DOE OFFICE OF INDIAN ENERGY

Strategic Energy Planning

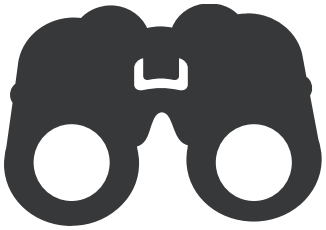
U.S. DEPARTMENT OF ENERGY | Office of Indian Energy

DOE Office of Indian Energy

- Free technical assistance
- Project development support, PCE training, energy planning
- SEP workshops across Alaska

What is Community Strategic Energy Planning?

And what does it do for you?

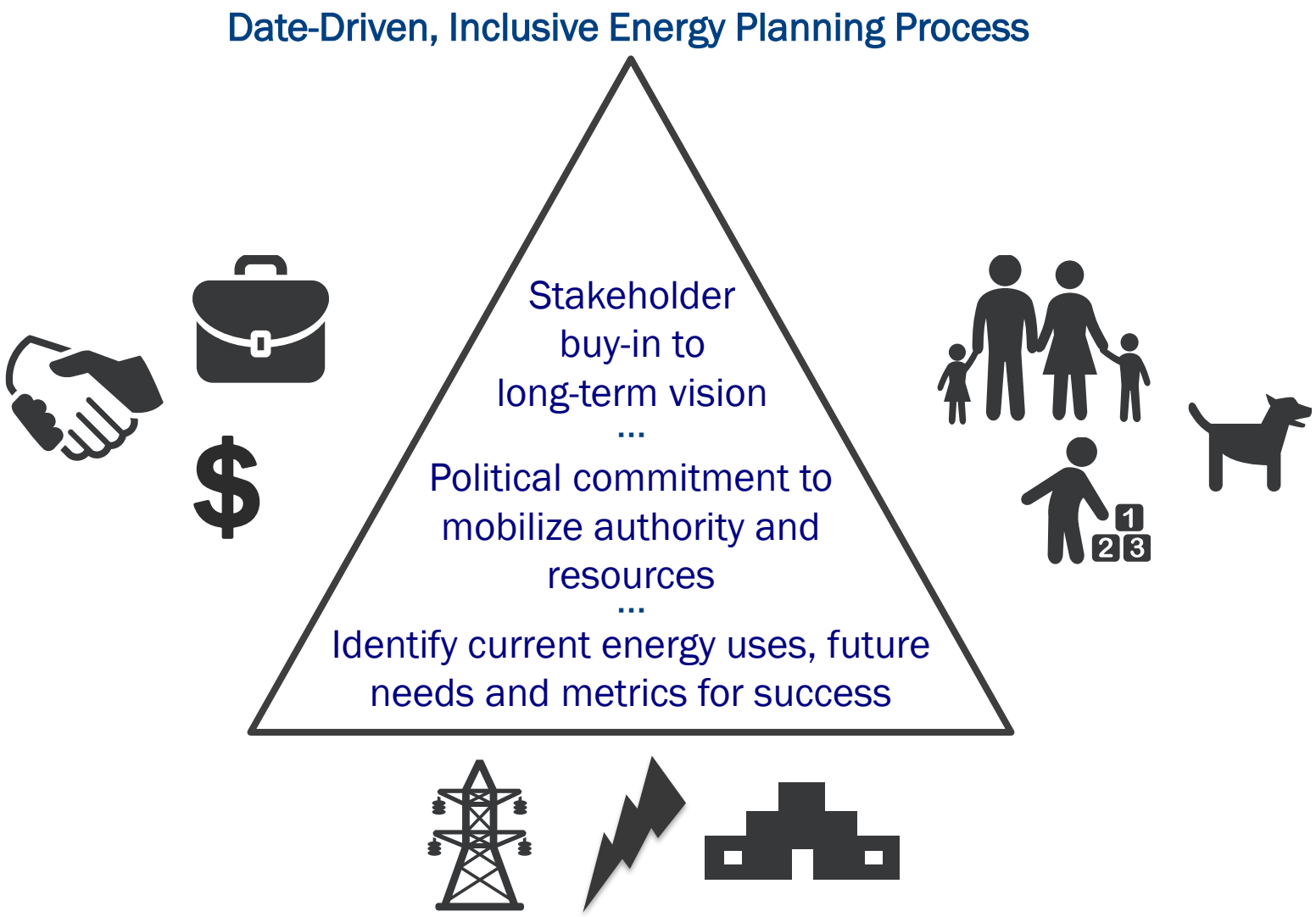


vs.

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

Graphic concepts reprinted with permission from Lesley Kabotie, Kabotie Consulting.

What Makes Energy Planning "Strategic"?



