

**PEAK OIL & ENERGY
TRANSITION:**

**PREPARING FOR
CHALLENGES AND
OPPORTUNITIES**

**DRAFT REPORT TO THE
HAINES BOROUGH FROM THE
HAINES ENERGY TASK FORCE**

FEBRUARY 2008

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I. A LETTER TO THE CHILKAT VALLEY FROM THE HAINES ENERGY TASK FORCE

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Dear Fellow Residents of the Chilkat Valley,

In March of 2007 the Haines Borough Assembly empowered the Haines Energy Task Force to investigate the implications of a decline of world oil supplies to the economy and security of the Borough and its inhabitants. This report examines the current understanding of the concept of Peak Oil and details the findings of the Task Force regarding possible impacts upon our community. It also includes possible solutions and mitigation strategies that may be appropriate in our community.

In 2005, Robert Hirsch and others published what has come to be known as the "Hirsch Report": Peaking of World Oil Production: Impacts, Mitigations and Risk Management. Since the publication of this report, numerous federal, international, state, and private agencies have added additional support to Hirsch's work. The report was alarming, and as a consequence many communities have begun to prepare for an inevitable shift in energy supplies.

Preparing for a future scenario of shifting energy supplies is a difficult task. There are numerous uncertainties, ranging from supply estimates for current reserves, to potential undiscovered deposits, to technological innovations in recovering existing reserves. It is also unclear how additional energy sources such as solar, wind, tidal and others may mitigate the decline in petroleum supplies. To this list of uncertainties we can also add the implications of political instability and volatility, and unseen effects of social responses to energy constraints. It is because of these uncertainties, and many more that are mentioned in this report, the reader should understand that this is a changing landscape that will evolve as events unfold. It must also be clear to the reader that this evolution is likely to be at a pace unseen in historic times. The writers of this report hope that the information presented here will be helpful as we enter these challenging times.

Sincerely, and on behalf of the Haines Energy Task Force,

John Norton

II. INTRODUCTION

*“Crude Oil –
Uncertainty about future
oil supply makes it
important to develop a
strategy for addressing a
peak and decline in oil
production.”*

United States Government
Accountability Office,
Report GAO-07-283,
February 2007.

Uncertainties in the world energy markets are posing significant, accumulating risks to the Haines Borough. With increasing frequency, credible experts are warning that the world is rapidly approaching, or has reached, a peak of oil and natural gas production. Additionally, other significant issues are complicating the future ability to produce and distribute sufficient amounts of affordable petroleum in a sustainable manner to satisfy escalating world demand.

This report examines these energy issues, the potential implications, and addresses the expected impacts to the Borough of Haines. More importantly, however, the report identifies strategies for the Borough to capitalize on inherent local strengths and potentials while utilizing new and evolving technologies to mitigate the negative impacts.

It must be stated at the outset that this report is only a first step. Rapidly changing global events, developing technologies or a changing regulatory environment may necessitate the evolution of strategies and plans identified within this report. Leaders, planners, and citizens within the Borough should frequently readdress the recommendations and action plans to ensure a successful transition to the new energy realities

“In the decades ahead, we do not know precisely when, we shall reach a point, a plateau or peak, beyond which we shall be unable further to increase production of conventional oil worldwide. We need to understand that problem now and to begin to prepare for that transition.”

J. R. Schlesinger, former Secretary of Energy, Secretary of Defense, CIA Director, and AEC Chairman, in a statement made before the Committee on Foreign Relations, United States Senate, 16 November 2005.

<http://foreign.senate.gov/archives/2005/archive111605.ram> (link to video)

III. SUMMARY OF RECOMMENDATIONS AND ACTIONS

“Local government can no longer make policy decisions based on the obsolete assumption we will always have abundant quantities of affordable energy.”

Ronald R. Cooke,
Economist
[State of the Region Report](#),
December 6, 2007
<http://www.scag.ca.gov/sotr/>

RECOMMENDATION 1:

Take immediate action to reduce dependence on fossil fuels and increase community sustainability based on the recommendations of the Haines Borough Energy Task Force.

REC. 1 - ACTION 1: RESOLUTION

Adopt an enabling resolution. See the draft Haines Borough Assembly Energy and Community Sustainability Resolution – Appendix A.

REC. 1 - ACTION 2: COMMISSION

Establish a 9-member *Energy and Community Sustainability (ECS) Commission* to support and advise the Borough on energy security and community sustainability.

REC. 1 - ACTION 3: STAFF

Provide staff to help the Energy and Community Sustainability Commission carry out its responsibilities.

REC. 1 - ACTION 4: FUND

Establish an “Energy Transition and Community Sustainability Fund” to assist with funding programs and necessary infrastructure and technologies.

RECOMMENDATION 2:

The Haines Borough will lead the community in the overall reduction of fossil fuel use to decrease dependence on oil, save money, lower greenhouse gas emissions, and reduce the export of wealth from the community.

REC. 2 - ACTION 1: IDENTIFY

Identify inefficient and wasteful use of energy using energy auditing of Borough facilities and operations and encourage homeowners and business operators to do the same.

“Prudent risk management requires the planning and implementation of mitigation well before peaking. Early mitigation will almost certainly be less expensive than delayed mitigation.”

R.L. Hirsch et. al,
[Peaking of World Oil Production: Impacts, Mitigation, and Risk Management](#), US Department of Energy, National Energy Technology Laboratory, February 2005.

REC. 2 - ACTION 2: EDUCATE

Establish community-wide energy education and awareness campaigns that will target energy conservation and efficiency via local media.

REC. 2 - ACTION 3: INCENTIVES

Develop financial incentives for residents to invest in energy conservation and energy efficient technologies.

REC. 2 - ACTION 4: NON-TRADITIONAL TRANSPORTATION

Increase community use of pedestrian, bike, and non-carbon fueled transportation.

REC. 2 - ACTION 5: MOBILITY MANAGEMENT

Support programs and activities that reduce the number of vehicles transporting less than three people more than twenty miles round trip daily (as stated as a goal of the *Haines Borough Coordinated Transportation Plan, December 12, 2007*, page 1).

REC. 2 - ACTION 6: EXPAND RECYCLING

Support expanded recycling.

REC. 2 - ACTION 7: REDUCE ENERGY USE

Reduce fossil fuel used by the Haines Borough government.

RECOMMENDATION 3:

Lead in the development and use of local, sustainable, and renewable energy sources.

REC. 3 - ACTION 1: IDENTIFY

Identify potential local renewable energy sites and sources.

REC. 3 - ACTION 2: SECURE

Secure renewable energy sites for future use.

REC. 3 - ACTION 3: DEVELOP

Support the development of local renewable

“Peaking of conventional oil production is almost certain to occur soon enough to deserve immediate and serious attention.”

Green, D., Oak Ridge National Laboratory energy analyst, *“Have we run out of oil yet? Oil Peaking from an Optimist’s Perspective,” Energy Policy 34, 2006.*

energy sites and sources, and infrastructure ensuring that supply and demand can be met.

REC. 3 - ACTION 4: ASSIST CONSUMERS

Support programs that would assist in the acquisition of technology required to fully utilize renewable energy sources.

RECOMMENDATION 4:

Plan and prepare for energy shortages.

REC. 4 - ACTION 1: MEASURE ENERGY

Conduct an energy use inventory for propane, electricity, gasoline, diesel fuel, heating fuel, firewood, solar, wind, and hydro, and how these energy sources are used (private, commercial, public, etc.).

REC. 4 - ACTION 2: PLAN FOR SHORTAGES AND DISRUPTION

Ensure that the Local Emergency Planning Committee (LEPC) has developed contingency plans to address a “long emergency” brought about by oil supply constraints lasting months or years.

REC. 4 - ACTION 3: COMMUNICATE WITH SUPPLIERS

Open official lines of communication between Borough leaders and suppliers of energy of all types to regularly assess the status of supplies, sources, and delivery infrastructure.

RECOMMENDATION 5:

Identify, protect, and preserve areas appropriate, accessible, and/or essential for local food production and gathering, and ensure access to these areas.

REC. 5 - ACTION 1: IDENTIFY

Identify areas appropriate, accessible, and/or essential for a pure, clean, adequate water supply; for agriculture; and for the sustainable gathering of wild food, including berries, fish,

“If we humans do not choose to act, Earth is poised to make the choice for us by forcing the mother of all market corrections... . In everyday language, we humans have used cheap oil subsidies to create economics and lifestyles that depend on the unsustainable consumption of Earth’s resources... .”

David C. Korten, 2006, [The Great Turning from Empire to Earth Community](#), Berrett-Koehler Publishers, Inc., Berkeley, CA , p. 81.

and game.

REC. 5 - ACTION 2: PRESERVE

Protect and preserve access to the resources identified in *ACTION 1* by designating “Access Corridors” and “Food and Potable Water System Preserves.”

REC. 5 - ACTION 3: ACQUIRE

Seek funding solutions to obtain privately owned agricultural land if a seller is willing to sell to the Borough expressly for the purpose of preserving prime agricultural land resources.

REC. 5 - ACTION 4: MEASURE

Determine how much food Haines needs to raise in order to be self-sustaining.

RECOMMENDATION 6:

Encourage and support development and enhancement of local food production, processing, and storage

REC. 6 - ACTION 1: LAND CLASSIFICATION

Request the Planning Commission to study the feasibility of permitting “agriculture, personal use,” “animal husbandry,” and “crop production” as uses by right (UBR) or as conditional uses (CU) in all land use zones. See Haines Borough Code Title 18.70.030-040.

REC. 6 – ACTION 2: INCENTIVES

Create financial incentives using tax policy or other creative solutions to foster development of local food production.

REC. 6 – ACTION 3: LEASE BOROUGH LANDS

Explore options to lease Borough lands for activities such as Community Supported Agriculture (CSA’s), small farms, and school gardens.

REC. 6 – ACTION 4: COMMERCIAL COMPOST

“While growth has 500 years on its side, the downside of the curve is a vastly different world... . Our life-style is up for re-definition.”

Richard Lamm, former Governor of Colorado, at the first conference of ASPO-USA, November 2005.

<http://www.globalpublicmedia.com/articles/573>

Encourage local production of non-toxic organic compost. Consider composting opportunities for local non-profits, local sanitation companies, and the Borough Water and Sewer Department.

REC. 6 – ACTION 5: FOOD STORAGE

Explore opportunities to develop community food storage facilities located in strategic areas designed to minimize transportation costs.

REC. 6 – ACTION 6: EDUCATE

Partner with other entities to educate citizens about gathering, growing, processing, preserving, and preparing local foods.

RECOMMENDATION 7:

Ensure all members of the community have access to food and water resources.

REC. 7 – ACTION 1: PLAN FOR FOOD SHORTAGES

Task the LEPC (Local Emergency Planning Committee) to develop and/or enhance contingency planning measures to prioritize food security in the event of oil supply constraints.

REC. 7 – ACTION 2: FOOD ASSISTANCE PROGRAMS

Help local food assistance programs develop plans to prepare for an anticipated increased demand for food from a larger percentage of the population.

REC. 7 – ACTION 3: ACCESS TO WILD FOOD

Work with the Planning Commission and state and federal agencies to ensure wild food sources (game, berries, fish) are managed for sustainability and equal access, with subsistence use given priority over commercial use.

RECOMMENDATION 8:

Promote the local economy through education and awareness of an energy transition while developing and actively supporting local marketing strategies

“We do not know what form a crisis over oil will take, but we know that a crisis is coming – one that could harm the United States.”

Robert McFarlane, James Woolsey, Frank Gaffney and 29 other prominent DC insiders, in a letter to President Bush, March 24, 2005.

Linked at
<http://www.secureenergy.org/>

and actively supporting local marketing strategies.

REC. 8 – ACTION 1: BUY LOCAL CAMPAIGN

Encourage local consumption of locally produced and/or processed goods.

REC. 8 – ACTION 2: PUBLIC MARKETS

Provide easily accessible venues for public markets to sell locally produced and processed goods.

REC. 8 – ACTION 3: NEW BUSINESSES

Support new business opportunities emerging from the energy transition.

RECOMMENDATION 9:

Design a safety net to protect vulnerable and marginalized populations, and insure health care and social service providers are prepared for the ramifications of peak oil.

REC. 9 – ACTION 1: EDUCATE

Ensure that local health care and social service providers are educated about how peak oil will affect their ability to provide care.

REC. 9 – ACTION 2: PREVENTATIVE CARE

Support efforts to encourage or mandate preventative care.

REC. 9 - ACTION 3: ASSISTANCE

Work with community members to obtain state and national assistance for low-income households to maintain utility service and to perform weatherization.

REC. 9 - ACTION 4: STAY INFORMED

Stay up to date with current requirements and qualifications for housing, food, and energy assistance programs.

“Given that the average household saving rate in the U.S. is negative, even middle income families have remarkably little capacity to ‘dig into savings’ to sustain their consumer spending. With oil jumping to \$120 a barrel, household energy bills will roughly double to about \$6,000 a year, or about 15% of total annual income for the median family. Most families will have little choice but to sharply curtail other spending. This same pattern will be mimicked around the world.”

Robert F. Westcott,
“What Would \$120 Oil Mean for the Global Economy?”, Securing America’s Future Energy, Washington, DC, April 2006.

RECOMMENDATION 10:

Seek funding for education and training opportunities for community members seeking careers emerging from an energy transition.

REC. 10 – ACTION 1 : APPRENTICESHIPS

Support and foster the development of local apprenticeship programs.

REC. 10 – ACTION 2: LOCAL POST-SECONDARY CAMPUS

Partner with educational institutions to develop a Haines campus offering professional development courses and training regarding emerging technologies in renewable energy, energy conservation, and energy efficiency.

REC. 10 - ACTION 3: GRANTS

Seek funding for educational grants to train those who will commit to return to Haines, in emerging careers in renewable energy and energy conservation and efficiency.

RECOMMENDATION 11:

Ensure that access to information, cultural activities, and the arts is maintained.

REC. 11 – ACTION 1: EDUCATE

Ensure that program and facility managers are educated about upcoming energy challenges.

