What is Strategic Energy Planning

- Stakeholder Inclusivity
- Leadership Team
- A Strategic Energy Plan
  - Convene Stakeholders
  - Form Leadership Team
  - Develop Energy Vision
  - Assess Energy Needs and Resources
  - Develop Specific Goals
  - Prioritize Projects and Programs
  - Identify Financing Options
  - Compile Energy Plan
  - Measurement and Verification (M&V) and Plan Alterations
Why a SEP?

And what does it do for you?

- Brings desired energy future into clear focus
- Considers current reality and leverages local resources
- Considers hurdles/challenges before you reach them
- Maps out efficient path to achieve your desired energy future
- Clarifies progress indicators
- Documents the game plan for short- and long-term success

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What Makes Energy Planning “Strategic”?

Inclusive Energy Planning Process

- Public Sector (Tribal/State/Federal)
- Private Sector
- Non-Profit

Stakeholder buy-in to long-term vision

- Political commitment to mobilize authority and resources
- Identify energy uses and future needs (baseline)

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Proper Planning and Strategic Energy Plan Development Helps:

- Direct action
- Sustain momentum
- Motivate involvement
- Reduce/minimize reactive decision-making
- Go the distance
Why does Strategic Energy Planning Fail?

- Short-sighted predictions of the situation, timeline
- Unrealistic predictions of resources
- Uncoordinated implementation
- Narrow ownership
- Failure to follow the plan
- Poor, or casual, communication

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Steps in Strategic Energy Planning

1. Identify/Convene Stakeholders
2. Form Leadership Team
3. Develop Energy Vision
4. Assess Energy Needs and Resources
5. Develop Specific Goals
6. Prioritize Projects & Programs
7. Identify Financing Options
8. Compile Energy Plan
9. Measurement & Verification (M&V) and Plan Alterations

Office of Indian Energy
Strategic Energy Planning: First Steps

**Stakeholders**
- Tribal Members
- Tribal Council
- Tribal Government
- Tribal Utilities
- Tribal Enterprise Leaders
- Large Energy Users
- Local Utilities
- Regional Partners

**Key Success Component:** Identify and select an energy “champion” to shepherd the process
First Steps: Form a Leadership Team

Draw from the stakeholders:

- Tribal council member(s)
- Tribal government executives
- Tribal member representative(s)
- Tribal enterprise leader(s)

Include Regional Energy Planners

Photo by Dennis Schroder, NREL
Regional Energy Planning

• Collaborate with existing Regional Energy Organization plans.

• Link to the Alaska Energy Authority to partner resources.

• Shift perspective to ownership between the leadership and the community
Strategic Energy Planning: Leadership Team

Not just people with the “right” idea, but those committed to the long-term task with personal and political influence

**Include**
- Individuals with authority to direct resources
- Individuals with a passion for the “destination”
- Individuals with influence in the community and administrative abilities to keep the project alive
- Individuals with the technical ability
- Individuals who can “tell the story”

**Avoid**
- Exclusively political appointees
- Exclusively technical staff
- Exclusively implementers
First Steps: Develop an Energy Vision

Common objectives, such as:

• Increase and ensure energy reliability
• Minimize environmental impacts
• Diversify energy supply
• Use local, renewable resources
• Strengthen, support economic development
• Build workforce/jobs
• Ensure energy affordability
• Generate revenue for Tribe
• Energy security/self-sufficiency
• Off-grid electrification
• Save money (offset energy costs)
• Keep money in Tribe
• Stabilize energy costs for Tribe and tribal members
Strategic Energy Planning: Priorities & Decisions

1. Assess Energy Needs
2. Develop Specific Goals
3. Prioritize Projects & Programs
4. Identify Financing Options
5. Examine Levelized Cost of Energy & Total Resource Cost

- Analyze Energy Usage Data and Available Renewable Resources
- Reduce Energy Costs by ___% in 5 years
- $$
Priorities & Decisions: Assess Energy Needs

Document the community baseline:

• Determine energy use by “sector” including government, residential, school, commercial

• Use available tools:
  – Energy audits
  – EPA Portfolio Manager (non-residential buildings)

• Forecast future load
  – New housing
  – New government facilities
  – New/expanded enterprises

• Verify current service providers and rates for electricity, gas, propane, wood, and others
Priorities & Decisions: Develop Specific Goals

Examples:

- Reduce electricity use by ___% by 2022
- Obtain ___% of electricity from renewable sources within 10 years (similar to a renewable portfolio standard or RPS)
- Reduce energy costs by ___% within 5 years
Priorities & Decisions: Prioritize Projects & Programs