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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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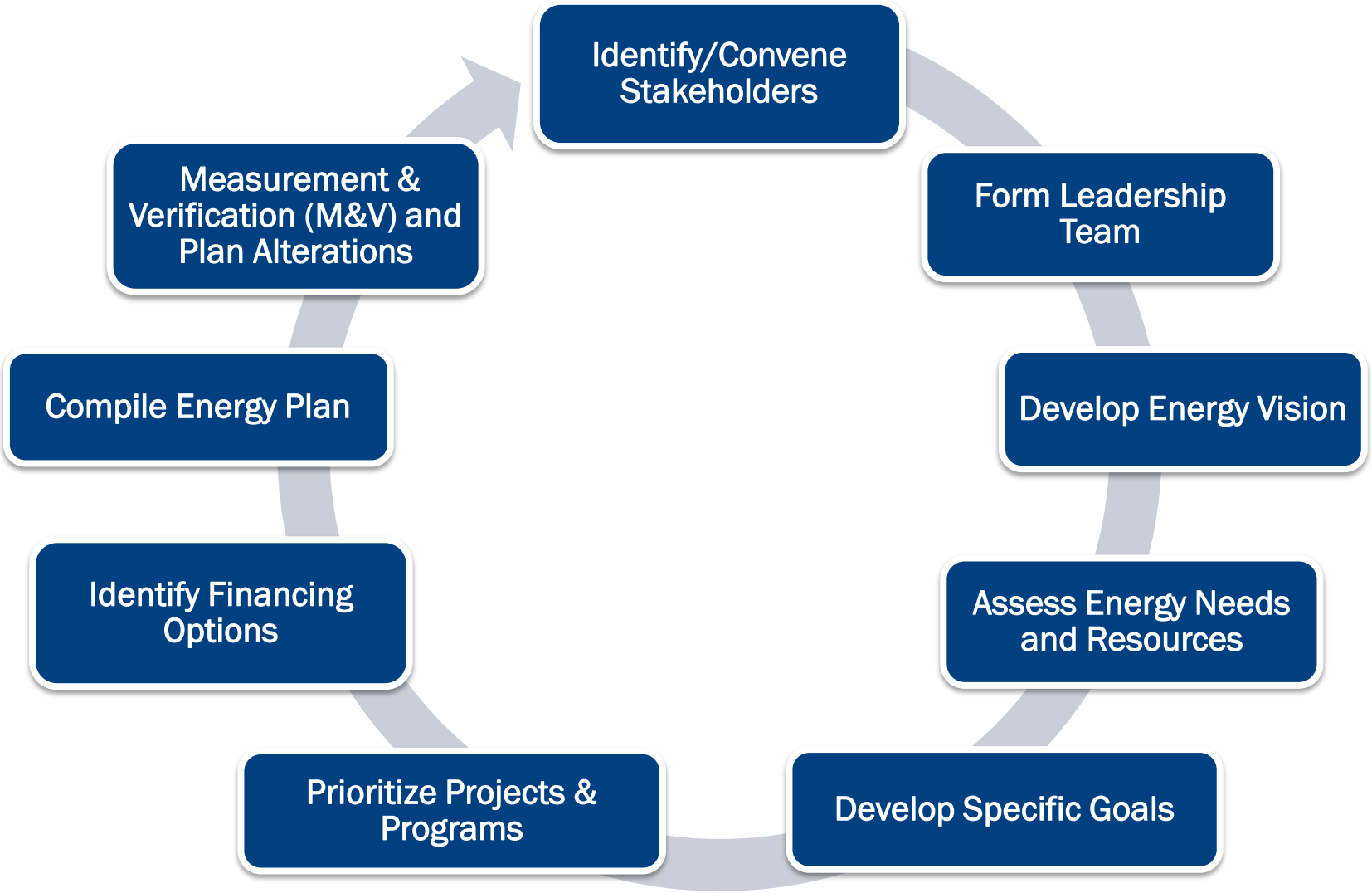
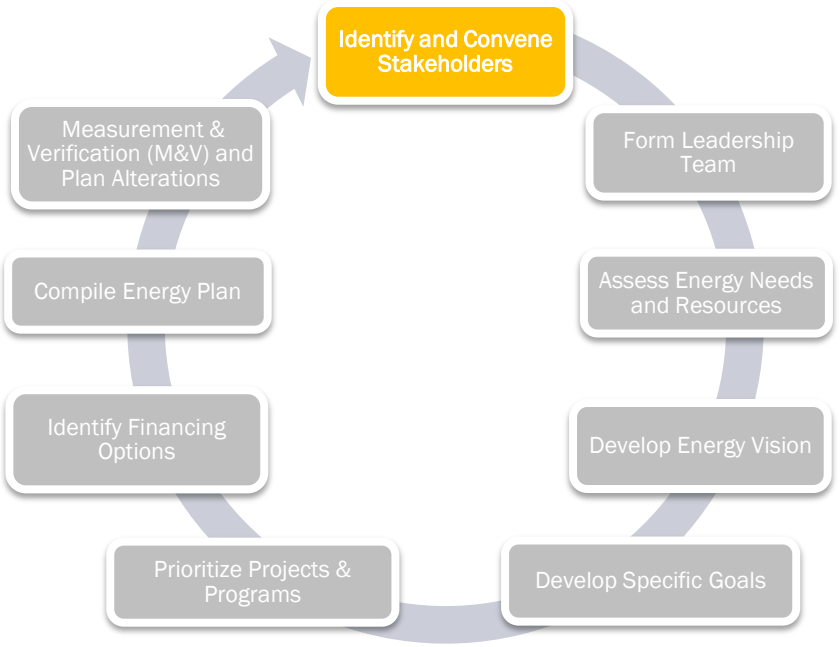
Steps in Strategic Energy Planning



Step 1: Identify and Convene Stakeholders

- Utility representatives
- Community leaders (tribal/city)
- Local facilities managers
- Community businesses/industry
- Regional intertribal organizations
- Community members
- School district
- Housing authority
- State or regional-level energy-focused administrators

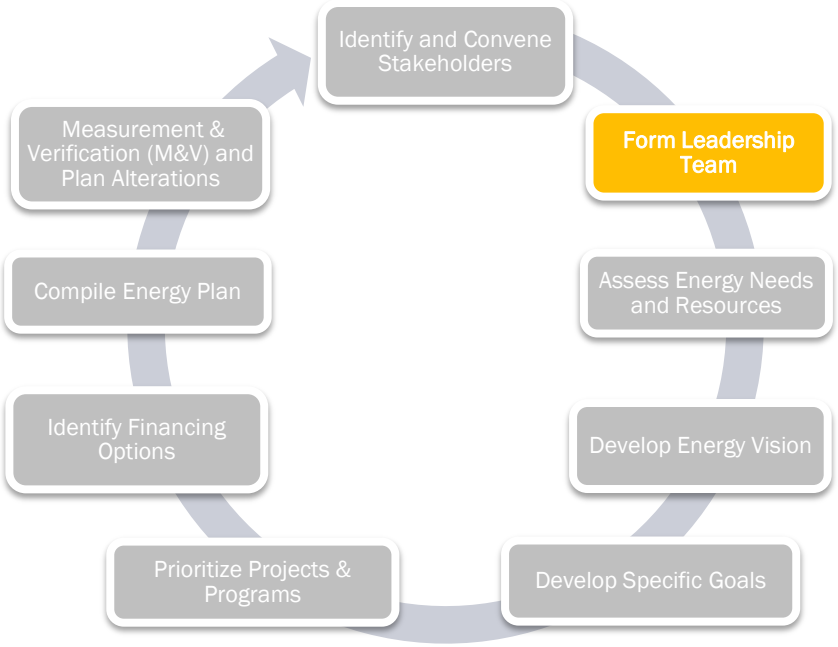


Step 2: Form Leadership Team

Draw from the stakeholders:

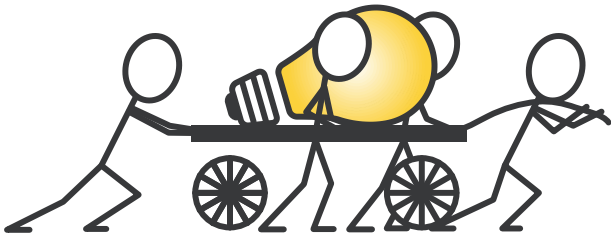
- Tribal Council Member(s)
- Village/Municipal Representative(s)
- Alaska Native Corporation & Enterprise Leader(s)

Key success component:
Identify and select an energy "champion" to endorse the process and a "plan advocate" to shepherd the steps in the process



Tips for Forming a Leadership Team

vs.



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 (utility management, fuel purchasing, school district, facility management, land and waste management, housing construction, etc.)
- 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 elected officials (turnover potential)
- Exclusively technical staff
- Exclusively implementers

