NAEMI Biomass Training Workshop

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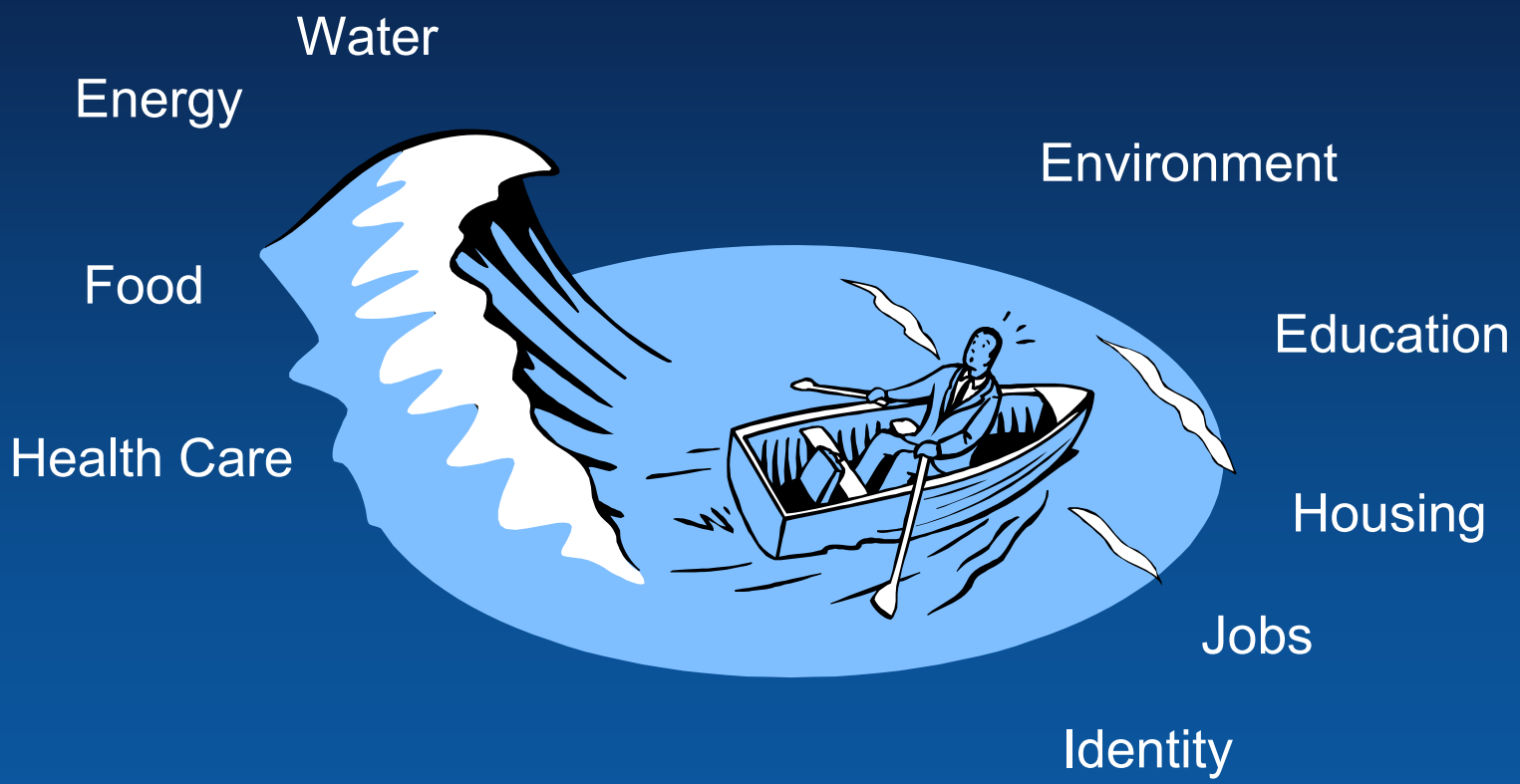
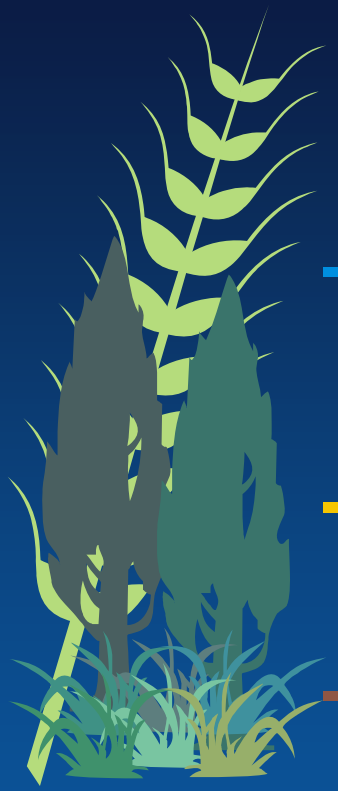
Strategic Bio-Energy Planning Next Steps