• Develop a ranking system to understand cost-effectiveness of different projects

• Best practice models:
  – Total Resource Cost
    • Model considers life-cycle benefits for projects
  – Levelized Cost of Energy
    • Allows comparison across different technologies

• Tribal energy policy/program examples:
  – Incentives to reduce energy use
  – Incentives to promote renewable energy
  – Sustainable/green building codes, standards, or other requirements or guidelines
Priorities & Decisions: Identify Financing Options

Secure planning and project funding sources:

- Tribal funding
- DOE Technical Assistance (TA) Program
- Other federal agency TA and grant programs
- State programs
- Non-governmental organizations (NGOs)

2013 September finance workshop attendee Barney Enos Jr. of the Gila River Indian Community.
Strategic Energy Planning: Energy Plan

M&V and Plan Alterations

Compile Energy Plan

Speaker David Lewis presents during the September 2013 finance workshop. (NREL Photo #28051)
Energy Plan: Purpose & Functions

Purpose

- Document near-term goals
- Sustain momentum
- Achieve long-term goals

Functions

- Creates “road map” to hold accountability to the destination
- Provides the means to consistently share the story with others
- Creates resources to help guide and filter priorities, providers, and decisions
Energy Plan: Components

Include:

• Vision
• Objectives
• Goals
• Baseline
• Barriers
• Program/project options
  – Demand side
  – Generation
• Recommendations
• Adoption by Tribal Council

Wind anemometer measures wind speed for resource assessment.
Energy Plan: M&V and Plan Alterations

• M&V
• Evaluate
• Fine tune
CASE STUDY
STRATEGIC ENERGY PLANNING
CHANINIK WIND GROUP
Chalinik Wind Group

Tribes brought together four villages and several utilities to introduce wind heat to over 2,000 people by forming the Chaninik Wind Group.
Kipnuk
Dongiganak
Kwigillingok
Tntutuliak
Chaninik Wind Group

• Wind Heat Smart Grid

• $3.7 million dollar Project

• Five Wind Turbines (each 95 kW)

• 450 Kilowatt wind-diesel system serving the 4-village community of Kongiganak
Benefits of Chaninik Wind Group

- Installed wind turbines to lower cost of heat and electricity energy
- Reduced dependency on diesel fuel
- Created local jobs
- Trained and Certified employees
- Became a sustainable community
Strategic Energy Planning: First Steps

The tribal villages of Kipnuk, Kongiganak, Kwigillingok and Tuntutuliak built capacity to develop a lasting economic foundation to serve 1,807 with sustainable energy.
Collaboration is key to SEP

A strong strategic Energy Plan will have many collaborators:

• Intelligent Energy Systems (IES)
• AEA Renewable Energy Fund
• U.S. DOE Tribal Energy Program (Guided the SEP process)
• Calista Corporation
• Denali commission
• Denali Training Fund
• NREL
• Alaska Legislature
• Senator Lyman Hoffman
• Representative Bob Herron
• CSWG Community Members and Utilities
Chaninik Formed a Leadership Team
Chaninik Stakeholders Developed an Energy Vision

CWG Strategies for Success

- Build capacity as a foundation for lasting economic development
- Good information to make good decisions, lower costs, and give a pathway to sustainability
- Adopt innovation to meet needs and support values
- Lead efforts to plan for community energy use creating value and fostering new opportunities
- Think outside the box
Strategic Energy Planning: Priorities & Decisions

- Assess Energy Needs
- Develop Specific Goals
- Prioritize Projects & Programs
- Identify Financing Options

CSG hired a knowledgeable contractor through a competitive process.
Chaninik Assesses Energy Needs
CWG identified their goals in 2005

- Lower the cost of home heating and electricity
- Reduce dependency on diesel fuel by 40%
- Train and certify local employees
- Become a sustainable community
CWG Identifies Financing and Partners

• Alaska Renewable Energy Fund
  – CWG approached AK State Legislature with their strategic energy plan to request funding.

• Requested technical assistance from the D.O.E. Tribal Energy Program

• Collaborated with the Denali Training Fund, the Denali Commission, and the Calista Corporation.
CWG installed Five 95 kilowatt turbines and supplied the entire village with thermal stoves to heat homes.
Identified a Unique Technology

- Electric Thermal Storage (ETS) home heating units.