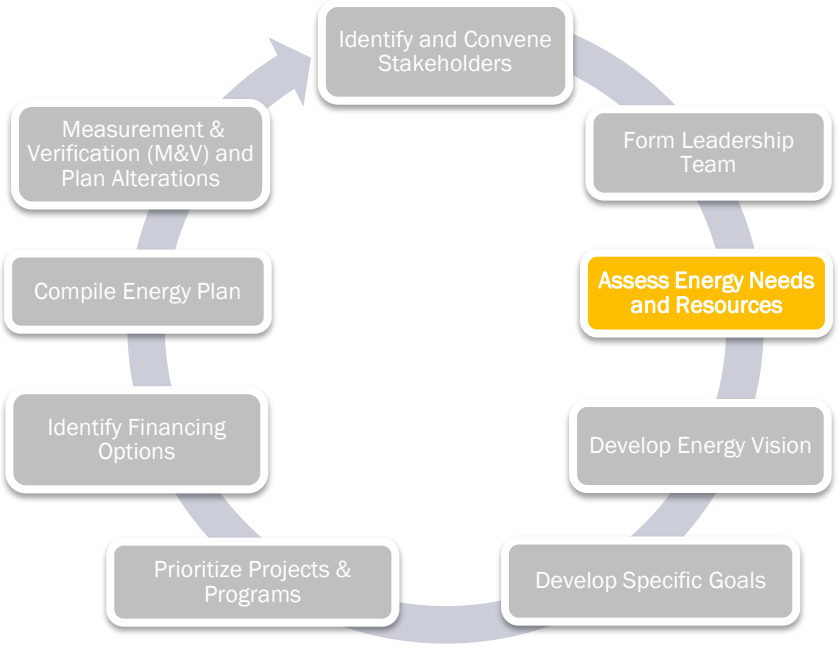
Step 3: Assess Energy Needs & Resources

Community energy assessment will have two key parts:

- A baseline of a community's energy use and generation **(Present)**
- A forecast that documents future energy demands **(Future)**

And should include:

- Heat
- Power
- Transportation



DATA, WHERE IS IT!?!?

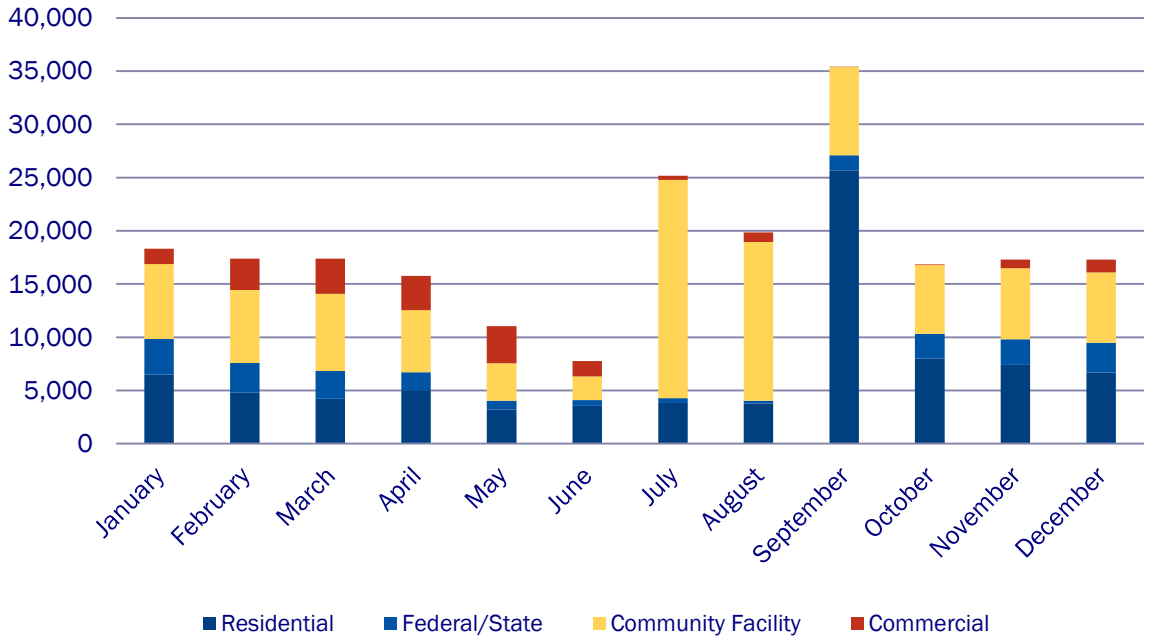
Assess Energy Needs

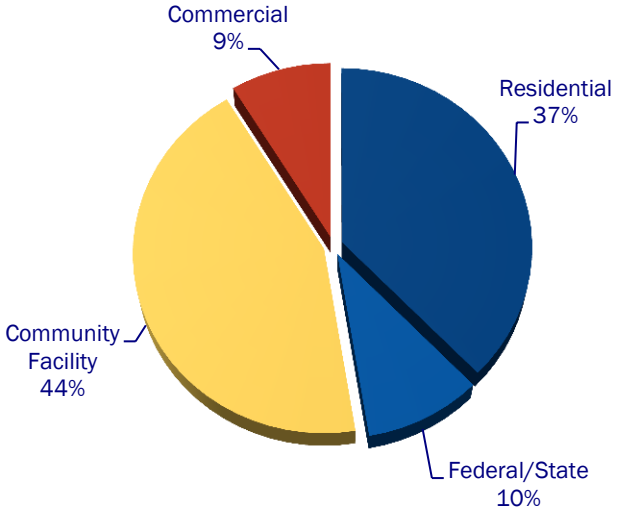
Document the community baseline:

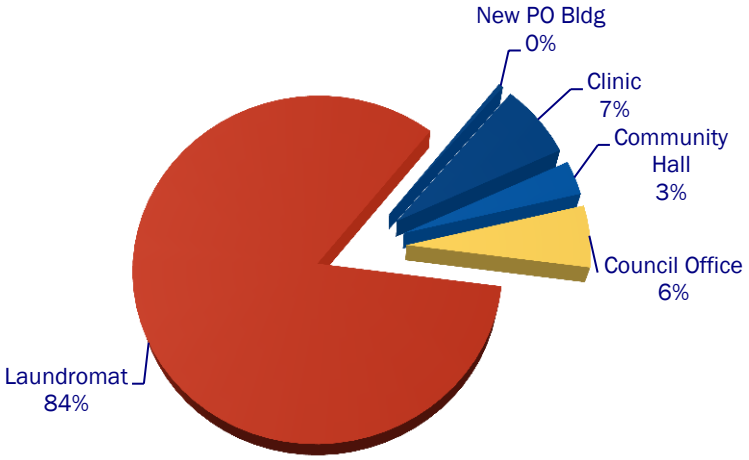
- Determine energy use including government, residential, school, commercial
- Use available tools:
  - Energy audits
  - PCE reporting documents
- Forecast future load
  - New housing
  - New government facilities
  - New/expanded enterprises
- Verify current service providers and rates for electricity, gas, propane, wood, and others

