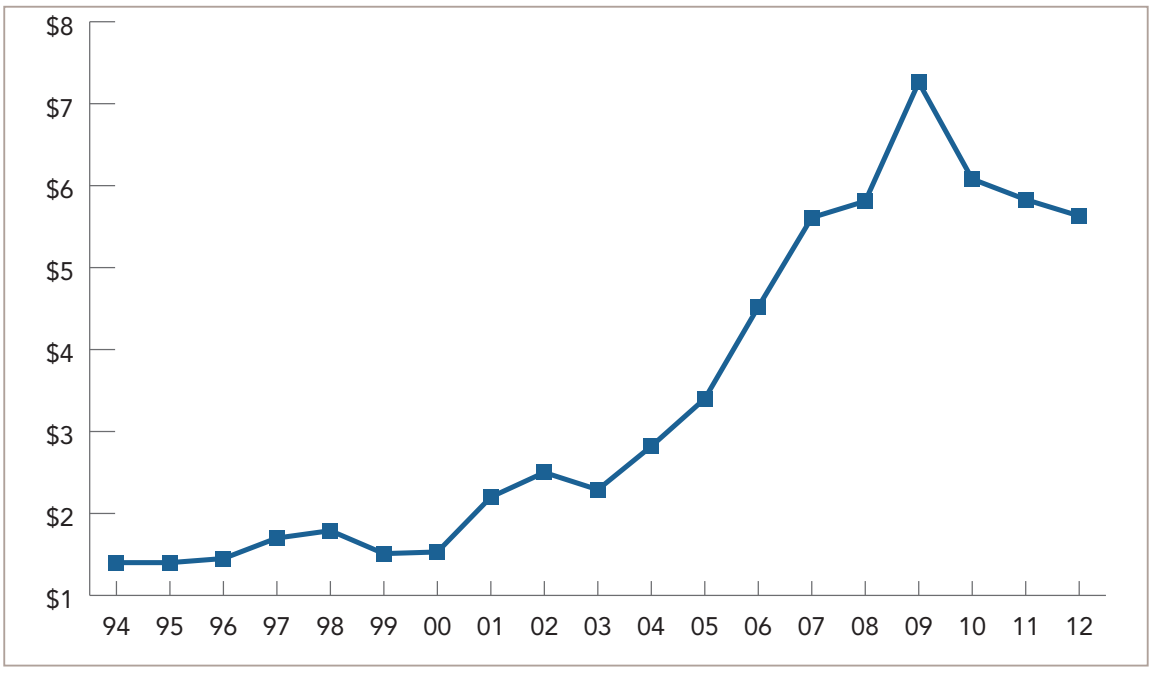
Appendix B: Historic Commodity Price Graphs

U.S. Natural Gas Wellhead Price, 2002-2012 (Dollars per Thousand Cubic Feet)



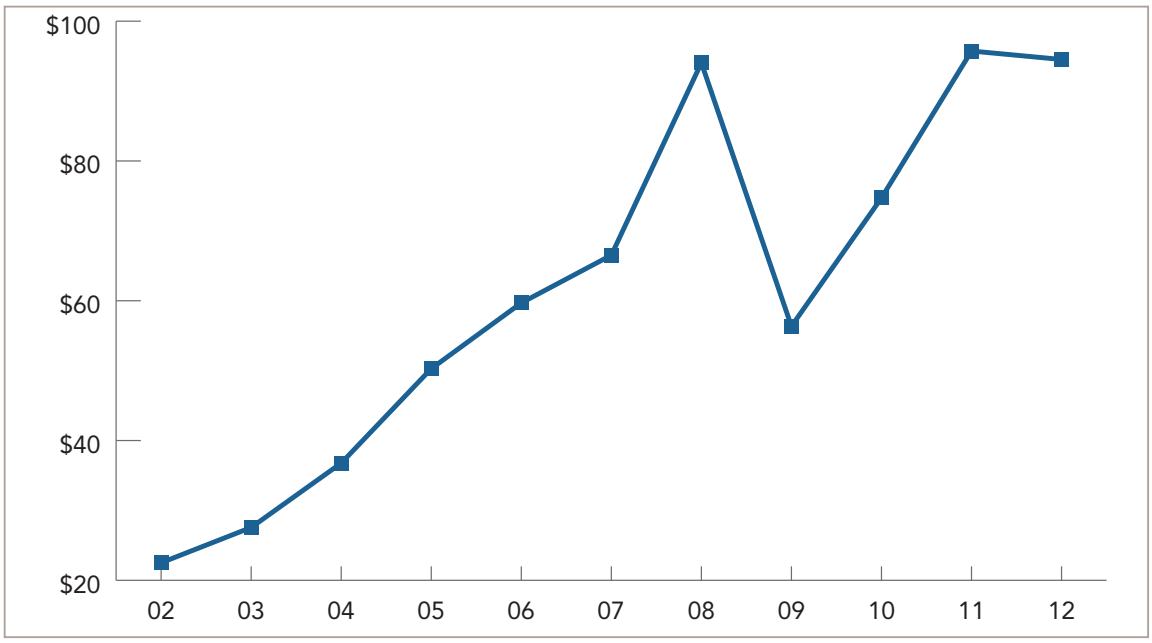
(Price data from U.S. Dept. of Energy Energy Information Administration)