REC. 11 – ACTION 2: CONSERVE

Support energy conservation and efficiency measures developed by program and facility managers.

REC. 11 – ACTION 3: FUND

Support efforts to develop supplemental funding sources developed by program managers.

REC. 11 – ACTION 4: USE RENEWABLE ENERGY

Explore options to reduce the exposure of these facilities to fossil fuels by installing technologies that use local renewable energy sources.

*REC. 11 – ACTION 5: PRESERVE THROUGH
CONSOLIDATION*

Consider creative options for consolidating services and information within these facilities should severe shortages or long-term price increases threaten the existence of these entities.

“The challenge over the next several decades is to manage the consequences of unavoidable dependence on oil and gas that is traded in world markets and to begin the transition to an economy that relies less on petroleum. The longer the delay, the greater will be the subsequent trauma. For the United States, with 4.6 percent of the world’s population using 25 percent of the world’s oil, the transition could be especially disruptive.”

National Security Consequences of U.S. Oil Dependency, Independent Task Force Report No. 58, sponsored by the Council on Foreign Relations, Inc. 2006, NY, NY. Online at <http://www.cfr.org/content/publications/attachments/EnergyTFR.pdf>.

IV. PEAK OIL: AN EXPLANATION

“For decades, the world has been consuming increasingly more oil than it has been finding. Because oil is a depleting natural resource, world conventional oil production will reach a maximum, called “the peak,” after which production will go into decline.”

Robert L. Hirsch,
[Peaking of World Oil Production: Recent Forecasts](#),
February, 2007. p. 6.

It may seem unnecessary to point out that the development of our modern society has occurred via the vehicle of cheap and abundant energy, however at this time, this fundamental statement is critical in framing our immediate future.

Historians point out that the harnessing of wind energy spurred the Dutch to world leadership in the 17th century, while England used the energy of coal to establish dominance of the world in the 18th and 19th centuries. It was also their down fall as they remained tied to this resource when a much higher quality of energy ignited the next wave of industrial development.

Oil, at first in the form of whale oil, and later in the form of petroleum, led the United States to world dominance in the 20th century. What will occur in the 21st century remains to be seen, but one point is absolutely clear - the scarcity of oil rather than its abundance will direct world affairs.

While there are many examples of how oil has changed our world none is clearer than the change brought about in agriculture. In the second half of the 1800's, approximately 90 percent of our nation was involved in the production of agricultural goods. The use of horses, mules, and oxen provided the power to till and harvest crops. Currently, less than 1 percent of our population is engaged in farming, and this tiny fraction is able to provide vast surpluses to feed the world, owing mostly to pesticides, fertilizers, and mechanized farm implements - all based on an oil foundation.

85 MILLION BARRELS OF OIL EVERY DAY

The world consumes 85 million barrels of oil **every day**. The super-giant oil fields of Prudhoe Bay with reserves of 10 billion barrels of oil could supply the world's oil needs for about 117 days at today's rate of use. While it's difficult for most people to grasp the enormity of this consumption, it's not difficult to grasp that at some point we will run out of this resource.

“It’s very unlikely that we’re going to be able to see [oil] supply in the world grow from the levels where we are right now.”

Former Commerce Secretary Don Evans (George W. Bush Administration), on *Hardball* with Chris Matthews, February 2, 2006.

this resource.

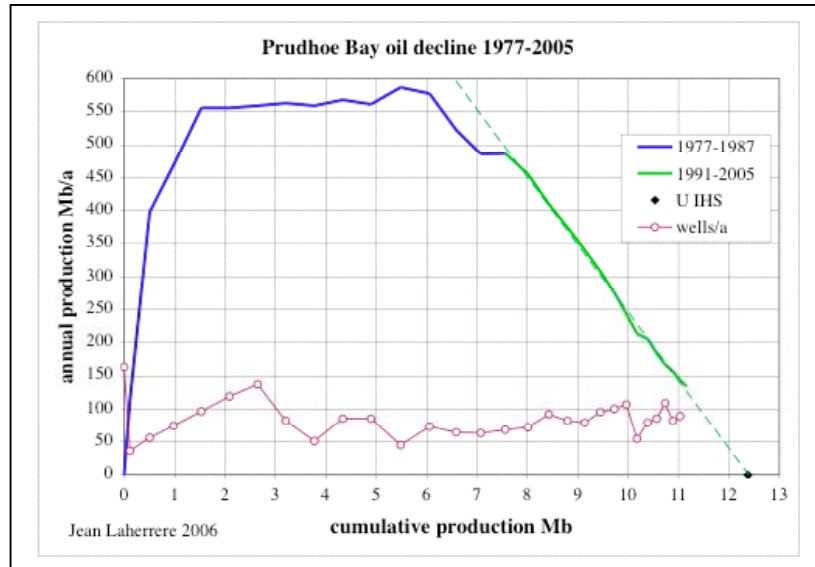
WHAT IS PEAK OIL?

Peak oil describes that point when the amount of oil we are able to pump from the earth begins to decline from its highest level of production. This is easily seen on any oil well production curve, where flows increase to maximum rates, and then reach zero when the well is dry.

Recognizing the peak foretells the eventual decline of a well or field.

The vast oil field at Prudhoe Bay is a perfect example of the peak oil paradigm, as depicted in the production graph below. Beginning in 1977, production quickly rose to maximum levels before beginning to decline in 1987. As of January 2008, Prudhoe Bay fields are in an annual rate of decline of 8 per cent, with production now reduced to less than a quarter of its peak flow. The remaining life of this field is quite short.

Prudhoe Bay Oil Production decline 1977-2005



Association for the Study of Peak Oil (ASPO), Jean Laherrere, *Uncertainty on Data and Forecasts*, July 2006, pdf downloaded from www.oilcrisis.com/laherrere/ASPO2006-JL-long.pdf.

Similar graphs depict the decline of the vast North Sea oil fields, the Cantarrel field of Mexico, and numerous other fields that are also facing rates of decline of 8 percent or more per year.

“Peak oil will affect more people in more places in more ways than anything else in the history of the world.”

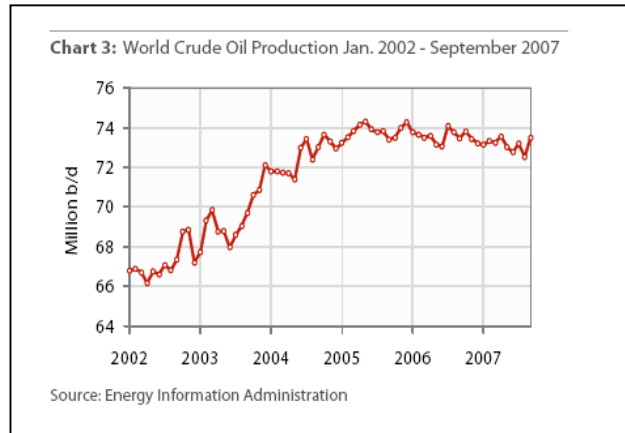
Walter Yonguist,
Professor Emeritus,
University of
Oregon, at first
ASPO-USA
Conference,
Denver, November,
2005

Could some other oil field, such as ANWR (Arctic National Wildlife Refuge) provide a similar amount of resource volume as seen at Prudhoe?¹ Experts agree that this is very unlikely. In the parlance of oil geologists, “There aren’t any more big elephants out there.”²”

WHAT ABOUT NEW DISCOVERIES?

While exploration companies continue to discover oil, the fields tend to be more difficult to access, more expensive to bring to market, and smaller in recoverable oil reserves. All of the world’s super-giant fields were identified in the late 1960’s and no others have been found in the past 40 years. An excellent example of how this is being played out today is the number of deep sea drilling rigs probing the oceans’ deepest basins in hopes of finding significant reserves. These rigs currently contract out for \$500,000 per day, some working at water depths greater than 9000 feet.

These staggering costs underscore the determination required to establish new oil finds. Even with such heroic effort, new reserves have



failed to keep pace with increasing world demand. **Simply stated, we are using more oil than we are finding.**

WHEN WILL OIL PEAK?

Numerous reliable sources indicate that the world is at or near peak oil.³ As seen in the graph, global crude oil production has been in decline since May of 2005. In its October 2007 report, ***Crude Oil – The Supply Outlook***, the Energy Watch Group’s key finding of global oil production was that “Peak oil is now” (p.12). A number of the world’s largest oil fields are in steep decline, and in many others, mitigation of the production decline curve can only occur

“...there are a lot of uncertainties about when the peak will occur, ...probably the biggest uncertainties have less to do with how much oil is under the ground rather than risks above ground.”

Congressman
Roscoe Bartlett, R-
MD,
[Congressional
Record](#), GAO
Report on Peak Oil,
March 29, 2007, p.
22

through the use of Enhanced Oil Recovery (EOR) techniques, which are expensive and energy intensive. **While it may be premature to say that oil production has definitively peaked, it is generally accepted that we have reached the end of the era of cheap and abundant petroleum oil.**

WHAT ABOUT ALTERNATIVE FUELS?

In the short-term, alternatives (bio-diesel, ethanol, hydrogen, solar, wind, bio-mass, etc.) may offset some or most of the shortfall between production and demand. However, many analysts are skeptical that alternatives alone can make up the future shortfall expected by peaking conventional oil production.⁴ They argue that both supply and demand side measures will be required. Additionally, “mitigation will require a minimum of a decade of intense, expensive effort, because the scale of liquid fuels mitigation is inherently extremely large”. (Hirsch, R.L., 2005, pg 5).

WHAT ABOUT THE CANADIAN TAR SANDS?

The tar sands in Alberta, Canada are the largest contributor to what is called “unconventional oil,” but nonetheless contribute less than 3 percent of world liquid fuel supplies (Hirsch, R.L., 2007, p. 9).

Future tar sands production estimates have been revised downward by 200,000 barrels per day by 2015 due to constraints in human resources and increased production costs⁵. Infrastructure problems and limitations in the energy and water resources needed also limit long-term tar sands production. There is also some question about whether the extraction of this oil “pencils out” in terms of energy expended for energy gained⁶.

WHAT ABOUT LETTING THE “MARKET” CORRECT FOR SUPPLY AND DEMAND?

The argument has been made that the “market” will take care of the problems by supply and demand economics. However, due to the essential role oil plays in the economies of the world, and the fact that alternatives or mitigation programs are estimated to take decades to fully

Iran, Iraq, Nigeria, and Venezuela possess proven oil reserves greater than 10 billion barrels but they also face high levels of political risk. The US imported 5.4% of its 2006 oil from Iraq, 10.25% from Nigeria, and 11.29% from Venezuela.

US [GAO-Report](#), February, 2007.

develop, the market signals will likely come too late – the crisis will have already developed (see “Hirsch” report, 2005). Therefore, the problem is one of **time**. Additionally, the socio-economic costs of rising prices and threats to availability tend to disproportionately affect the poorest members of society first and the hardest. As the Hirsch report puts it, “without timely mitigation, the economic, social and political costs will be unprecedented” (Hirsch, R.L. 2005, pg. 4).

OTHER FACTORS THAT CONTRIBUTE TO THE UNCERTAINTY OF OIL SUPPLIES

ESCALATING GLOBAL DEMAND. Developing nations, especially Brazil, China, and India, are consuming more and more of the global liquid fuel supply. Additionally, rising demand from the oil producing nations themselves is limiting the amount available for export. Jeff Rubin, chief economist at CIBC World Markets, reports that export capacity of OPEC, Russia and Mexico, representing 60% of current world oil production, “will fall 2.5 million barrels a day by the end of the decade as soaring domestic demand cannibalizes export capacity.”⁷

GEOPOLITICAL CONCERNS. The Government Accountability Office acknowledges “oil production could be shut down by wars, strikes, and other political events, thus reducing the flow of oil to the world market...” (GAO, Feb. 2007, p. 21).

An additional threat to stable world oil markets is a phenomenon known as Resource Nationalism. Most Americans are familiar with this concept as witnesses to the nationalization of Venezuela’s oil resources in February 2007. At that time independent oil companies such as Exxon and others saw their investments in Venezuela taken from them and transferred to Venezuela’s national oil company. Analysts suggest that the nationalization of resources is significant in two respects. First, it removes the market force that will be needed in time of shortage. The second point has to do with the chilling effect on resource development since newborn national oil companies are often corrupt and unable to undertake the technological challenges of oil production. In either event, the outcome is less oil.

The United States is vulnerable to these political disruptions because it imports more than half the amount of oil it consumes.⁸

INFRASTRUCTURE VULNERABILITY. Even if there were plenty of petroleum and natural gas in the ground, acquisition and distribution depend on viable infrastructure. Analysts point out that global and US infrastructure, both physical and human, is aging. Corrosion shut down the Alaska pipeline in August 2006. Oil production was reduced by 400,000 barrels per day or about 2.6 percent of US supply including imports. Infrastructure is vulnerable to terrorism as well as international and civil wars. Unpredictable acts of nature, like Hurricane Katrina, can also incapacitate infrastructure. Specific examples of these vulnerabilities and the effect on the oil supply are described in the Endnotes⁹.

THE ESSENCE OF THE PROBLEM

Peak oil is a “liquid fuels” crisis. It presents significant and severe challenges, specifically to the transportation sector. Due to our reliance on globalized markets, and the very elaborate transportation systems in place, the required time to mitigate this crisis is measured in decades. However, should the world be at or near peak as many analysts believe, hoping for supply-side alternatives may not be an option and immediate demand-side arrangements will now be necessary.

THE HAINES ENERGY TASK FORCE CONCLUDES...

Credible information suggests peak oil is real, imminent and warrants the immediate attention of the Haines Borough. Additionally, other significant issues affecting global energy security add to the extreme urgency of the situation. As events unfold on the national and international stage, so too will these events impact the community of Haines.

Cities, towns, and municipalities that change with the changing energy landscape will prosper, those that don't, won't. HEFT wants Haines to be one of those places that prosper. So Haines has to change.