Photo by Alex Dane, NREL 22724

Rampart Energy Baseline

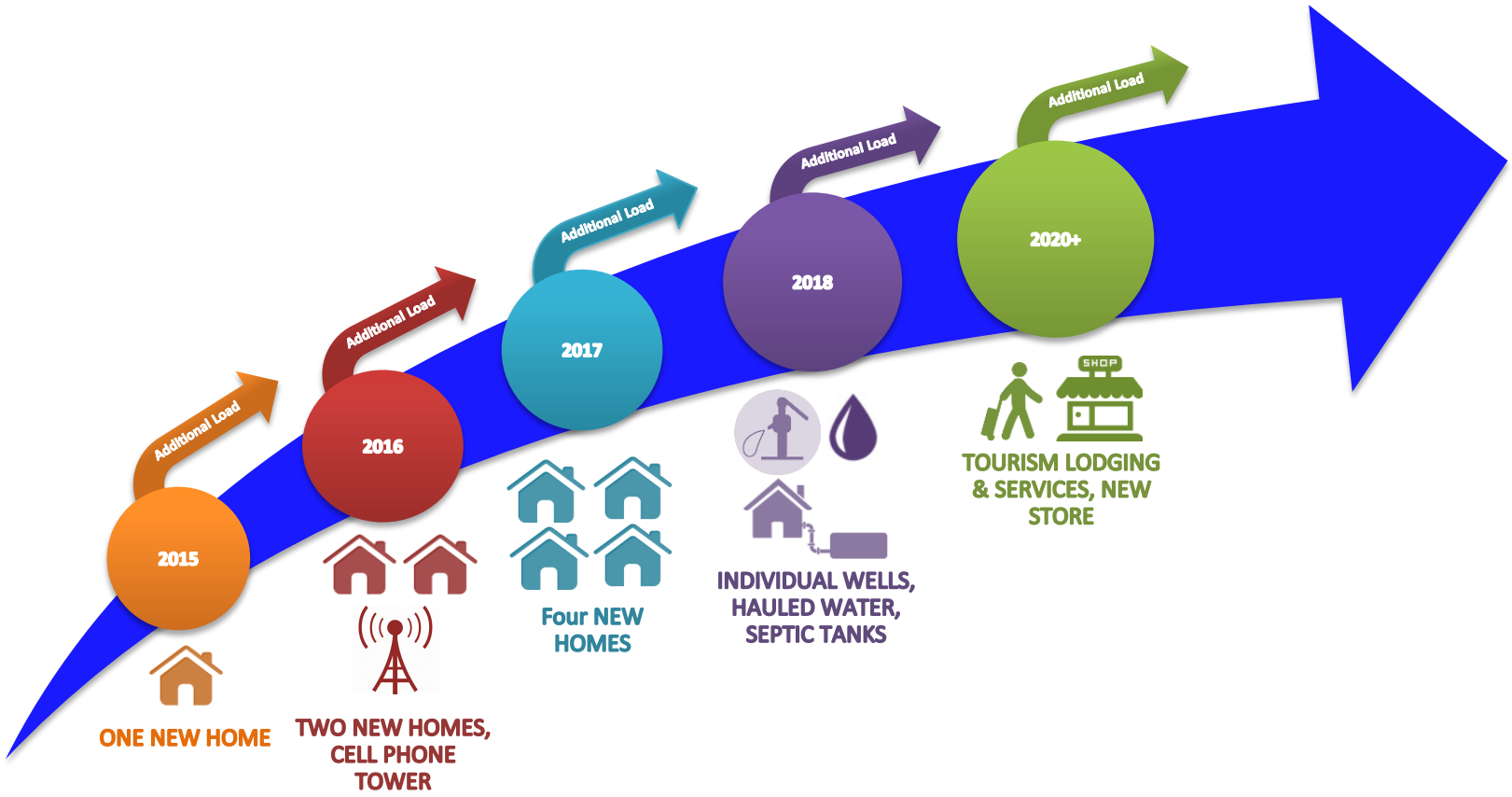




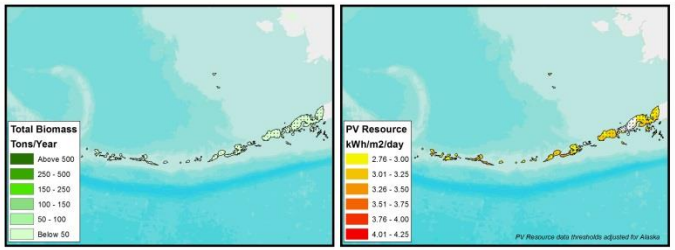


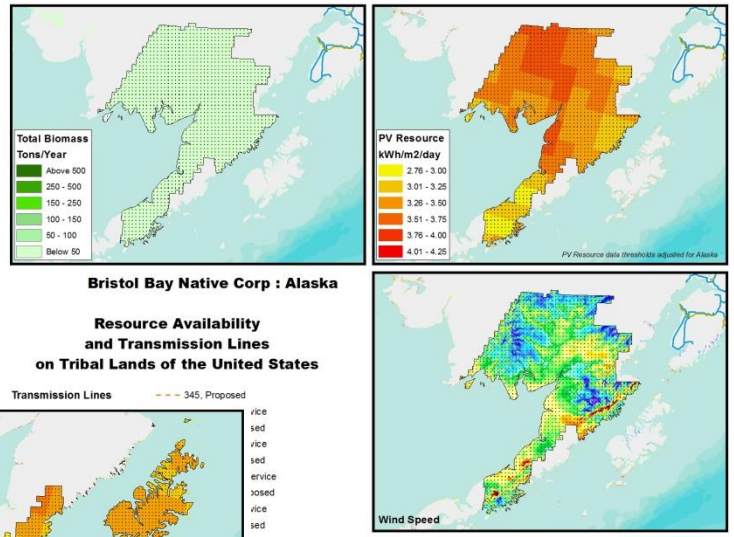
Forecasting Future Energy Demand

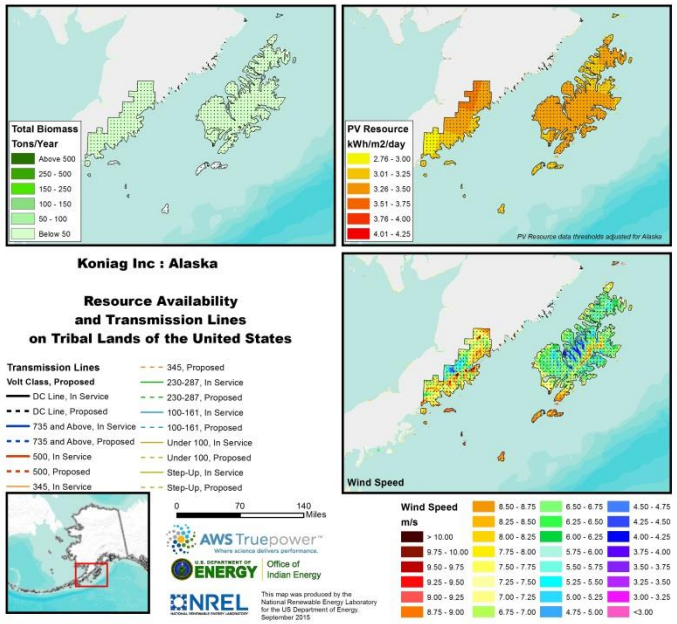
Forecasting energy demand is an exercise in broader community planning