The ETS devises are saving $1,500 to $2,000 annually per home.
Electronic Thermal Stoves (ETS)

- ETS heat output at high is equivalent to a Toyostove Laser 56
- $.10 per kwh is equivalent to buying diesel at $3 per gallon
- Current diesel price in Kongiganak: $6.95 per gallon
Measurement & Verification and Plan Alterations

- Community-wide smart metering

- Smart grid control was added to the plan to capture their success in numbers.
Kongiganak Energy Summary 2013

<table>
<thead>
<tr>
<th>KONGIGANAK POWER PLANT</th>
<th>Energy Summary (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
</tr>
<tr>
<td>Diesel 1</td>
<td>42,370</td>
</tr>
<tr>
<td>Diesel 2</td>
<td>25,260</td>
</tr>
<tr>
<td>Diesel 3</td>
<td>-</td>
</tr>
<tr>
<td>Diesel 4</td>
<td>200</td>
</tr>
<tr>
<td>Total Diesel Generation</td>
<td>67,830</td>
</tr>
</tbody>
</table>

| Wind Turbine 1          | 15,618 | 15,234 | 15,575 | 21,588 | 11,740 | 7,867 | 8,301 | 7,078 | - | - | 139,512 |
| Wind Turbine 2          | 17,164 | 4,789 | 8,160 | -10 | - | 1,396 | 736 | 2,919 | - | - | 80,584 |
| Wind Turbine 3          | 26,130 | 18,936 | 22,211 | 20,113 | 15,733 | 12,018 | 9,678 | 8,921 | - | - | 92,571 |
| Wind Turbine 4          | 23,363 | 5,139 | -61 | 13,437 | 14,968 | 3,866 | 2,603 | 5,316 | - | - | 14,816 |
| Wind Turbine 5          | - | - | - | - | - | - | - | - | 1,672 | 10,926 | 154,616 |
| Total Wind Generation   | 76,876 | 44,099 | 45,885 | 55,128 | 42,441 | 25,167 | 21,318 | 25,905 | 46,923 | 48,539 | 36,245 | 38,546 | 507,071 |
| Total Generation        | 144,706 | 116,109 | 120,605 | 125,248 | 113,401 | 89,407 | 90,118 | 109,495 | 125,373 | 131,549 | 126,315 | 131,466 | 1,423,791 |

| Summary of Consumption  | 2,742 | 2,387 | 2,757 | 2,455 | 2,627 | 2,974 | 2,819 | 2,549 | 2,887 | 2,881 | 2,338 | 2,524 | 31,950 |
| Wind to Load Regulator  | 14,556 | 7,032 | 8,527 | 11,898 | 11,335 | 8,442 | 5,723 | 7,489 | 12,892 | 8,859 | 6,384 | 7,832 | 110,969 |
| Wind to ETS            | 21,833 | 8,813 | 6,285 | 9,868 | 7,588 | 2,342 | 1,002 | 1,776 | 4,676 | 6,305 | 6,481 | 5,233 | 82,203 |
| Total Village          | 108,317 | 100,264 | 105,792 | 103,462 | 94,478 | 78,623 | 83,393 | 100,230 | 107,805 | 116,385 | 113,450 | 118,400 | 1,230,619 |
| Total Consumption      | 144,706 | 116,109 | 120,605 | 125,248 | 113,401 | 89,407 | 90,118 | 109,495 | 125,373 | 131,549 | 126,315 | 131,466 | 1,423,791 |

| % Diesel kWh Displaced by Wind | 37.4% | 28.2% | 29.4% | 32.2% | 24.9% | 18.3% | 17.5% | 16.6% | 27.2% | 28.7% | 20.6% | 21.5% | 25.5% |
Annually, community homes with ETS stoves installed saw an average of $800 - $1250 in stove oil displacement.
Strategic Planning Leads to Successful Results
Lessons Learned

- Energy issues must be addressed on all levels.
- More resources are needed to build capacity.
- New opportunities reveal themselves everyday.
- Risks are necessary and will allow you to expect the unexpected.
- Stay positive and focus on the project goals!
Useful Resources

<table>
<thead>
<tr>
<th>Resource</th>
<th>Technology</th>
<th>Policy</th>
</tr>
</thead>
</table>
Thank You & Contact Information

Tribal Energy Program Contacts
http://apps1.eere.energy.gov/tribalenergy/program_contacts.cfm

For Technical Assistance:
IndianEnergy@hq.doe.gov.

DOE Office of Indian Energy Website:
www.energy.gov/indianenergy

NREL Renewable Energy Technology Basics Website:
www.nrel.gov/learning/re_basics.html