V. RECOMMENDATIONS AND ACTIONS

The Haines Energy Task Force (HEFT) suggests that the community and the Borough Assembly view the following recommendations and actions as suggestions – not as mandates, with one caveat. The only mandate is the obligation to **ACT NOW**. As HEFT member Leonard Dubber succinctly said: “The towns that are going to survive, are the towns that adjust” (January 29, 2008). While we believe all recommendations should be implemented, implementing **any** will begin that necessary adjustment.

INITIAL MEASURES

National, state, and local governments all over the United States have commissioned groups to advise them about peak oil. Each report urges its parent group to **ACT NOW**.

The Haines Energy Task Force (HETF) concurs with this assessment and urges the Haines Borough Assembly to establish a standing commission dedicated to carry out these recommendations.

RECOMMENDATION 1:
Take immediate action to reduce dependence on fossil fuels and increase community sustainability based on the recommendations of the Haines Borough Energy Task Force.

“Increasing world demand and decreasing supply are early warnings of the larger problem of supply decline and the need to transition away from fossil fuels. As the gap between supply and demand increases, fossil fuels will be so expensive and/or scarce that we

ACT NOW

“Act Big, Act Now....The Task Force is unified in urging strong and immediate action.” City of Portland Peak Oil Task Force, Descending the Oil Peak: Navigating the Transition from Oil and Natural Gas, , Executive Summary, January 18, 2007, p. 2.

“Intervention by governments will be required, because the economic and social implications of oil peaking would otherwise be chaotic.” Hirsch, R.L., Peaking of World Oil Production: Impacts, Mitigation, & Risk Management, Executive Summary, February 2005, p. 5.

“To address this situation, aggressive action must be taken by the government and industry to abate growth in U.S. oil demand and to increase production of fuels from domestic sources.” Task Force on Strategic Unconventional Fuels, America’s Strategic Unconventional Fuels, Volume I – Preparation Strategy, Plan, and Recommendations, Executive Summary, February 2007, p. 1.

will require replacement sources of energy to meet a wide range of our current needs. However ... there is no one easy replacement for fossil fuels, and all the current alternatives added together still fall far short of current (and anticipated) world usage. To have a smooth transition to our new energy future, it is vital that our culture both intensively reduce its total energy needs and develop alternatives, starting at least 10 to 20 years before the oil production peak. Unfortunately, we might now or soon be at the peak, increasing the urgency.” Charting a Path for a New Energy Future for Sebastopol, Maintaining City Municipal Services, April 3, 2007, p. 24.

“Domestic oil production peaked in 1970 and continues to decline. Proved domestic reserve lifetime for oil is about 3.4 years. World oil production is at or near its peak and current world demand exceeds the supply.”

Fournier and. Westervelt, Energy Trends and Their Implications for U.S. Army Installations, Army Corps of Engineers, September 2005, Executive Summary, p. xi. . 2007.

REC. 1 - ACTION 1: RESOLUTION.

Adopt an enabling resolution. See the draft Haines Borough Assembly Energy and Community Sustainability Resolution: Appendix A.

REC. 1 - ACTION 2: COMMISSION.

Establish a 9-member *Energy and Community Sustainability (ECS) Commission* to support and advise the Borough on energy security and community sustainability.

Suggestions for composition and tasks:

The Commission should include of one member of the Haines Borough Assembly, one member of the Planning Commission, and 7 members from the community.

Community members of the commission should have appropriate knowledge and skills

- *to support inquiry and implementation of methods to increase energy efficiency,*
- *to reduce dependence on fossil fuels,*
- *to increase local use of renewable energy,*
- *to increase local production of essential goods and services, including food, and*
- *to mitigate social and health care issues that may arise as a result of economic hardship due to energy related rising costs and scarcities.*

The ECS Commission will track energy and sustainability issues, and advise the Borough as events unfold. As part of this work, it will:

1) Collect key information from a variety of sources on these topics, especially:

“Peak oil will affect more people in more places in more ways than anything else in the history of the world.”

Walter Yongquist, Professor Emeritus of Geology, University of Oregon, at first ASPO-USA conference, Denver, November 2005v

“We have already peaked...Everyone is going to have to come to grips with this in the next two or three years.”

Oil tycoon T. Boone Pickens. **Our medical system: it's time to face peak oil.** Dan Bednarz. 2 Dec 2007. posted on www.energybulletin.net.

a) Ongoing trends in energy supply and demand, and their impact on pricing and availability;

b) Alternative technologies and approaches, for the Borough's needs; and

c) Successful actions taken by other governments and communities that might be useful options for the Borough to address these challenges.

2) Seek funding to encourage proactive and timely implementation of solutions.

3) Report bi-annually or as needed to the Borough Assembly on the status of these energy supply issues and the recommendations in this report.

REC. 1 - ACTION 3: STAFF

Provide staff to help the Energy and Community Sustainability Commission carry out its responsibilities.

Duties to include but not be limited to:

1. Preparing grant applications for such things as alternative energy installations, energy conservation and efficiency upgrades, bike paths, etc.
2. Recording minutes of Commission meetings,
3. Carrying out Commission directives,
4. Facilitating communication between the Commission and the Haines Borough Assembly and other entities.
5. Drafting correspondence, reports, news releases, brochures, fact sheets, opinion pieces, advertising, etc. to help implement energy and food security measures.

REC. 1 - ACTION 4: FUND.

Establish an “Energy Transition and Community Sustainability Fund” to assist with funding programs and necessary infrastructure and technologies.

Possible sources of revenue include:

1. Dedication of a portion of sales tax revenues received from petroleum-based fuel sales.
2. Some community advisory groups (e.g. Willits Economic Localization and Willits Ad-Hoc Energy Group, Willits, CA) suggest adding a half-cent ‘carbon tax’ on all fuels sold

within the municipality. The money raised from this tax may be directed into programs that fund renewable energy installations for community buildings.

“Significantly increased fuel and energy costs combined with high unemployment rates, limited local economies, and local governments struggling to provide basic local services continue to present rural Alaska ...with challenging circumstances with no long-term solution in sight.”

Current Community Conditions: Fuel Prices Across Alaska, June 2007 Update, Alaska Department of Commerce, Community, and Economic Development, August 2007, p. 7

ADDRESSING ISSUES AFFECTING ENERGY SECURITY

Despite the energy crisis of the 70's, the US continues to increase its imports of foreign oil – from 25% in the 1970's, to 40% in the 1980's, to presently 63.5%. Right now, oil provides the lion's share of US energy: oil – 40%, gas –23%, coal –23%, nuclear 8%, other – 6%¹⁰.

But energy security in the 21st century goes beyond “breaking an addiction to oil” (President George W. Bush, State of Union Address, 2006). According to Dr. Daniel Yergin, Chairman, Cambridge Energy Research Associates, the concept of energy security must be updated to include diversifying supply, a buffer against shocks, recovery after disruptions, quality information, renewing of the commitment to energy efficiency and conservation, and the developing and deploying of new technologies¹¹.

AN EXAMPLE OF ENERGY DISRUPTION.

“November 9, 1965, Toronto, Canada went black. Then, Boston, New York and other cities along the North American east coast, large and small, went dark. In just 13 minutes...80,000 square miles and over 30 million people were without electricity.

Luckily, with a few days, the power grid was up and running again. But, within those few days civilian and military leaders saw signs of the economy coming to a halt; society beginning to unravel; increasing violence; and the political system beginning to break down.”

(http://www/eceme.ension.eb.br/eventos/7ciclo/palestras/energy_security_united_states_ppt).

Recommendations 2 through 4 were developed to ensure energy security for the Haines Borough.

RECOMMENDATION 2: The Haines Borough will lead the community in the overall reduction of fossil fuel use to decrease dependence on oil, save money, lower greenhouse gas emissions, and reduce the export of wealth from the community.

“Conservation and efficiency increases are by far the most effective means of reducing cost to the individual, reducing emissions and reducing fuel usage. The beauty of increasing efficiency is we can start today. With available know-how one can immediately start to save money on our utility and ... heating bills. There are a multitude of simple measures that range in price and energy savings. Education is key to producing these energy savings, so the casual implementer will know what measure will provide the best bang for their buck. Efficiencies can happen at all levels, from installing compact fluorescent light bulbs to installing

the most efficient combined cycle gas turbine.” – Fairbanks Energy, November 2007, Strategic Business Plan, p. 29.

“High energy costs are one of many factors leading a noticeable number of rural residents to desert their homes for larger communities.”

adn.com | our view : [Fuel costs strap the Bush. Bright side? Those high prices drive search for alternatives](#) Published: December 18, 2007

REC. 2 - ACTION 1: IDENTIFY

Identify inefficient and wasteful use of energy using energy auditing of Borough facilities and operations and encourage homeowners and business operators to do the same.

Three examples:

1. Seek funding to sponsor a workshop or class to educate contractors and homebuilders on Alaska’s Building Energy Efficiency Standards (BEES) and how to use the AKWarm software for determining a building’s thermal energy requirements¹².

2. Seek funding to bring an AKWarm certified technician to Haines to conduct home energy audits or workshops to show homeowners where their homes are losing heat and how to make them more efficient. There are three licensed technicians in Juneau.¹³

REC. 2 - ACTION 2: EDUCATE

Establish community-wide energy education and awareness campaigns that will target energy conservation and efficiency via local media.

Seven examples:¹⁴

1. Seek funding to publish Energy Conservation Tips in the Chilkat Valley News (CVN).¹⁵

2. Seek funding for enhanced PSAs about energy conservation and efficiency run daily on KHNS.

3. Seek funding for a weekly radio segment on energy conservation to be aired on KHNS¹⁶.

4. Showcase local energy efficient projects at the Southeast Alaska State Fair possibly in conjunction with an Energy Fair to show applications of renewable energy technology.

“The impact of excessive, unsustainable energy consumption may undermine the very culture and activities it supports...The days of inexpensive, convenient, abundant energy sources are quickly drawing to a close.”

Donald F. Fournier and Eileen T. Westervelt, Energy Trends and Their Implications for U.S. Army Installations, Army Corps of Engineers, September 2005, p. xi

5. Stimulate interest in using renewable energy by posing a challenge to the community to generate a certain percentage of its energy through renewable sources¹⁷.

6. Link the Borough website to energy efficient home building/renovating sites such as the Green Home Guide from US Green Building Council
<http://www.greenhomeguide.org/>

7. Provide each building permit applicant with a checklist of energy efficient elements¹⁸.

REC. 2 - ACTION 3: INCENTIVES

Develop financial incentives for residents to invest in energy conservation and energy efficient technologies.

Two examples:

1. Exempt local sales tax for the purchase of energy saving and renewable energy technology.
2. Provide property tax credit for local homes and businesses that convert from fossil fuel based energy to local renewable energy. Conversely, exempt the value added by the addition of renewable energy technology from property tax.

REC. 2 - ACTION 4: NON-TRADITIONAL TRANSPORTATION

Increase community use of pedestrian, bike, and non-carbon fueled transportation.

Seven examples:

1. Request the Planning Commission identify continuous, connected, and safe non-motorized corridors in the town site and to the town site from outlying areas.
2. Develop the corridors identified in 1 above.
3. Request that the Planning Commission consider transportation efficiencies and the transportation costs incurred by “sprawl” when making land use planning and zoning recommendations.

“When it comes to drastically reducing oil use, the only short-term option is mode shifting: Carpooling, Biking, Public Transport, and Walking. Ironically, even before oil prices rise, mode shifting has gigantic societal benefits in terms of cost, health, and safety.”

[Investing in Mode Shifting, Preparing for a Peak Oil World Alt Energy Stocks at http://Altenergystocks.com/Archives/2007/10/investing](http://Altenergystocks.com/Archives/2007/10/investing)

4. Seek funding for covered, locking bike racks at convenient locations through the town-site and “park and bike” areas at the three major town-site entry points (Haines Highway, Lutak, and Mud Bay)

5. Provide bikes for public use (perhaps funded through a collaborative grant with SEARHC or through the Police Department’s abandoned or stolen bicycles)

6. Seek funding for installing charging stations for Neighborhood Electric Vehicles (NEV’s) and other vehicles powered by renewable energy.

7. Lobby the state for changes in State Department of Transportation road regulations pertaining to vehicles such as NEVs.¹⁹

REC. 2 - ACTION 5: MOBILITY MANAGEMENT

Support programs and activities that reduce the number of vehicles transporting less than three people more than twenty miles round trip daily (as stated as a goal of the Haines Borough Coordinated Transportation Plan, December 12, 2007, page 1).

Two examples:

1. Open discussion between the Haines Borough, the Haines Borough School District, the Chatham School District, and the Alaska Department of Education’s Pupil Transportation Program to discover how to amend the program to increase the public’s use of these transports and to decrease transportation duplication as described in the Haines Borough Coordinated Transportation Plan strategy section (pages 8, 10).

2. Apply for state or federal funding for a community Mobility Manager position to coordinate transportation information and arrangements for residents as described and recommended in the Haines Borough Coordinated Transportation Plan, pages 9 and 10.²⁰

“It takes 95% less energy to recycle aluminum than it does to make it from raw materials.

Making recycled steel saves 60%, recycled newspaper 40%, recycled plastics 70%, and recycled glass 40%. These savings far outweigh the energy created as by-products of incineration and land filling!”

National Recycling Coalition

REC. 2 - ACTION 6: EXPAND RECYCLING

Support expanded recycling.

Three Examples:

1. Work with private and non-profit entities to establish curbside pick up for recyclable materials²¹.
2. Work with existing entities to expand recycling to include burned out compact fluorescent bulbs (CFLs),²²and "white goods."²³
3. Recycle construction and demolition debris(C&D) (concrete, asphalt, drywall, wiring, piping).²⁴
5. Support expansion of the electronic waste recycling program.²⁵

REC. 2 - ACTION 7: REDUCE ENERGY USE

Reduce energy used by the Haines Borough government.