Resource Assessment



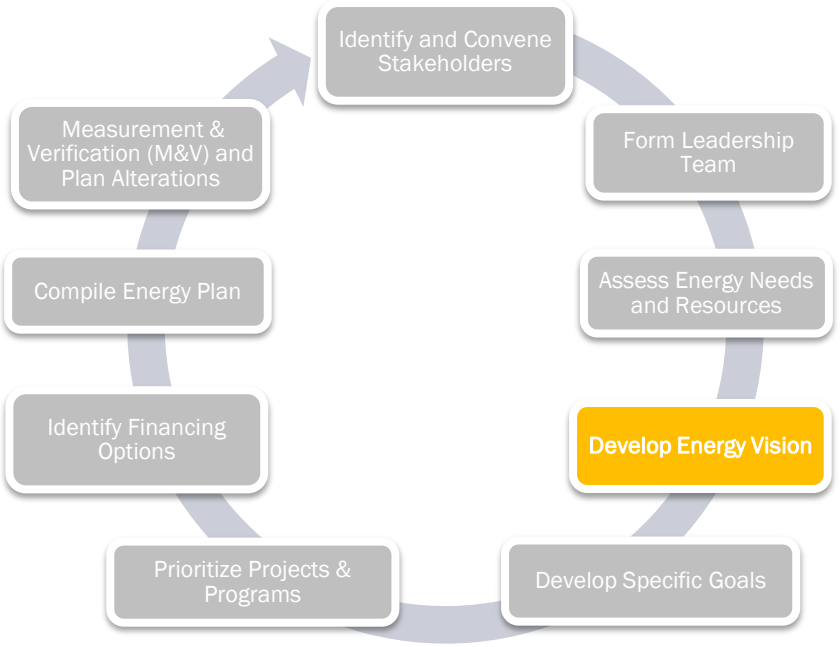




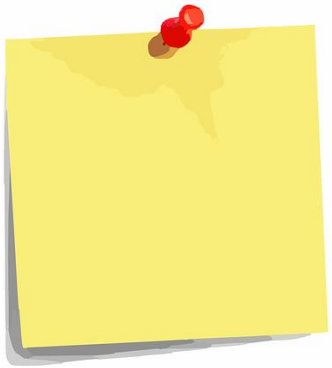
Step 4: Develop Energy Vision

A vision statement:

- Describes an optimal, desired future
- Provides inspiration/guidance
- Is succinct, easy to remember
- Specific and relevant to the situation "on-the-ground"



BRING YOUR STICKY NOTES!



Values and Objectives Inform an Energy Vision

Common objectives include:

- 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
- Save money (offset energy costs)
- Keep money in the village
- Stabilize energy costs

Photo by Karen Petersen, NREL

Energy Vision Example: Rampart, AK

Build capacity to design and maintain new and existing energy systems while focusing on increasing the grid's efficiency, reliability, and stability and to provide employment and training opportunities for tribal members

Accomplishments toward this goal to date include:

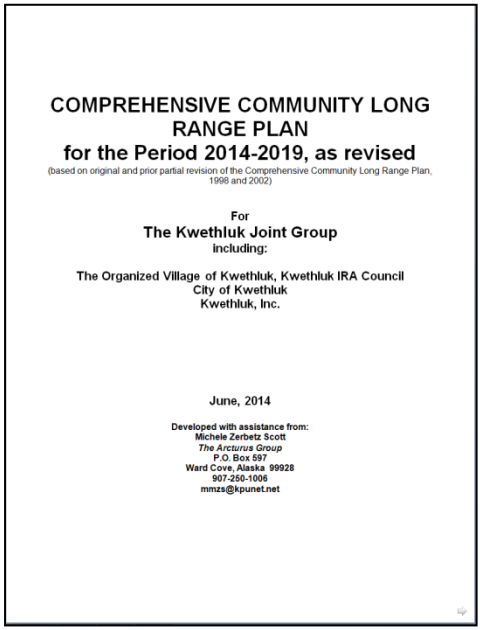
- The tribe got on PCE after having been off for years
- Solicited expert advice on size and configuration of a new generation regime for the community
- Conducted a prefeasibility study of using waste-heat for the washeteria and clinic and also had an energy audit of those two buildings

The Rampart electricity grid is currently very outdated. The powerhouse consists of three generators: one 120kW generator, one 90 kW generator and one 45 kW generator. The 45 kW generator has been out-of-service for over 10 years. The other two generators are operational, but are both very old, and based on the village baseline electricity consumption, oversized for the community.

Source: http://energy.gov/indianenergy/articles/forest-county-potawatomi-recognized-renewable-energy-achievements

Step 5: Develop Specific Goals/Projects

Energy Goals Should be Integrated with Community Development Goals!


COMPREHENSIVE COMMUNITY LONG RANGE PLAN
for the Period 2014-2019, as revised
(based on original and prior partial revision of the Comprehensive Community Long Range Plan, 1998 and 2002)

For
The Kwethluk Joint Group
including:

The Organized Village of Kwethluk, Kwethluk IRA Council
City of Kwethluk
Kwethluk, Inc.