Cook Inlet Prevailing Natural Gas Price, 1994-2012 (Dollars per Thousand Cubic Feet)



(Price data from state of Alaska, Dept. of Revenue)

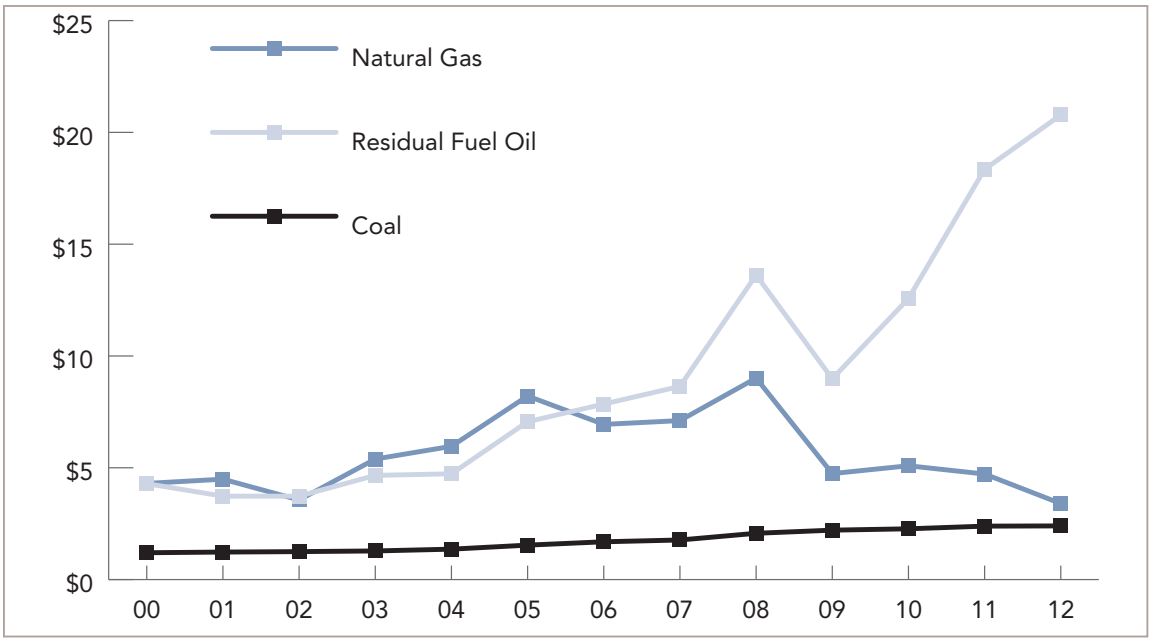
U.S. First Purchaser's Crude Oil Price, 2002-2012 (Dollars per Barrel)



(Price data from U.S. Dept. of Energy Energy Information Administration)