Ten examples:

1. Develop a Borough energy budget that provides quantity (e.g. in kilowatt hours, gallons, therms) and dollars spent for each energy and fuel source by department and month for the previous fiscal year.
2. Require the Borough government as a whole to meet vehicle and heating fuel reduction targets of 4% annually or an overall reduction of 30% by the year 2015 relative to the baseline of the Borough's vehicle and fuel use for FY 2007²⁶.
3. Develop a data tracking and analysis system to monitor progress towards this goal. (The ICLEI software described in Recommendation 4, Action 1 will enable tracking and progress monitoring).
4. Change lighting in public buildings to compact fluorescent light bulbs (CFL).²⁷
5. Change streetlights to Light Emitting Diode (LED) technology. An average LED streetlight has about 240 LEDs and draws about 19 watts. They last anywhere from 5 to 10 years without any maintenance. These savings offset the initial costs of purchase and installation.

*“The cheapest
unit of energy is
the one not
used.”*

Fairbanks
Energy,
November 2007,
Strategic
Business Plan,
p.29

6. Replace office equipment, heating and lighting, and major appliances with EPEAT registered or Energy Star rated products.²⁸.

7. As Borough vehicles are retired, analyze the cost/benefit of replacing vehicles with new efficient technologies such as hybrid or fully electric vehicles. Factor in rising price of petroleum.

8. Study the feasibility of using local sources of energy to heat buildings. Consider field proven wood energy systems such as the installation of a wood fired heating system in Craig, Alaska²⁹, to heat the Craig swimming pool and elementary school.

9. Consider the biodigester³⁰ proposal from Willits, CA for heating the sewage treatment plant.

10. Use an established a set of guidelines for energy efficient construction. Require that any new public construction or major renovation comply with guidelines.

According to US DOE our buildings consume:

- 37% of all energy used in the United States
- 68% of all US electricity used
- 12% of freshwater supplies
- 88% of potable water supplies
- 40% of all raw materials



RECOMMENDATION 3: Lead in the development and use of local, sustainable, and renewable energy sources.

Using figures in the FY07 and FY08 Borough budget the cost of heating borough facilities rose by 32% while electricity costs remained steady.

| Estimate of \$ spent on electricity and heating fuel for borough facilities (not including the school district) | | |
|--|--------------------|---------------------|
| <u>FY</u> | <u>Electricity</u> | <u>Heating Fuel</u> |
| 07 | \$114,236 | \$97,446 |
| 08 | \$114,650 | \$128,415 |

The Haines Borough can mitigate the rising cost of heating fuel by planning to meet municipal energy needs with energy sources that do not depend on fossil fuel.

“... a peak in oil production presents problems of global proportion whose consequences will depend critically on our preparedness. The prospects will be most dire if a peak occurred soon...because alternative energy sources...are not yet available in large quantities.”

CRUDE OIL – Uncertainty About Future Oil, Government Accountability Office, 2007.

REC. 3 - ACTION 1: IDENTIFY.

Identify potential local renewable energy sites and sources.

Utilize public and private information sources such as the Alaska Energy Authority (AEA)(www.akenergyauthority.org/).³¹

REC. 3 - ACTION 2: SECURE.

Secure renewable energy sites for future use.

Suggestion:

Establish a zoning classification for energy “preserves” and associated infrastructure access corridors.

REC. 3 - ACTION 3: DEVELOP.

Support the development of local renewable energy sites and sources, and infrastructure ensuring that supply and demand can be met.

Four possible strategies:

1. Partner with private and non-profit entities. For example, work with AP&T to determine the capacity of the existing hydroelectric infrastructure to meet increased demand created by Haines residents switching to electrically heated homes and hot water systems. Could significant increased

“As peaking is approached, liquid fuel prices and price volatility will increase dramatically, and without timely mitigation, the economic, social, and political costs will be unprecedented. Viable mitigation options exist on both the supply and demand sides, but to have substantial impact, they must be initiated more than a decade in advance of peaking”

U.S. Department of Energy sponsored report: [Peaking of World Oil Production: Impacts, Mitigation and Risk Management](#). The “Hirsch” report. Feb 2005. Pg. 4.

homes and hot water systems. Could significant increased demand enable AP&T to lower their rates? Consumers who heat water with oil would then be able to shut down their oil furnaces seasonally.

2. Explore the option of establishing and/or joining local or regional energy co-ops.

3. Identify and apply for federal and state funds to develop alternative renewable energy sites and infrastructure.

4. Lobby for pro-active statewide legislation that supports and provides state funding for development of local, sustainable renewable energy.

REC. 3 - ACTION 4: ASSIST CONSUMERS

Support programs that would assist in the acquisition of technology required to fully utilize renewable energy sources.

Examples of strategies:

1. Identify and seek funding for “pilot projects” to utilize local source renewable energy sources.

2. Establish criteria for local installation of renewable energy technology that would qualify for sales tax and property tax exemptions.

3. Lobby for state legislation that provides funding for end-user access to the technology and infrastructure needed to utilize local, sustainable, renewable energy.

“Christy Tengs Fowler said electricity and fuel costs were ‘huge’ in her decision to close the Pioneer Bar and Bamboo Room for dinner hours during the winter. ‘We used to heat with propane but we switched over to oil because it was cheaper, but oil got more and more to the point that it doesn’t even matter.’”

“Fuel Costs Drive Winter Closures,” Tom Morphet, [Chilkat Valley News](#), November 15, 2007, Vol. XXXVII

RECOMMENDATION 4: Plan and prepare for energy shortages.

Compounding a reduction in the supply of liquid fuels and predictable price escalation, natural and political events can create sudden price-spikes or cut off supplies all together. This can seriously disrupt the government’s ability to provide basic services (police, ambulance, fire, education, road and building maintenance, administration). The Haines borough should have contingency plans in place to address these logistical challenges as well as the public unrest and panic that can occur during shortages. Plans should address shortage situations that persist well beyond the short-term events for which emergency agencies typically prepare.

“You can’t manage what you don’t measure.”

-An old management adage.

REC. 4 – ACTION 1: MEASURE ENERGY

Conduct an energy use inventory for propane, electricity, gasoline, diesel fuel, heating fuel, firewood, solar, wind, and hydro, and how these energy sources are used (private, commercial, public, etc.)

Purchase software specialized for measuring amount of energy used community-wide:

The Clean Air and Climate Protection (CACP) software is provided through membership in ICLEI – Local Governments for Sustainability. This software assists in inventorying the energy used in municipal buildings, vehicles, outdoor lighting, and water and sewer and waste; and in a community-wide inventory of residential, commercial, transportation, and waste disposal energy use. The software calculates energy and cost savings associated with the above dimensions as energy conservation measures are applied. Juneau, Fairbanks, Anchorage, Homer, and Kenai are members of ICLEI. Communities join for a one-time fee of \$600, which includes the software.

REC. 4 – ACTION 2: PLAN FOR SHORTAGES AND DISRUPTION.

Ensure that the Local Emergency Planning Committee (LEPC) has developed contingency plans to address a “long emergency” brought about by oil supply constraints lasting months or years.

Consider the following initiatives:

- 1. Using the information from an energy use inventory (Action 1), have strategies in place for a rapid reduction of fuel use*

“Energy price spikes and supply disruptions could prevent your municipality from continuing normal operations. The municipality has a responsibility to recover in the minimum amount of time, with minimum disruption and at minimum cost. This requires careful preparation and planning.”

<http://energypreparedness.net/services>

fuel use.

2. Assess current Borough fuel supply levels and procedures. Determine if the Borough should increase minimum levels maintained in storage tanks or establish additional backup sites. Remember that the borough must rely on diesel when and if the hydro feed is interrupted. Interruptions could occur as a result of seismic events or even over-demand.

3. Assess the “emergency basis only” electrical consumption for each department, how much stand-alone backup electrical generation capacity is currently in place, and where this backup power is located. Determine what amount of downtime that backup power covers, and decide if the Borough wants to extend the coverage, in case of longer-term outages of the grid and/or shortages in the supply of other energy sources.

4. Determine if backup generators could use alternative fuels (for instance, bio-diesel for diesel engines, and ethanol for gasoline engines.) Assess costs and benefits.

5. To prepare for fuel constraints, prioritize which vehicles to send out, based on energy supplies and vehicle mileage rate. This could provide savings compared to sending out more vehicles than necessary.

6. Develop a system for allocating emergency fuel supplies between competing needs, such as water/wastewater, backup generators, police and fire vehicles, borough administration, and police/fire EMS command and control. Also consider transportation needs for food, medicine, and other essential freight, as well as any agricultural fuel needs.

7. Determine how department staff would be impacted by sustained fuel shortages (i.e. officers and staff who live out of the town site).

8. Work with Borough manager and department heads to consider how to include energy vulnerability scenarios in each Borough department’s ongoing procedures and planning processes.

REC. 4 – ACTION 3: COMMUNICATE WITH SUPPLIERS

Open official lines of communication between Borough leaders and suppliers of energy of all types to regularly

assess the status of supplies, sources, and delivery infrastructure.

December 17 and December 19, 2007, Alaska power and Telephone president and manager were sent the following questions via email from HEFT staff. Although the emails were acknowledged, to date, there has been no response.

1) What percent of the electrical power consumed by the Haines Borough is generated by hydro?

2) If there was an increase in demand for electricity by the consumers in the Haines Borough, would that demand be able to be met with energy generated through hydro? How would that increase in demand be reflected in the rate structure? We are anticipating the following scenario: As fuel oil becomes more and more expensive, consumers might consider switching from propane or heating oil to electricity as a heat source. Has AP&T anticipated and planned for this situation?

3) Does AP&T have an interconnect policy (relative to net metering) that applies to consumers in the Haines Borough? Does AP&T have an interconnect policy in any of the communities it serves? If so, what is that policy? If not, is AP&T considering developing a policy?

4) Will you please comment on the pros and cons of net metering as you see them.

5) Is the description and estimate of AP&T capacity, as printed in the Haines Borough Comprehensive Plan, still current?

From the Haines Borough Comprehensive Plan, page 88:

“Alaska Power and Telephone Company provides Haines electricity via the Goat Lake hydroelectric facility. The previously used diesel powered generating plant within the town site has been quieted and will now serve the community as a back-up electricity source. The total hydroelectric peak-load capacity of the system is 4,900 KW. The total load capacity, with diesel electric backup generators included is 7,400 KW. HL&P serves approximately 1,150 residential, commercial, and industrial customers at an approximate cost of 17 cents/KWH. The existing system and the diesel back up could accommodate safely a 50% increase in the number of customers.”

ADDRESSING ISSUES AFFECTING FOOD SECURITY

Our food system relies heavily on cheap oil. The US food system uses about 17% of the total fossil fuels consumed each year. Threats to our oil supply are also threats to our food supply. When people learn how dependent their current supply is on fossil fuels for production, processing, transportation, storage, and preparation, many turn their attention to growing their own food.

According to the Christian Science Monitor, “Food prices worldwide hit record highs in 2006, and all the signs are that they will go on rising this year, and for the foreseeable future. The era of cheap food, the experts say, is over and we are going to have to get used to it. Corn, milk, bread, and other farm products hit record high prices in 2006 – and will likely keep rising in 2008.”

Why the Era of Cheap Food is Over, Christian Science Monitor, online at <http://www.csmonitor.com/2007/1231/p13s01-wogj.html>

RECOMMENDATION 5: Identify, protect, and preserve areas appropriate, accessible, and/or essential for local food production and gathering, and ensure access to these areas.

Land and clean water are the raw materials of a locally sustainable food system. In order to reduce reliance on a food system heavily influenced by the vagaries of fossil fuel, the community must ensure that local agricultural land, watersheds, and wild food resources are preserved and protected.

“Truly sustainable practices require that food be grown closer to the point of consumption in order to reduce the use of fossil fuels for shipping food long distances.”

New Solutions, [Food, Feed, and Fuel, Number 12](#), November 2007.

REC. 5 - ACTION 1: IDENTIFY

Identify areas appropriate, accessible, and/or essential for a pure, clean, adequate water supply; for agriculture; and for the sustainable gathering of wild food, including berries, fish, and game.

Suggestion: This task could be assigned to a subgroup reviewing and rewriting the Haines Borough Comprehensive Plan.

REC. 5 - ACTION 2: PRESERVE

Protect and preserve access to the resources identified in *ACTION 1* by designating “Access Corridors” and “Food and Potable Water System Preserves.”

Suggestion: Explore creating a “Food Preserve” land use classification with designations for wild food gathering and land suitable for agriculture. Similarly, create a “Potable

“From farm to plate, the modern food system relies heavily on cheap oil. Threats to our oil supply are also threats to our food supply. As food undergoes more processing and travels farther, the food system consumes ever more energy each year.”

Daniel Murray (2005) Oil and Food: [A Rising Security Challenge](#), Energy Bulletin, [energyBulletin.net](#)

Water Preserve” classification.

REC. 5 - ACTION 3: ACQUIRE

Seek funding solutions to obtain privately owned agricultural land if a seller is willing to sell to the Borough expressly for the purpose of preserving prime agricultural land resources.

Local Example: Henderson’s farm is prime agricultural land that is in danger of being subdivided for housing by his heirs.³²

REC. 5 - ACTION 4: MEASURE.

Determine how much food Haines needs to raise in order to be self-sustaining.

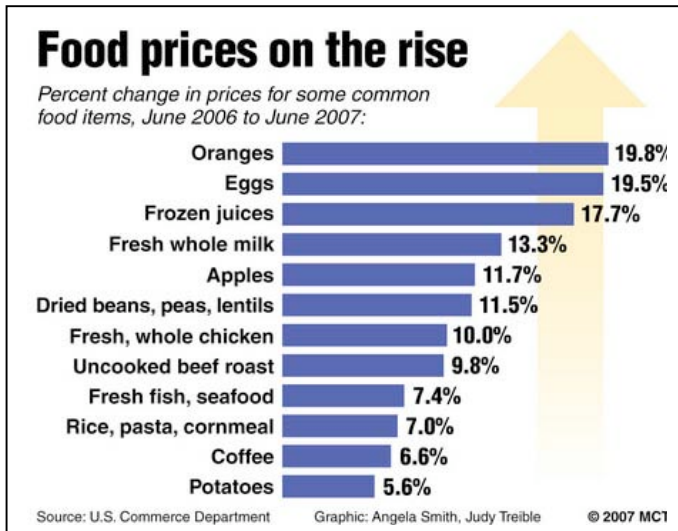
Conduct a Food Inventory based on a standard caloric intake per person per day with a vision of what crops can be raised here³³ and their associated caloric value. From this, calculate how much of what type of locally produced or gathered food is needed per person. With respect to production, calculate the amount land (water and fertilizer) required to raise that amount. Compare this to how much arable land is available. Simultaneously, calculate the current turnover rate of the local food supply in Haines’ markets.