June, 2014

Developed with assistance from:
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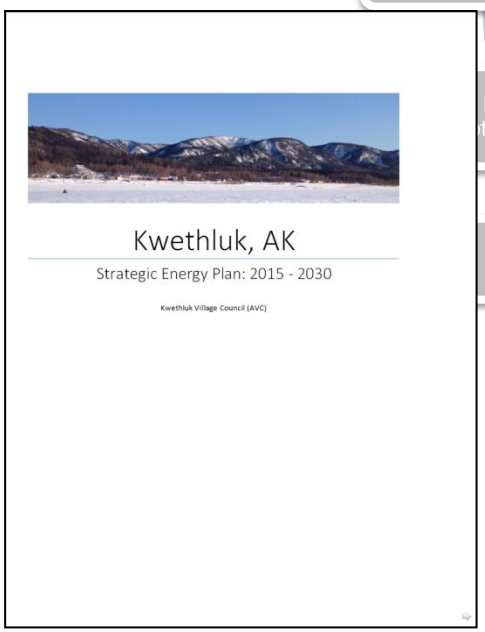
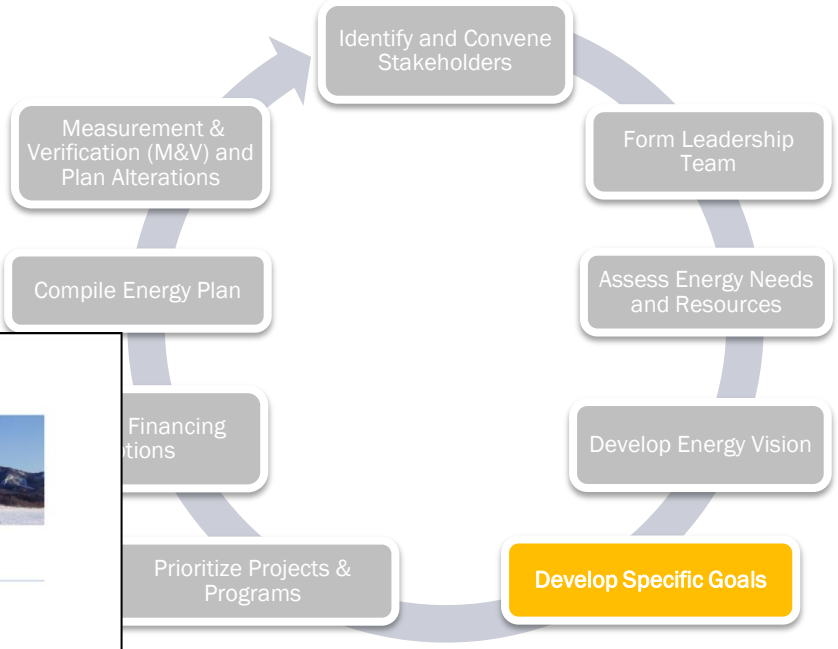
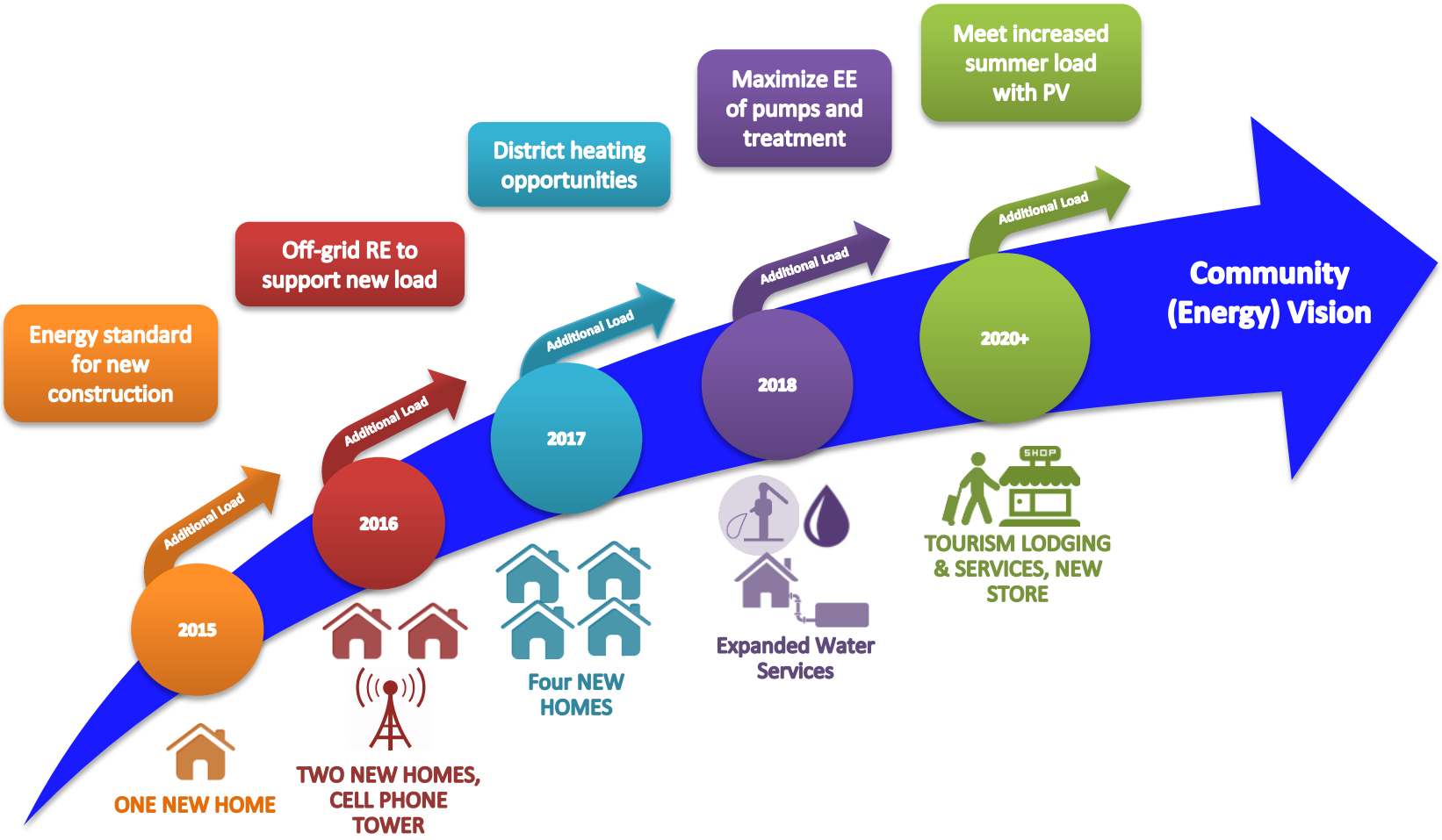




Energy Projects Reflect Community Development Projects



Priorities & Decisions: Develop Specific Goals

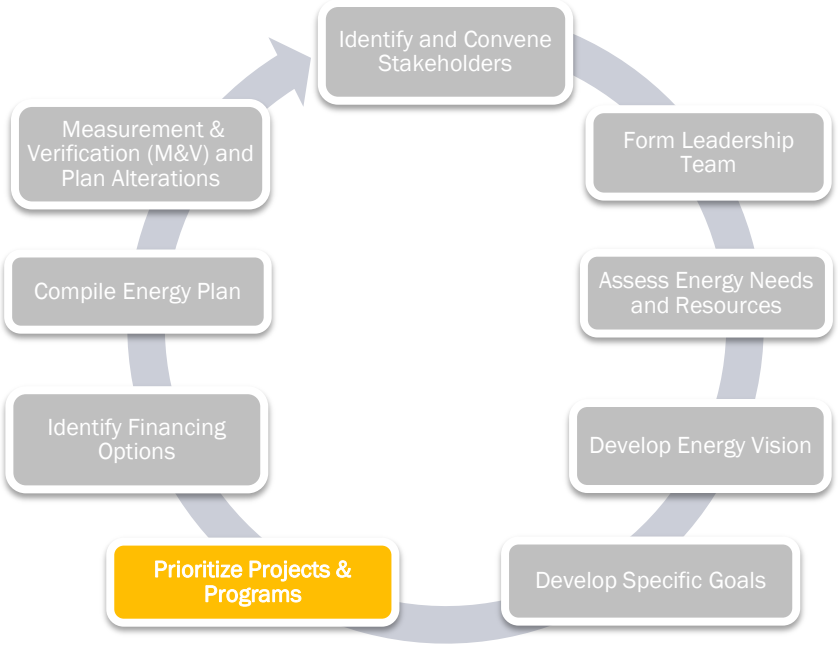
Examples:

- 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

Photo by Karen Petersen, NREL

Step 6: 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 (LCOE)
    - Allows comparison across different technologies
  - Net Present Value (NPV)
    - Considers the profitability of an investment versus the opportunity costs