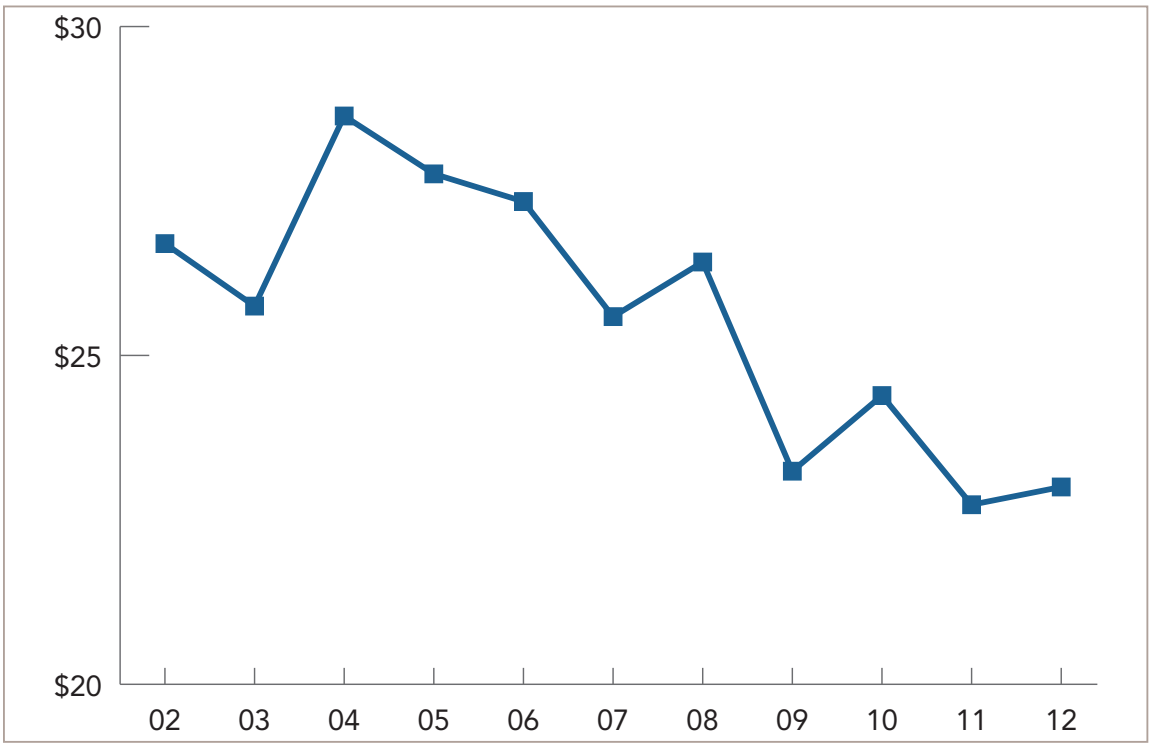
Cost of Fossil-Fuel Receipts at Electric Generating Plants, 2000-2012

($/million Btu, including taxes)



(Data from U.S. Energy Information Administration, Monthly Energy Review, Table 9.9)

Price of Peat, 2002-2012 (f.o.b. min, Dollars per Ton)



(Price data from USGS)

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Abbreviations and Acronyms

AEA – Alaska Energy Authority
ACOE – U.S. Army Corps of Engineers
ASCMCRA – Alaska Surface Coal Mining Control and Reclamation Act
BCF – billion cubic feet (of gas)
BMP – Best Management Practice
BOE – barrels of oil equivalent
BTU – British Thermal Unit
CBM – coalbed methane
CFD – cubic feet per day (of gas)
CINGSA – Cook Inlet Natural Gas Storage, Alaska
DEC – Department of Environmental Conservation
DNR – Alaska Department of Natural Resources
DOE – Department of Energy
EPA – U. S. Environmental Protection Agency
GVEA – Golden Valley Electric Association
JORC – Joint Ore Reserves Committee (Australia)
KW – kilowatt
LMPT – DNR Large Mine Permitting Team
LNG – liquefied natural gas
Ma – million years (ago)
MCF – thousand cubic feet (of gas)
MMBO – million barrels of oil
MMBOE – million barrels of oil equivalent
MMCFD – million cubic feet per day (of gas)
MW – megawatt(s)
OPMP – DNR Office of Project Management and Permitting
OSM – federal Office of Surface Mining
PDP – proved developed producing (reserves)
PDNP – proved developed non-producing (reserves)
ROR – run of river
TCF – trillion cubic feet (of gas)
TLO – Alaska Mental Health Trust Land Office
UCG – underground coal gasification
UCM – Usibelli Coal Mine Inc.
USGS – United States Geological Survey
USDA – United States Department of Agriculture