To get a sense of what food it is possible to raise in Haines, consult The Farm Report, prepared by the HEFT Food and Agriculture Subcommittee, on file in the Borough office.

“The US food system uses over 10 quadrillion Btu (10,551 quadrillion Joules) of energy each year, as much as France’s total annual energy consumption. Growing food accounts for only one fifth of this. The other four fifths is used to move, process, package, sell, and store food after it leaves the farm.”

Daniel Murray (2005) [Oil and Food: A Rising Security Challenge](#), Energy Bulletin, [energyBulletin.net](#)

RECOMMENDATION 6: Encourage and support development and enhancement of local food production, processing, and storage.



Food production and delivery systems are heavily dependent on petroleum. As the costs of nitrogen fertilizers and diesel fuel have gone up sharply, production costs rise proportionately. Corn prices have also gone up, driven in part by government mandates for ethanol, reducing the amount of corn available for animal feed.

Add possible disruption of the transportation system itself to the rising prices and you have a potential disaster. Developing local sources of food best mitigates this situation.

“The US food system uses about 17% of the total fossil fuels consumed each year in the nation. This is the equivalent of 400 gallons of oil per person per year or about 9.5 BOE barrels of oil equivalent per person per year for food alone.”

[New Solutions](#), Number 13, July 2007.

REC. 6 - ACTION 1: LAND CLASSIFICATION

Request the Planning Commission study the feasibility of permitting “agriculture, personal use,” “animal husbandry,” and “crop production” as uses by right (UBR) or as conditional uses (CU) in all land use zones. See Haines Borough Code Title 18.70.030-040.

REC. 6 – ACTION 2: INCENTIVES

Create financial incentives using tax policy or other creative solutions to foster local food production.

Consider the following:

- 1. Lobby the State to eliminate the condition that an owner must derive 10% of their gross income from farm activity in order to qualify for the farm discount (see AS. 29.45.060)*

“Without cheap transportation fuels we will have to reduce the amount of food transportation that occurs....This implies increased local food self-sufficiency.”

“Governments must also provide incentives for people to return to an agricultural life. ...Successful traditional agriculture requires social networks, and intergenerational sharing of skills and knowledge. We need not just more agricultural works, but a rural culture that makes agricultural work rewarding.”

Richard Heinberg, [Threats of Peak Oil to the Global Food Supply](#), www.richardheinberg.com

REC. 6 – ACTION 3: LEASE BOROUGH LANDS

Explore options to lease Borough lands for activities such as Community Supported Agriculture (CSA’s), small farms, and school gardens.

Consider this possibility:

Partner with a local non-profit to develop and manage the vacant lot adjacent to the Public Safety Building for raised bed gardening.

REC. 6 – ACTION 4: COMMERCIAL COMPOST

Encourage local production of non-toxic organic compost. Consider composting opportunities for local non-profits, local sanitation companies, and the Borough Water and Sewer Department .

Consider the entrepreneurial possibilities provided by sludge from the Borough Sewage Treatment Plant; manure from the horse barns; food refuse from restaurants, and retail food outlets; fish wastes; and sawdust piles.

REC. 6 – ACTION 5: FOOD STORAGE

Explore opportunities to develop community food storage facilities located in strategic areas designed to minimize transportation costs.

Possibilities include root cellars and cold storage facilities.

REC. 6 – ACTION 6: EDUCATE

Partner with other entities to educate citizens about gathering, growing, processing, preserving, and preparing local foods.

Consider the following educational initiatives:

1. A partnership between the Haines Borough, the State of Alaska Extension Service, SEARHC, Chilkoot Indian Association, the Haines Borough Library, Community Education, and the Museum to address an increased need to educate citizens about food growing, processing, preserving, cooking, and composting.

2. Encourage the school district to seek funding for school gardens and associated curriculum that addresses nutrition,

where foods come from, how to grow, harvest, process, preserve, and prepare food, how to compost. For an example of a partnership between a school district and a non-profit organization devoted to food production see Calypso Farms in Fairbanks, Alaska (www.calypsofarm.org).

3. Encourage the school district to include a science or social studies curriculum to study the international, national, and local impacts of “peak oil” and its implications for the food supply.

“With food, ... loss of traditional skills is particularly dangerous. Not only has much of the knowledge of how to grow food without fossil fuels been lost, but the understanding of good food and nutrition is also disappearing. Some of the most nutritious vegetables, such as kale, collard, and Swiss chard, are no longer reported in the U.S. government’s agriculture statistics. Many people don’t even know how to cook them.”

New Solutions, [Food, Feed, Fuel](#), Number 13, July 2007

RECOMMENDATION 7: Ensure all members of the community have access to food and water resources.

USAID defines food security as “When all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life” (USAID Policy Determination #19, downloaded from www.usaid.gov/policy/ads/200/pd19.pdf). The USAID states that food availability will be constrained by “marketing and transportation systems which inhibit the cost-effective movement of food from source to need” and an “inability to predict, assess and cope with emergency situations which interrupt food supplies.” The transition from cheap to expensive liquid fuels has already impacted the price of food. No crystal ball is needed to alert us to the need to plan for an increase in demand for food aid.

“Unless we take urgent action, as oil security deteriorates, so too will food security.”

[Fueling a Food Crisis: The impact of peak Oil on food security](http://energybulletin.net/24319.html), Jan. 3, 2007

REC. 7 – ACTION 1: PLAN FOR FOOD SHORTAGES

Task the LEPC (Local Emergency Planning Committee) to develop and/or enhance contingency planning measures to prioritize food security in the event of oil supply constraints.

REC. 7 – ACTION 2: FOOD ASSISTANCE PROGRAMS

Help local food assistance programs develop plans to prepare for an anticipated increased demand for food from a larger percentage of the population.

REC. 7 – ACTION 3: ACCESS TO WILD FOOD

Work with the Planning Commission and state and federal agencies to ensure wild food sources (game, berries, fish) are managed for sustainability and equal access, with subsistence use given priority over commercial use.

“Because oil is used to transport the goods of our consumer society from all over the nation and globe, the price of most products will also go up. Food prices will be the most evident as food spending as a percentage of income rises.”

www.communitysolution.org/problem.html#12

ADDRESSING ISSUES AFFECTING ECONOMIC STABILITY

On June 15, 2006, Ben Bernake, Chairman of the US Federal Reserve, discussed the many ways energy is essential to our economy (see box).

Increases in the cost of energy will threaten the supply demand for goods and services. As prices continue to escalate the variety of goods will be reduced.

However, advances in technology may provide alternatives that increase business efficiencies, and demand may evolve, creating opportunities for local entrepreneurs and businesses. The community must be ready to capitalize on emerging opportunities arising from an energy transition.

RECOMMENDATION 8:
Promote the local economy through education and awareness of an energy transition while developing and actively supporting local marketing strategies.

An energy transition will require communities to refocus attention inward and rely on local strengths. Many dimensions of our local economy may need to be re-invigorated. Educating the community on the importance of supporting local business is vital. Fostering an environment for local business and entrepreneurship to grow will require community creativity and vision. Due to the risks involved with peak oil and an energy transition, government guidance and assistance is of utmost importance.

WARNING!

"...energy commodities are special, in part because they are critical inputs to a very wide variety of production processes of modern economies. They provide the fuel that drives our transportation system, heats our homes and offices, and powers our factories. Moreover, energy has an influence that is disproportionate to its share in real gross domestic product (GDP) largely because of our limited ability to adjust the amount of energy we use per unit of output over short periods of time."

Federal Reserve Chairman Ben S. Bernanke, before the Economic Club of Chicago, Chicago, IL, June 15, 2006,
<http://www.federalreserve.gov/newsevents/speech/bernanke20060615a.htm>

“The price and availability of virtually everything that we import, export, manufacture, construct, transport, eat, wear, buy, sell, rent, live in or use in our daily lives will be affected by peak oil.”

Standing Committee on Rural Regional Affairs and Transport, Australian Senate, Submission 80, [Australia’s Future Oil supply and Alternative Transport Fuels – Final Report](#), February 2007, p. 27

“The real lesson here is that it only requires a relatively small amount of oil to be taken out of the system to have huge economic and security implications.”

[Oil Shockwave](#), June 23, 2005.

REC. 8 – ACTION 1: BUY LOCAL CAMPAIGN

Encourage local consumption of locally produced and/or processed goods.

Three suggestions:

1. Partner with local business entities such as the Chamber of Commerce, to develop a creative and vibrant **“Buy Local!”** marketing campaign to strengthen local businesses and the entire community by ensuring that wealth is not exported from the community.
2. Use tax policy as a stimulus to provide financial incentives to develop local demand for locally produced products.
3. Establish a strong local vendor preference. Consider giving local vendors preference in the form of a 5 to 15% contract bid differential. Keeping products and services local, even at slightly higher costs, ensures local businesses survive and that people within the community have jobs. A goal of local employment reduces travel-related energy consumption since over 50% of our present fuel appetite is for transportation fuels.

REC. 8 – ACTION 2: PUBLIC MARKETS

Provide easily accessible venues for public markets to sell locally produced and processed goods.

Providing venues for public markets can create opportunities for entrepreneurs, commercial fishermen, small-scale farmers, gatherers, and family businesses. These venues can also create vibrant market centers and promote a sense of community. Locations can include Borough land or city streets in various population centers, which are easily accessible, and promote efficient transit.

REC. 8 – ACTION 3: NEW BUSINESSES

Support new business opportunities emerging from an energy transition.

Develop and support initiatives and financial incentives to promote new business opportunities. Consider lobbying the State to provide low interest loans to entrepreneurs offering sales and services related to renewable energy.

ADDRESSING ISSUES AFFECTING COMMUNITY HEALTH, WELFARE, AND SOCIAL VIABILITY

Increasing oil prices and threats of supply shortfalls will likely affect access to health care, social services, education, information, cultural activities, and the arts. Budgets will strain as costs increase. At the same time, demand for these services will also increase.

More and more residents may become “vulnerable and marginalized” because fixed and low-income families are hit hardest by rising prices and job shortages. A 2007 Alaskan study³⁴ found that utility costs for road-system communities like Haines were 39% higher in 2006 than in 2000. But more importantly, they found that “...utility costs take a much bigger share of the smaller incomes of poor households. That’s especially true in remote places, where incomes are lowest. Utility costs take from 8% to 33% of the income of poor households but about 2% to 4% among wealthy households” (p. 3).

Measures should be put into place to insure that health and welfare programs and services are prepared for the effects of peak oil and the ensuing energy transition.

HAINES BOROUGH MEDICAL SERVICES

Disrupted medical services would be catastrophic. Consider the following benchmarks indicating the current level of use:

The ambulance was called out 190 times in 2007 (Mark Satterwhite, Chief Dispatcher). Marcia Scott, Administrator for the Haines SEARHC reports (via telephone January 25, 2008) 19,622 visits to the clinic in 2007. This count includes visits to a physician, nurse, pharmacist, or physical therapist. It does not include dental or Wise Woman related visits. There were 89 medivacs out of 153 “encounters” with patients who needed to stay in the clinic 2 hours or more. Lynn Canal Counseling administrator Becky Chapin (via email January 25, 2008) reports that LCC served 183 clients in 2007, 76 of which were classified as “psychiatric emergencies.”

RECOMMENDATION 9:

Design a safety net to protect vulnerable and marginalized populations, and insure health care and social service providers are prepared for the ramifications of peak oil.

Vulnerable and marginalized members of the community will increase, and be hardest hit by peak oil. Health care and social service providers will likely see increased demand along with increased costs that may affect their ability to provide care. More people will need

assistance as family budgets are strained. As the economy becomes stressed, businesses will continue to shift costs for health coverage to employees, increasing the number of the underinsured and uninsured.³⁵ People without insurance tend to wait to see health providers until an emergency develops. Therefore, the need to provide emergency care will increase. Efforts must begin now to educate and prepare providers.

“Modern health care is dependent upon large inputs of energy as well as an array of products derived from petroleum.”

Bednarz, & Mac Crawford, [Energy: Healthcare's Preconditional Crisis](#), Feb, 17, 2007.

REC. 9 – ACTION 1: EDUCATE

Ensure that local health care and social service providers are educated about how peak oil will affect their ability to provide care.

Three Suggestions:

- 1. Identify and inventory products and services impacted by declining oil. Identify what aspects of their services may see increased demand.*
- 2. Determine energy needs of facilities and medically related transport.*
- 3. Undertake conservation measures.*

REC. 9 - ACTION 2: PREVENTATIVE CARE

Support efforts to encourage or mandate preventative care.

Prevention has the lowest cost of all health care strategies, leaving more money for those who truly need medical help.

REC. 9 - ACTION 3: ASSISTANCE

Work with community members to obtain state and national assistance for low-income households to maintain utility service and to perform weatherization.

REC. 9 - ACTION 4: STAY INFORMED.

Stay abreast of current requirements and qualifications for housing, food, and energy assistance programs.

RECOMMENDATION 10: Seek funding for education and training opportunities for community members seeking careers emerging from an energy transition.

The shift toward renewable energy and energy efficient technologies is expected to create new jobs, often referred to as “green collar” jobs. There will be increased demand for wind turbines, solar panels, and biomass engines. New businesses will develop to market, install, and service on-site power production. Workers will be needed to design, construct, weatherize, and retrofit buildings and homes. Just as we need to prepare for the pitfalls of peak oil, we have to be equally prepared to take advantage of the opportunities.

*“This 21st century
'Green Rush' will
expand at a rate and
power that will stretch
human and material
resources to the limit.”*
www.greenenergyjobs.com

REC. 10 - ACTION 1: APPRENTICESHIPS

Support and foster the development of local apprenticeship programs.