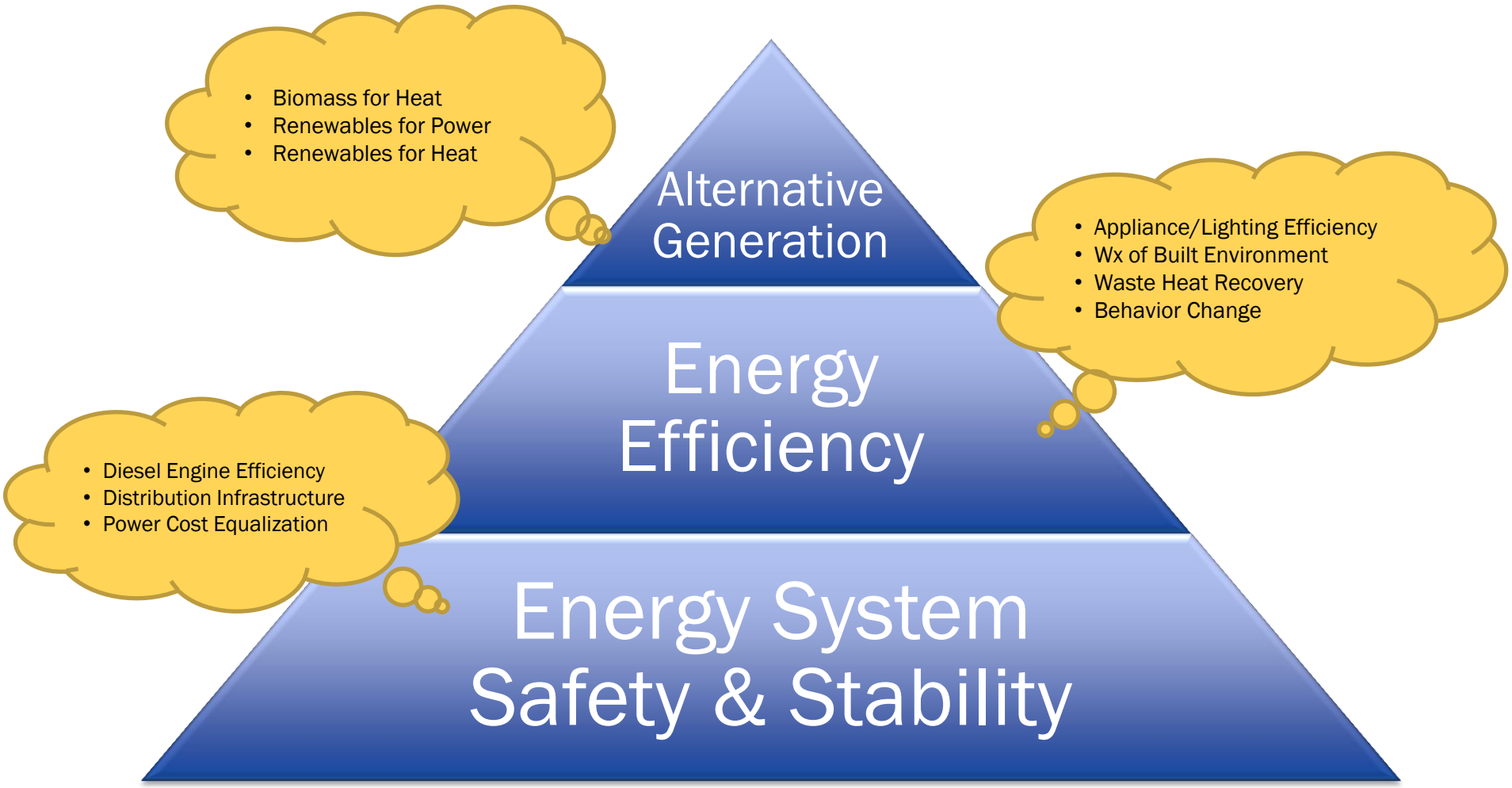


Priorities and Decisions: Prioritize Projects and Programs

- 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
  - Sustainable/green building codes, standards, or other requirements or guidelines

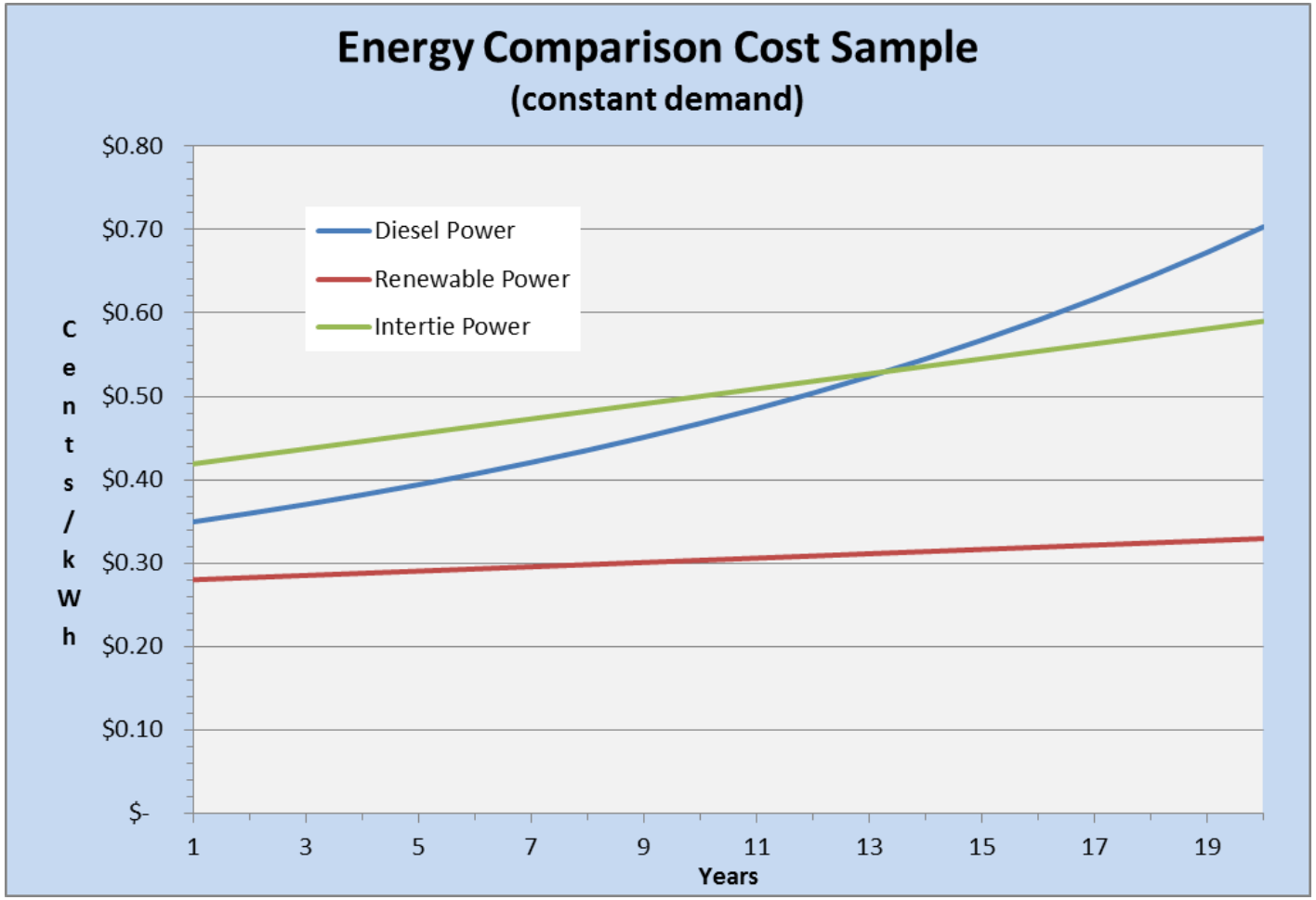
Photo by Bob Gough, NREL 15954

Hierarchy of Needs



Program/Project Selection Based on Economics

A remote village in Alaska is currently using diesel fuel to power their generators 24/7 at 35 cents/kWh. They have two options: (1) intertie with a neighboring village, or (2) install wind turbines. Which option is the most economically viable?

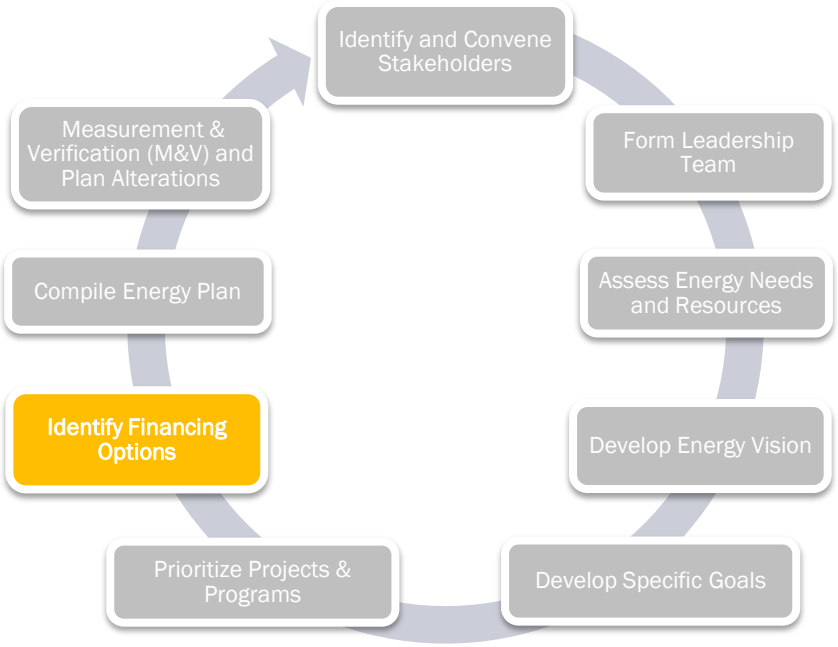


1. Currently, inter-tie appears more expensive than diesel generators.
2. Consider the fact your village would need to build the lines to the neighboring village.
3. Immediate savings are realized from new wind generation, including infrastructure.
4. If diesel power continues to rise, eventually, intertie power should be an important consideration.

Step 7: Identify Financing Options

Techniques:

- Consider various financial approaches
  1. Cost avoidance (have to do no matter what: aggravate fuel purchases, GSA purchases)
  2. Efficiency (weatherization and optimization), power plant tune-up
  3. Public Money:
  4. Private Funding (RurAL CAP, Aid Foundations, Native Corps)
- Integrate grant writing capability and project team technical knowledge during project identification to support this step
- Research intent of grant programs and attributes of successful awards
- Align grant award timetable and project development process



State Funding
- AEA
- AFHC

Non Profit
- Rasmussen Foundation
- Rockefeller
- Etc.

Federal Funding
- Denali Commission
- DOE
- EPA
- IHS
- USDA
- HUD
- NGOs / Non-Profits

Priorities and Decisions: Identify Financing Options

Secure planning and project funding sources:

- Tribal funding (energy.gov/indianenergy/fedprograms)
- DOE Technical Assistance (TA) Program
- Other federal agency TA and grant programs
- State programs
- Non-governmental organizations (NGOs)

Photo by Alex Dane, NREL

DOE Funding Tool

Provides information for Tribes about federal grant, loan, and technical assistance programs available from multiple federal agencies to support energy development and deployment in Indian Country and Alaska Native villages

Sort information by type of assistance, eligibility, agency or office, program name, or project phase

Step 8: Compile Energy Plan

Include:

Vision

Objectives

Goals

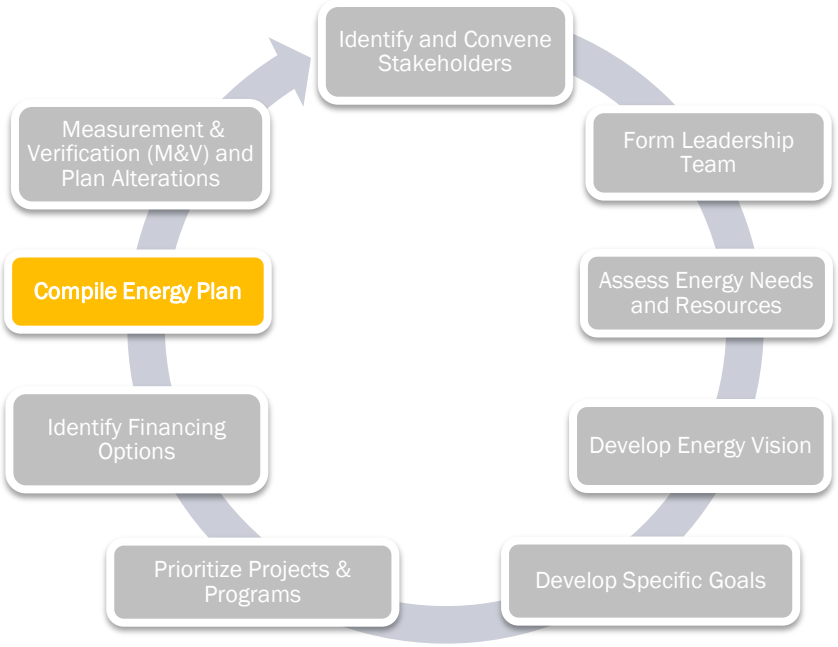
Baseline

Barriers

Prioritized projects (sequenced)

- Demand side
- Generation

Adoption by Tribal Council



Energy Plan: Components

Include:

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

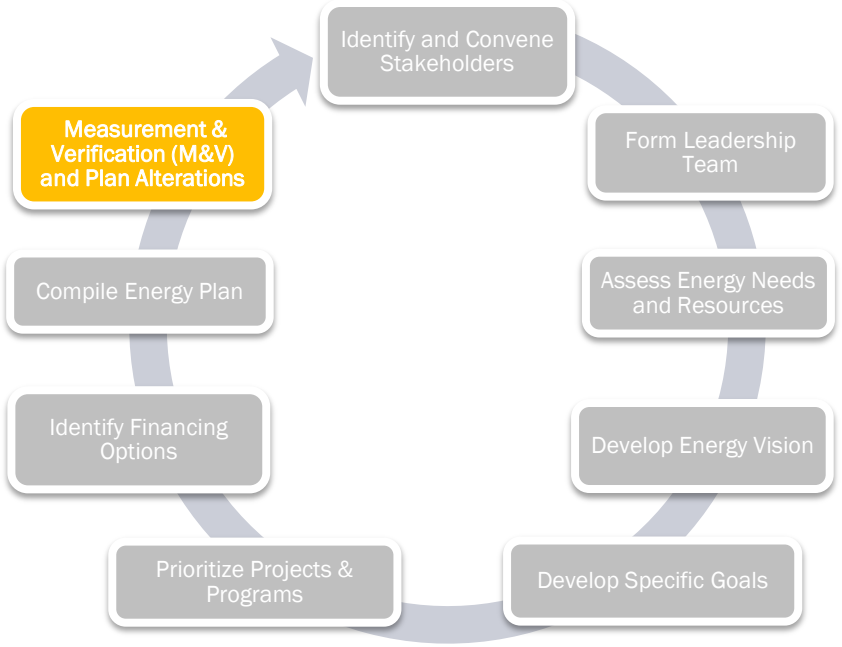
Photo by Paul Dearhouse, NREL 24503

Step 9: Measurement & Verification

M&V

Evaluate

Fine Tune



Questions?

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  - Sherry.stout@nrel.gov