Suggestion:

Create a database of local experts interested in mentoring others in their fields of expertise.

REC. 10 – ACTION 2: LOCAL POST-SECONDARY CAMPUS.

Partner with educational institutions to develop a Haines campus offering professional development courses and training regarding emerging technologies in renewable energy, energy conservation, and energy efficiency.

REC. 10 - ACTION 3: GRANTS

Seek funding for educational grants to train those who will commit to return to Haines, in emerging careers in renewable energy and energy conservation and efficiency.

“Consumer demand for green power—along with the progress of utility restructuring and proposed state and federal mandates/incentives for consumers and utilities to purchase green power—could substantially strengthen the renewable power industry. This, in turn...may increase the number of jobs available in the renewable energy industry.”

US Department of Efficiency and Renewable Energy
http://www1.eere.energy.gov/education/careers_renewable_energy.html

RECOMMENDATION 11: Ensure that access to information, cultural activities, and the arts is maintained.

As oil prices rise, budgets for information, cultural activities, and the arts service providers may shrink. But the Library, Sheldon Museum, and Chilkat Center are essential community resources. The Haines Borough Library provides meeting places, internet access, after school programs, information, and events; the Sheldon Museum provides meeting places, events, and houses knowledge of our heritage; the Chilkat Center provides places for meetings and recreation and houses the local public radio station – the valley’s safety net through its Emergency Alert System. The Chilkat Center also provides venues for cultural events and learning opportunities. Community members and visitors during the tourist season use all three facilities heavily.

Some Amazing Local Statistics and Facts

Haines Borough Public Library, 2007:

*Exceeded the state average for items used per patron: Haines 41 items per patron, state average: 6.08 items per patron.

*Hosted 351 community events/meetings in 2007 with a total attendance of 3,590.

*Offered 876 adult and children’s programs with a total attendance of 6,993.

*Number of Internet uses: 28,597.
-via email from Library Director Dan Coleman, January 25, 2008.

REC. 11 – ACTION 1: EDUCATE

Ensure that program and facility managers are educated about the upcoming energy challenges.

REC. 11 – ACTION 2: CONSERVE

Support energy conservation and efficiency measures developed by program and facility managers.

REC. 11 – ACTION 3: FUND

Support efforts to develop supplemental funding sources developed by program managers.

REC. 11 – ACTION 4: USE RENEWABLE ENERGY

Explore options to reduce the exposure of these facilities to fossil fuels shortfalls by installing technologies that use local renewable energy sources.

REC. 11 – ACTION 5: PRESERVE THROUGH CONSOLIDATION

Consider creative options for consolidating services and information within these facilities should severe shortages or long-term price increases threaten the existence of these entities.

APPENDIX A

HAINES BOROUGH RESOLUTION 08-__-__

A RESOLUTION OF THE HAINES BOROUGH ASSEMBLY SUPPORTING THE RECOMMENDATION OF THE HAINES BOROUGH ENERGY TASK FORCE AND ESTABLISHING AN ENERGY AND COMMUNITY SUSTAINABILITY COMMISSION TO ASSIST THE BOROUGH TO MAINTAIN AND ENSURE ENERGY SECURITY, FOOD SECURITY, AND COMMUNITY SUSTAINABILITY.

WHEREAS, the Haines Borough is committed to a sustainable future based on a vibrant local economy; and

WHEREAS a growing number of professionals in the energy industries believe that world oil production is nearing its point of maximum production (“Peak Oil”); and

WHEREAS peak oil will usher in a prolonged period of ever-increasing energy prices; and

WHEREAS, price signals of petroleum scarcity are likely to come too late to trigger effective mitigation efforts in the private sector, thus requiring governmental intervention at all levels in order to avert social and economic chaos; and

WHEREAS, The Department of Energy-sponsored study on mitigation of Peak Oil demonstrated that a twenty-year lead time is required for effective mitigation; and

WHEREAS, the importance of making this energy transition proactively rather than reactively, and integrating this transition into the Borough’s planning and daily actions is abundantly clear,

NOW THEREFORE BE IT RESOLVED that the Haines Borough Assembly:

Section 1. Supports the development and implementation of action plans to reduce fossil fuel consumption and increase utilization of local renewable energy for all borough facilities, activities, and the community at large;

Section 2. Supports the development and implementation of action plans to provide for food security, for economic stability, and for the health, welfare, and social viability for the residents of the Haines Borough while navigating the era of Peak Oil;

Section 3. Establishes a 9 member Energy and Community Sustainability Commission composed of one member of the Haines Borough Assembly, one member of the Haines Borough Planning Commission, and seven community members with the following powers and duties:

- a. To coordinate, propose, and promote energy conservation and efficiency, utilization of renewable energy, and production of food locally among residents, businesses, and non-governmental agencies and educational organization through education and outreach programs.
- b. To make recommendations to the Haines Borough Assembly and the Planning Commission on policies and programs that promote energy conservation, energy efficiency, sustainability, utilization of renewable energy, economic stability, food security, and health, welfare, and social viability in the Haines Borough.
- c. To determine, in cooperation with the Haines Borough and the public, Haines's energy consumption profile.
- d. To provide a biannual "energy consumption" assessment. The Assessment shall be included in a report provided to the Assembly and the public.
- e. To research and apply for grants or other funds or gifts from public or private agencies for the purpose of carrying out any of the provisions or purposes of this resolution.
- f. To review and build on the work of the Haines Energy Task Force.

Section 4. The Borough manager shall designate staff support for the Energy and Community Sustainability Commission; and

Section 5. Provides for an Energy Transition and Community Sustainability Fund in the FY09 Haines Borough Budget.

Adopted this ____ day of _____, 2008.

Fred Shields, Mayor

Attest:

Julie Cozzi, Clerk

APPENDIX B

References and Resources Not Fully Cited in Endnotes

Hirsch, R.L., Bezdek, R., Wendling, R., 2005, February, Peaking of World Oil Production: Impacts, Mitigation, and Risk Management, U.S. Department of Energy, National Energy Technology Laboratory. Download PDF version from http://www.pppl.gov/pollimage.cfm?doc_id=44&size_code=Doc.

Hirsch, R.L. 2007, February, Peaking of World Oil Production: Recent Forecasts, U.S. Department of Energy, National Energy Technology Laboratory/1263, Washington, DC. Download PDF version from www.netl.doe.gov/.../Peaking%20of%20World%20Oil%20Production%20-%20Recent%20Forecasts%20-%20NETL%20Re.pdf

Portland Peak Oil Task Force, 2007 March, Descending the Oil Peak: Navigating the transition from Oil and Natural Gas, City of Portland, Portland, OR. Download PDF version from www.portlandonline.com/shared/cfm/image.cfm?id=145732

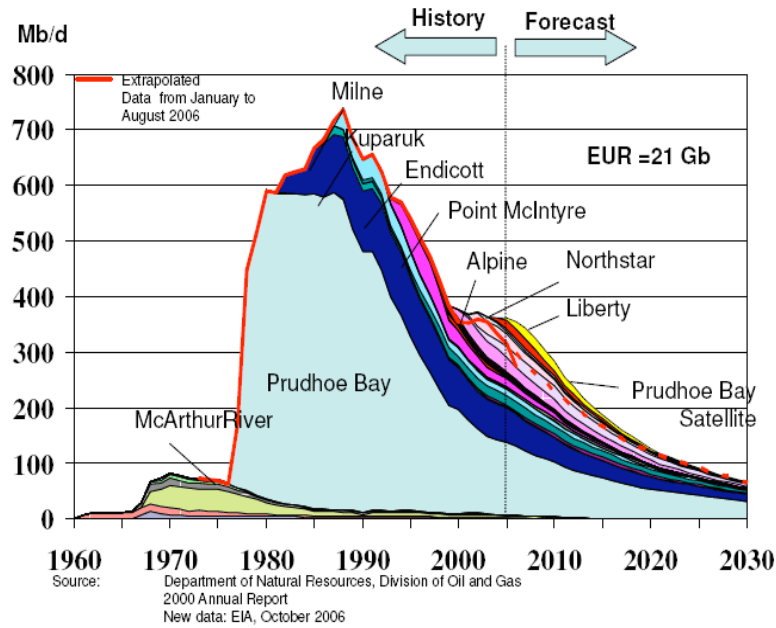
Westervelt, E.T., Fournier, D.F. 2005, September, Energy Trends and their Implications for US Army Installations, US Army Corps of Engineers, Research and Development Center, download PDF version from www.peakoil.net/Articles2005/Westervelt_EnergyTrends__TN.pdf.

United States Government Accountability Office (GAO), 2007, February, Report to Congressional Requesters, Crude Oil: Uncertainty About Future Oil Supply Makes It important to Develop a Strategy for Addressing a Peak and Decline in Oil Production, GAO-07-283, Washington, DC. Download PDF version from www.gao.gov/new.items/d07283.pdf

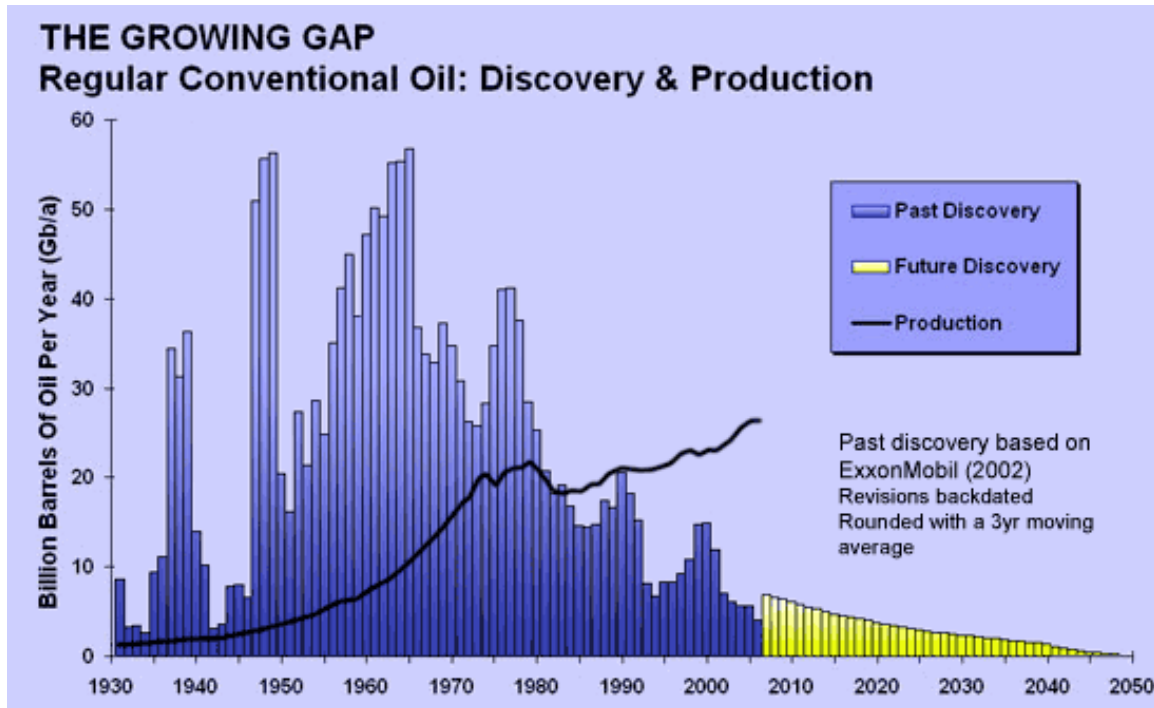
APPENDIX C

Supplemental Charts and Graphs

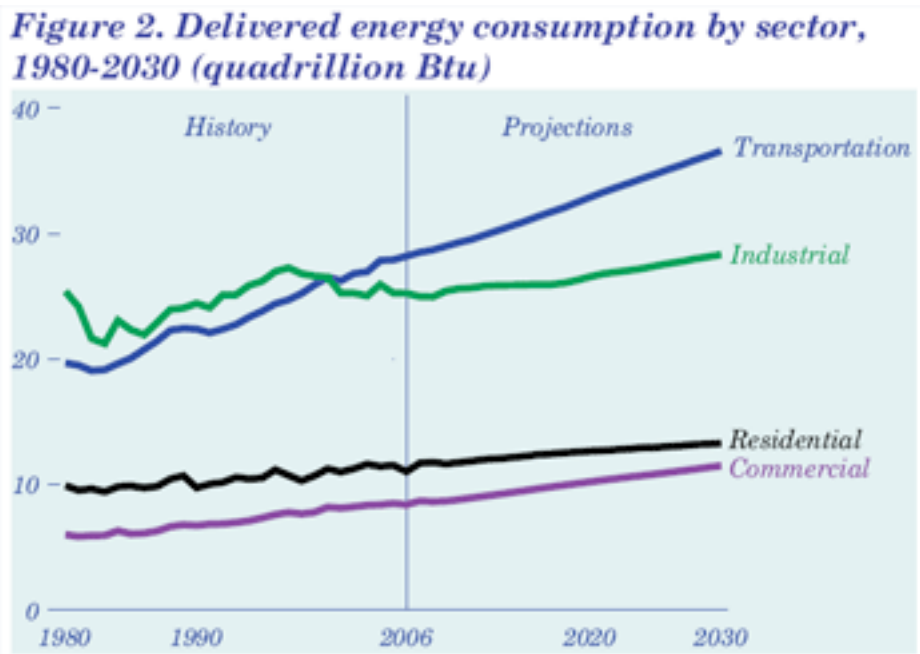
1. Field by Field Analysis of the North Slope Oil Production in Alaska



2.



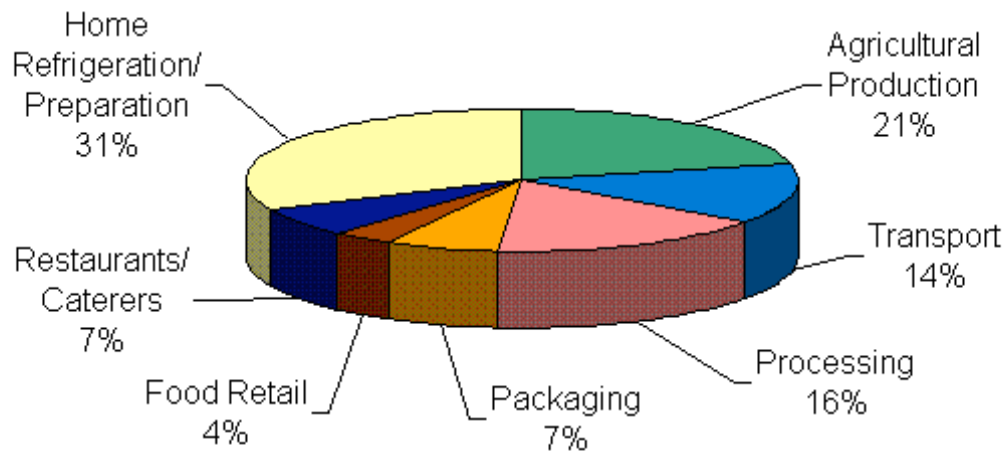
3. Consumption by Sector, AEO 2008



4. Food and Energy Use

United States Food System Energy Use

Total = 10.25 Quadrillion Btu



Source: Heller and Keoleian

5. Top Oil Producers, Exporters, Consumers, and Importers, 2006

**Top World Oil Producers, Exporters, Consumers,
and Importers, 2006**

(millions of barrels per day)

| Producers ¹ | Total oil production | Exporters ² | Net oil exports | Consumers ³ | Total oil consumption | Importers ⁴ | Net oil imports |
|-------------------------|----------------------|--------------------------------|-----------------|------------------------|-----------------------|------------------------|-----------------|
| 1. <i>Saudi Arabia</i> | 10.72 | 1. <i>Saudi Arabia</i> | 8.65 | 1. United States | 20.59 | 1. United States | 12.22 |
| 2. Russia | 9.67 | 2. Russia | 6.57 | 2. China | 7.27 | 2. Japan | 5.10 |
| 3. United States | 8.37 | 3. Norway | 2.54 | 3. Japan | 5.22 | 3. China | 3.44 |
| 4. <i>Iran</i> | 4.12 | 4. <i>Iran</i> | 2.52 | 4. Russia | 3.10 | 4. Germany | 2.48 |
| 5. Mexico | 3.71 | 5. <i>United Arab Emirates</i> | 2.52 | 5. Germany | 2.63 | 5. South Korea | 2.15 |
| 6. China | 3.84 | 6. <i>Venezuela</i> | 2.20 | 6. India | 2.53 | 6. France | 1.89 |
| 7. Canada | 3.23 | 7. <i>Kuwait</i> | 2.15 | 7. Canada | 2.22 | 7. India | 1.69 |
| 8. United Arab Emirates | 2.94 | 8. <i>Nigeria</i> | 2.15 | 8. Brazil | 2.12 | 8. Italy | 1.56 |
| 9. <i>Venezuela</i> | 2.81 | 9. Algeria | 1.85 | 9. South Korea | 2.12 | 9. Spain | 1.56 |
| 10. Norway | 2.79 | 10. <i>Mexico</i> | 1.68 | 10. Saudi Arabia | 2.07 | 10. Taiwan | 0.94 |
| 11. <i>Kuwait</i> | 2.67 | 11. Libya | 1.52 | 11. Mexico | 2.03 | | |
| 12. <i>Nigeria</i> | 2.44 | 12. <i>Iraq</i> | 1.43 | 12. France | 1.97 | | |
| 13. Brazil | 2.16 | 13. Angola | 1.36 | 13. United Kingdom | 1.82 | | |
| 14. <i>Iraq</i> | 2.01 | 14. Kazakhstan | 1.11 | 14. Italy | 1.71 | | |

NOTE: OPEC members in italics.

1. Table includes all countries with total oil production exceeding 2 million barrels per day in 2006. Includes crude oil, natural gas liquids, condensate, refinery gain, and other liquids.

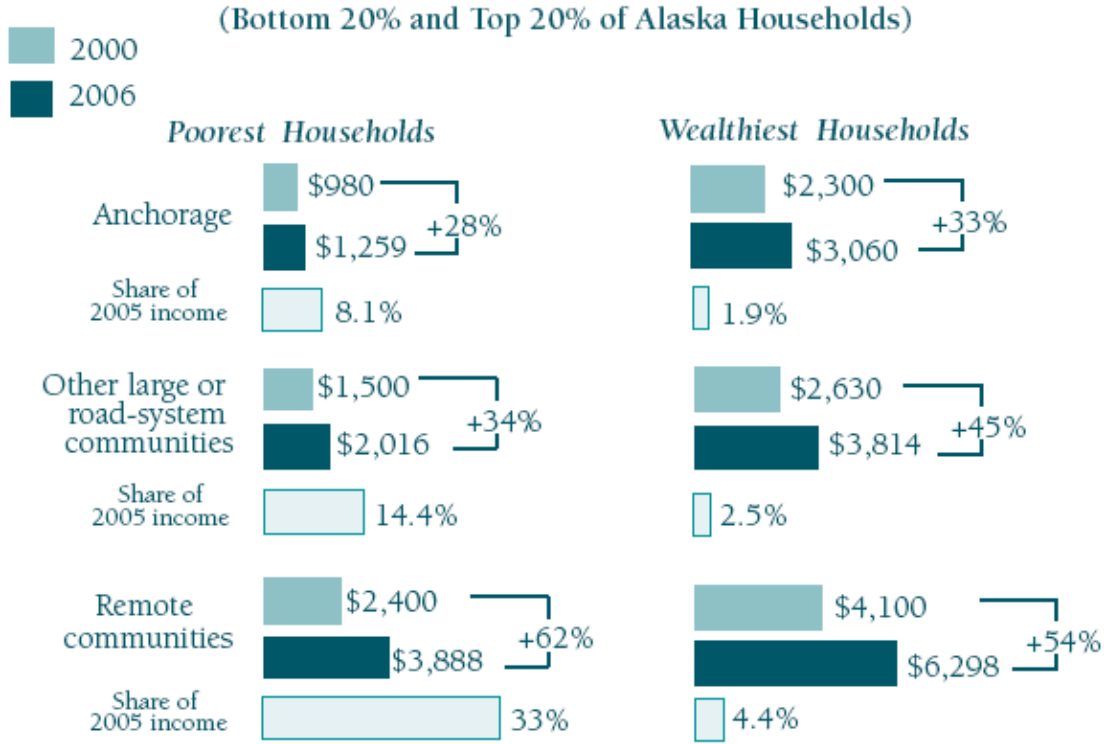
2. Includes all countries with net exports exceeding 1 million barrels per day in 2006.

3. Includes all countries that consumed more than 2 million barrels per day in 2006.

4. Includes all countries that imported more than 1 million barrels per day in 2006.

Source: Energy Information Administration (EIA), www.eia.doe.gov/emeu/cabs/.

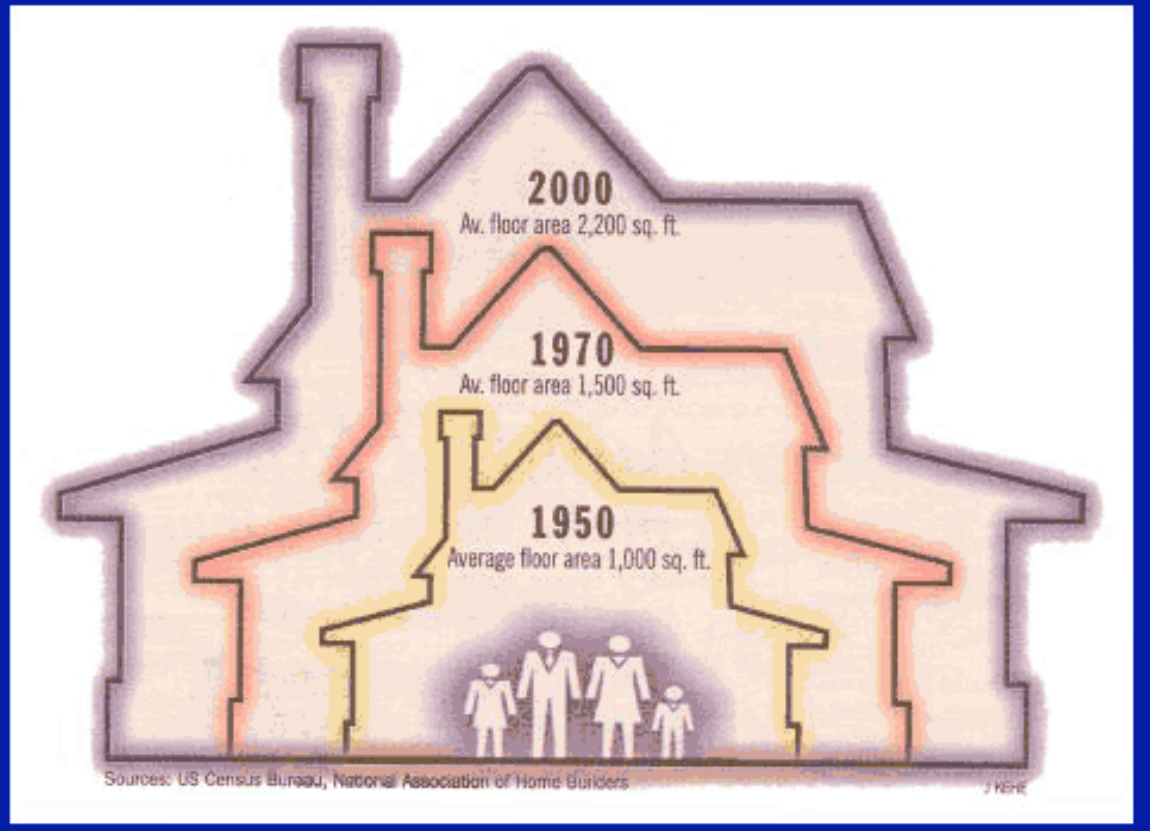
6. Median Utility Costs for Poorest and Wealthiest Alaskan Households, 2000 and 2006



Saylor, B., Haley, S., March 2007, Effects of Rising Utility Costs on Household Budgets, 2000-2006, Institute of Social and Economic Research, University of Alaska, Anchorage, p. 7

7. House size Increase from 1950 to 2000

1950 3.37 people per household - 297 s.f. per person
1970 3.14 people per household - 478 s.f. per person
2000 2.62 people per household - 840 s.f. per person



APPENDIX D

SUPPLEMENTAL RESOURCES

Websites:

Energy Bulletin: <http://www.energybulletin.net/>

International Energy Agency: <http://www.iea.org/>

National Petroleum Council: <http://www.npc.org/>

Securing America's Future Energy:
<http://www.secureenergy.org/site/page.php?index>

Simmons & Company International: <http://www.simmonsco-intl.com/>

State of Alaska Department of Natural Resources, Department of Oil and Gas:
<http://www.dog.dnr.state.ak.us/oil/>

Task Force on Strategic Unconventional Fuels:
<http://www.unconventionalfuels.org/>

The Oil Drum: <http://www.theoil Drum.com/>

U.S. Department of Energy, Energy Information Administration:
<http://www.eia.doe.gov/>

U.S. Department of Energy, National Energy Technology Laboratory:
<http://www.netl.doe.gov/>

U. S. Senate Committee on Energy and Natural Resources:
<http://energy.senate.gov/public/>

Major Reports

International Energy Agency (2005, February), Saving Oil in a Hurry: Measures for Rapid Demand Restraint in Transport, downloadable from www.objectfarm.org/.../Publications/SolareWeltwirtschaft/Energiekrise/IEA-Saving_Oil_In_A_Hurry_2005.pdf

International Energy Agency (2007 July) Medium-Term Oil Market Report, receive the MTOMR by subscribing to the Oil Market Report or purchase the MTOMR individually (500€ for a hard copy by express delivery or a PDF by email) from <http://omrpublic.iea.org/mtomr.htm>

International Energy Agency (2006 Dec.) World Energy Outlook –2006, ISBN: 92-64-10989-7, download *Executive Summary* for free or purchase 600-page document online at <http://www.worldenergyoutlook.org/2006.asp>

International Energy Agency (2007 Dec.) World energy Outlook – 2007, ISBN: 978-92-64-02730-5, download *Executive Summary* for free or purchase 600-page document online at <http://www.worldenergyoutlook.org/2007.asp>

National Petroleum Council. July 18, 2007, Facing the Hard Truths about Energy, download the report for free or purchase a hard copy at <http://www.npchardtruthsreport.org/>

Securing America's Future Energy (2005, June), Oil Shockwave: Oil Crises Executive Simulation, downloadable from <http://www.secureenergy.org/site/page.php?node=353&id=3>

United States Task Force on Strategic Unconventional Fuels (2007 Feb.) Development of America's Strategic Unconventional Fuels Resources, Vol. 1-3, all volumes and fact sheets downloadable from <http://www.unconventionalfuels.org/publications.html>

APPENDIX E

US STATE/REGION/CITY RESPONSES TO PEAK OIL

(This information is extracted from Post Carbon Cities, <http://postcarboncities.net/peakoilresponses>, updated January 29, 2008. Post Carbon Cities states that this is a listing of "all known sub-federal government actions in the U.S. and Canada made specifically in response to peak oil, whether internal (e.g., staff report, internal vulnerability assessment) or external (e.g., official resolution, task force)". Information extracted from website February 4, 2008.)

States

Connecticut

The state legislature's Peak Oil and Natural Gas Caucus released a report about peak oil in November 2007: Peak Oil Production and the Implications for the State of Connecticut, http://www.terrybacker.com/notes_detail.php?notes_id=3

Minnesota

State Representative Bill Hilty and other legislators are preparing a resolution urging the Governor of Minnesota to "prepare a plan of response and preparation to meet the challenges of Peak Oil." This resolution will receive a hearing on 4 February 2008 at a session that will include a presentation by energy investment banker and leading peak oil presenter Matt Simmons.

Regions

Southern California Assoc. of Governments (SCAG)

Hosted Southern California Energy Conference 10 March 2006 on the global peaking of oil and natural gas production, mitigation measures, and alternatives. Include energy issues in their 2008 Regional Comprehensive Plan, currently in draft form.
<http://www.scag.ca.gov/rcp/energy-summit.htm>

Metro regional government, Portland

Released policy white paper 18 April 2006, identifying "future oil supply uncertainty" as a timely risk management issue, and establishing a basis for Metro to consider possible policy and program responses.
<http://www.metro-region.org/article.cfm?ArticleID=18951>

Cities/Towns

Franklin Town, NY, pop. 2,546

Passed resolution 6 December 2005 creating a Citizens' Commission to examine the issues raised by declining energy supplies and rising energy costs.

Willits, CA, pop. 5,098

Declaration supporting "sustainable localization"; worked with local citizen group to develop initiative for purchasing solar power for City buildings and water treatment facilities.

Sebastopol, CA, pop. 7,685

Town Hall meeting in Fall 2005, resulting in an ad hoc "Energy Vulnerability" Citizen's Committee to develop Contingency Plans for municipal services. Committee released final recommendations 3 April 2007.

<http://postcarboncities.net/node/134>

Brattleboro, VT, pop. 8,289

Passed resolution 21 May 2007 forming a regional Peak Oil Task Force. Citizen group presentation on peak oil task force to Brattleboro Selectboard. The eleven task force members have been appointed and begun meeting.

Bloomington, IN, pop. 69,320

Passed resolution 20 July 2006 acknowledging the challenge of peak oil, supporting adoption of a global depletion protocol, and urging federal and state action on peak oil and its consequences. In December 2007, the Council passed a resolution to create a city Peak Oil Task Force.

Berkeley, CA, pop. 197,292

City Council passed a resolution on 18 December 2007, recognizing the work of citizen group Oil Independent Berkeley and requiring the City Manager to consider issues of energy uncertainty in future operations and planning.

San Francisco, CA, pop. 744,230

Passed resolution 11 April 2006 acknowledging the challenge of peak oil and the need for a plan of response and preparation. Authorized a peak oil task force on 3 May 2007. Peak Oil Preparedness Task Force began meeting on 2 January 2008, to continue until October with a report released in December.

Endnotes: Chapter IV: Peak Oil: An Explanation

¹ There is oil in the Arctic National Wildlife Refuge and people argue that "that's why we need to drill ANWR" when talking about our oil situation in the world, as if ANWR is the magic bullet. However, the United States Geologic Survey estimates that production from ANWR will range from 600,000 to 1.6 million barrels a day, approximately 5% of total US oil consumption. These production estimates will not even get Alaska to the peak production levels of the late 1980's. Additionally, peak production levels of the ANWR fields are estimated to last only 3-4 years before declining. (Energy Information Agency, March 2004, [Analysis of Oil and Gas Production in the Arctic National Wildlife Refuge, Introduction](#), Washington, DC, download from [tonto.eia.doe.gov/ftproot/service/sroiaf\(2004\)04.pdf](http://tonto.eia.doe.gov/ftproot/service/sroiaf(2004)04.pdf)).

² In [Peaking of World Oil Production: Recent Forecasts](#), 2007, prepared for the US Department of Energy, National Energy Technology Laboratory (NETL), R.L. Hirsch states, "We know of no region [in North America] that has reached maximum production in recent years and stayed on a plateau for an extended period of time" (16). In other words, all the conventional oil fields, the easy to get oil, in North America, including Alaska, are in decline.

³ Corroborating analyses can be found in reports from the Energy Watch Group, R.L. Hirsch, the Portland Peak Oil Task Force, the Army Corps of Engineers, the Government Accountability Office, the US Energy Information Agency, the International Energy Agency, and the Task Force on Strategic Unconventional Fuels. All of these reports are fully cited in Appendix B – References

⁴ See the reports by R.L. Hirsch, M.R. Simmons, and the Army Corps of Engineers listed in Appendix B - References

⁵ <http://www.thestar.com/article/276971>

⁶ "At Fort McMurray's pit mines, it takes 2 tons of sand, 250 gallons (947 liters) of water and 1,400 cubic feet (39.6 cubic meters) of natural gas to produce one barrel of synthetic crude, says Peter Wells, director of research firm Neflex Petroleum Consultants, Ltd. In Abingdon, England. That's enough water for a day's use of a US family of four and enough natural gas for 5.6 days..." (Lippert, J & Ohnsman, A, 2008, Prius Designer Says Toyota-Led Industry Must Lose Oil Addiction, Bloomberg.com, <http://www.bloomberg.com/apps/news?pid=20601109&sid=aoCSD7m5zHhA&refer=home>)

⁷ CIBC World Markets, ***OPEC's Growing Call on Itself***, Occasional Report #62, Sep 10, 2007. This concept, known as the "Export Land Model" is also now being referred to as "Peak Export". For further reading see www.theoil Drum.com

⁸ Quite a few of the importers fall into the GAO's category of "high political risk." "High political risk" is defined as the "likelihood that events such as civil wars, coups, and

labor strikes will occur in a magnitude sufficient to reduce a country's gross domestic product growth rate over the next 5 years" (GAO, page, 21).

⁹ **Threats to the infrastructure from lack of investment.** The International Energy Agency believes that the demand for oil and gas can be met if producers invest \$4.3 trillion and \$3.9 trillion (in 2005 dollars) over the next 25 years (Improving global Energy Security, Geneva, November 28, 2006, www.iea.org/textbase/speech/subjectresults.asp?keys2=4103). This recommendation reflects concerns about the state of oil exploration and production facilities in oil rich nations including Iran, Mexico, Russia, Venezuela.

Threats to the infrastructure from Civil War: Nigeria, from whom the US imported 10.25% of its oil in 2006, is a good example of a place where threats to the infrastructure from war and the relationship to oil production and distribution is clear.⁹

Threats to the infrastructure from Terrorism: Everyone is worried about Al Qaeda's threat to attack the oil infrastructure in Saudi Arabia – a threat that was given teeth by the November 8 Al Qaeda attack in Riyadh, Saudi Arabia that killed 17 and wounded over 120. On November 16, 2007, Simon Webb, writing for Reuters, reported that "The Saudi's are building a 35,000-person to protect their infrastructure... . Saudi Arabia pumps around 9 million barrels per day (bpd) of oil, over a tenth of global supplies, and severe damage to its infrastructure could have far-reaching effects. The kingdom is also keeper of most of the world's three million barrels per day (bpd) of spare oil capacity, a reserve crucial to the global energy system to deal with any surprise supply disruption" (www.reuters.com/article/newsOne/idUSL1528115720071116).

Endnotes: Recommendation Two

¹⁰ Strategic Studies Institute Mandate: Identify, develop, and promulgate key national security issues, http://www.eceme.ension.eb.br/eventos/7ciclo/palestras.energy_security_united_states_ppt.

¹¹ Daniel Yergin, testimony before the US House of Representatives Committee on Energy and Commerce, May 4, 2006, <http://www.cera.com/aspx/cda/public1/news>.

¹² Classes and workshops are available from the Alaska Building Science Network through their Building Energy Efficiency contract with Alaska Housing Finance Corporation. See www.absn.com.

¹³ There are no currently AKWarm licensed auditors living in Haines. An Energy Rater list by community can be downloaded from <http://www.ahfc.state.ak.us/reference/energyraters.cfm>

¹⁴ The people-power needed for many of these campaigns might be willingly provided by non-profits if some of the basic cost could be defrayed through grants supported or sought by the Borough.

¹⁵ A 2” x 5” column run every other week for a year would cost \$90 per publication in the CVN for an estimated total of \$2160. This fee includes a 10% discount for a year’s commitment. Here is an example of a “Tip” that would be worthwhile circulating in the valley:

Unplug the “secret energy addicts” in your home: TVs, VCRs, DVD players, cable TV boxes, computers, printers, video game consoles, microwave ovens and AC adapters for cell phones, digital cameras and other electronics. Most electronic equipment, including anything that uses a remote control, is designed to consume energy when it is turned off. That “off” setting is actually a “standby” or “idling” mode. Standby power in the average household consumes 1,000 kilowatt hours of electricity annually. That’s enough energy to power an entire home for two months, or more. The solution? Unplug anything that isn’t being used. Downloaded from The Green Home Guide at www.greenhomeguide.org.living_green/sustainable_lifestyles.html.

¹⁶ Studio time for production is estimated at \$75/hour. Locally produced shows with a similar information format are The Safety Guys, The Museum Report, The Library Report, and Watershed Weekly.

¹⁷ Consider using data derived from the Clean Air and Climate Protection Software (ICLEI, Local Governments for Sustainability).

¹⁸ For more information visit the US Green Building Council’s website: www.usgbc.org/LEED. Download a check list for homes at http://greenhomeguide.org/green_home_programs/LEED_for_homes.html

¹⁹ Current State of Alaska regulations state that low-speed vehicles are not permitted on highways with a maximum speed greater than 35 miles per hour (mph) but are permitted to cross a highway that has a maximum speed limit greater than 35 mph if the crossing is made at the intersection with a highway that is authorized for low-speed vehicle use. See Alaska Statutes 28.10.041, 28.35.261, 28.40.100)

²⁰ *“Mobility Management brokers a variety of networked transportation services to suit individual needs. It is a highly personalized, local system dependent on communication and dispatch. This approach to providing transportation services to the general public as well as targeted user groups may be adequate, and also may be the crucible out of which a public transportation system grows (page 9).”* Haines Borough Coordinated Transportation Plan, 2007.

²¹ Borough residents can recycle plastic, paper, cardboard, aluminum, and glass through Solid Waste Solutions, a commercial entity, and plastic, paper, cardboard, aluminum, and tin through Haines Friends of Recycling, a membership supported non-profit entity. Glass can be dropped at Acme Transfer; it is crushed, but not reused. HFR sent out 385,000 pounds of material to be recycled in 2006 (email January 26, 2008 from Melissa Aronson, HFR treasurer and board member).

²² To date, mail-in recycle services for CFLs are not available in Alaska, Hawaii, or Puerto Rico (see <http://www.recycleyourcfl.com/>). Anchorage recycles its CFLs through EcoLights Northwest in Seattle (<http://www.ecolights.com/>).

²³ White goods are major appliances, including refrigerators, freezers, washers, dryers, and water heaters. The name originated when most of these items were manufactured in just one color – white. Address the need to have a certificate showing the CFLs were recovered by a certified technician using a certified recovery machine.

²⁴ See the Environmental Protection Agency's website on C&D debris at <http://www.epa.gov/epaoswer/non-hw/debris-new/index.htm>.

²⁵ Haines Friends of Recycling currently recycles electronics annually. Twenty thousand pounds were shipped in 2007.

²⁶ This target is modeled after Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, signed by President Bush, January 2007. The federal government was ordered to “improve energy efficiency and reduce greenhouse gas emissions of the agency, through reduction of energy intensity by (i) 3 percent annually through the end of fiscal year 2015, or (ii) 30 percent by the end of fiscal year 2015, relative to the baseline of the agency’s energy use in fiscal year 2003. Another model that the Borough might consider is the vehicle fuel reduction target for the Federal Fleet incorporated in the Energy Independence and Security Act recently passed. Section 400FF(a) (2) of this legislation requires that “not later than October 1, 2015, and for each year thereafter, each Federal agency shall achieve at least a 20 percent reduction in annual petroleum consumption.” A third model to consider is the goal cited in the Haines borough Coordinated Transportation Plan (2007): “Reduce the annual consumption of petroleum-based vehicle fuel by 10% annually” (p.1).

²⁷ According to a Duke University 2006 publication downloaded from <http://www.duke-energy.com/ohio/savings/advantages.asp>, a CFL is a low wattage, high lumen output lamp that commonly replaces incandescent bulbs today. The savings advantage afforded by CFLs is recognized by government and consumer agencies.

²⁸ In a report on the savings realized by Energy Star products, prepared by the Lawrence

Berkeley National Laboratory, ENERGY STAR is described as “a voluntary labeling program designed to identify and promote energy-efficient products, buildings and practices. Operated jointly by the Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE), ENERGY STAR labels exist for more than thirty products, spanning office equipment, residential heating and cooling equipment, commercial and residential lighting, home electronics, and major appliances.”

²⁹ Wood fired Boiler Heating System Presentation, PDF, is appended to this report. It can also be downloaded from <http://www.tananachiefs.org/natural/AWEC2007.shtml>. According to the Craig City Manager’s presentation at the Alaska Wood Energy

Conference, Fairbanks, Alaska (Nov. 2007), Craig will save between \$63,000 and \$28,000 in oil or propane costs once the wood fired facility is in place.

³⁰ Capture energy from the sewage treatment plant by modifying the headworks to divert a significant portion of the incoming solids into a “biodigester” to produce methane gas – a natural byproduct of sewage treatment and an equivalent of natural gas and propane. This methane would be fed directly into a gas turbine generator to produce electricity to offset the sewage treatment plant’s energy needs.

Endnotes: Recommendation Three

³¹ According to the Renewable Energy Atlas of Alaska, published by the Alaska Energy Authority (www.aidea.org/aea/index.html), and Renewable Energy Alaska Project (REAP), Haines may have sites for hydroelectric, wind, and biomass renewable energy. Biomass fuels include wood, sawmill wastes, fish by products, and municipal waste. In the future, map data will be available in interactive format at the State of Alaska’s new energy inventory web site at www.energyinventory.alaska.gov.

Endnotes: Recommendation Four

³² Communicated by Bob Henderson to the Haines Energy Task Force Food & Agricultural Subcommittee.

³³ This information is available in the Food & Agricultural Committee’s *Farm Report* filed with HEFT documents in the Haines Borough office.

Endnotes: Recommendation Nine

³⁴ Saylor, B. & Haley, S. (2007 March), Effects of Rising Utility Costs on Household Budgets, 2000-2006, Institute of Social and Economic Research, University of Alaska, Anchorage.

³⁵ Peak Oil Task Force, Descending the Oil Peak: Navigating the Transition from Oil and Natural Gas, Portland, OR, March, 2007, p. 24-26.