Building a Community Lifeboat

Sovereignty & Sustainability through Self Sufficiency



Biomass & Bioenergy Flows



Biomass

Fiber

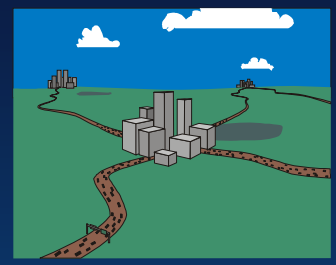
pulp
paper
lumber
plywood
cotton

Materials

Process Residues
black liquor
sawdust
bark

Crops, Animals

Food



Consumers

MSW clean fraction
yard trimmings
constr. & demolition wood
non-recyclable organics

Process Residues
dung
bagasse

stalks & straws
harvest residues
forest slash
forest harvest for energy plantations

Bioenergy

Energy Services

heat
CHP
electricity

Biofuels

charcoal
biogas
ethanol

Strategic Energy Planning

Defining where you are,
Where you want to go,
What are your energy options, and
Developing a plan to get there.

Tribal Strategic Energy Planning

Tribal Objectives

- Energy Reliability & Security
- Off-Grid Electrification
- Minimize Environmental Impacts
- Supply Diversification
- Use of Local Resources
- Economic Development
- Jobs
- Build technical expertise
- Respect for Mother Earth
- Others??

Develop a community energy baseline

Community Energy Audit
- All individual energy flows, in detail
- Buildings, Transportation, Agriculture, Water

Forecast of New Loads
- Markets, Coops, Housing, Lodging, Casino, Warehouse

Details of current Service Providers
- Who, where, how much, tariffs, level of cooperation
- Electric, Gas, Propane, Wood
- Load profiles, in detail

Local Energy Supply Options
- RE and fossil fuel inventory

Add it all up, categorize by load type, quantify load growth

Develop a common Tribal energy vision

- Place a “marker" on where the tribe wants to be – in 5, 10, or 20 years
- A statement, or resolution, approved by the Tribal Council following input from broader tribal community
- The vision sets clear direction, but is not too prescriptive

Identify and support a Tribal champion

A tribal champion (or team) is key - empowered to lead the strategic energy planning process forward

Integrate culture and environmental constraints

- Natural Resource Valuation
  - Water and Air
  - Wildlife Habitat
  - Forests, rangelands, wetlands, other
- Technology Effects
  - Emissions, Aesthetics, Noise
- Economic Development Trade-offs
- Cultural Impacts – (Sacred Sites, Plants, Burial Grounds)
- Tribal Impact – Community & Government
- Other Considerations

- Holistic Approach to development

Demand-Side Options

Fuel Switching (electricity, gas, propane, wood)

- Weatherization
- Efficiency
  - Appliances
  - Lighting
  - Heating & Cooling Systems
  - Commercial & Industrial Loads
- Demand Response and Load Shifting
- Direct Load Control
- Considerations
  - Quantifying available resource
  - Measuring effects of actions

Supply-Side Options

- Conventional Technologies
- Cogeneration
- Renewable Technologies
- Attributes to Consider
  - Plant Capacity
  - Fuel Type
  - Efficiency
  - Reliability
  - Capital, Operating & Lifecycles Costs
  - Lifetime & Decommissioning
  - Environmental Impacts

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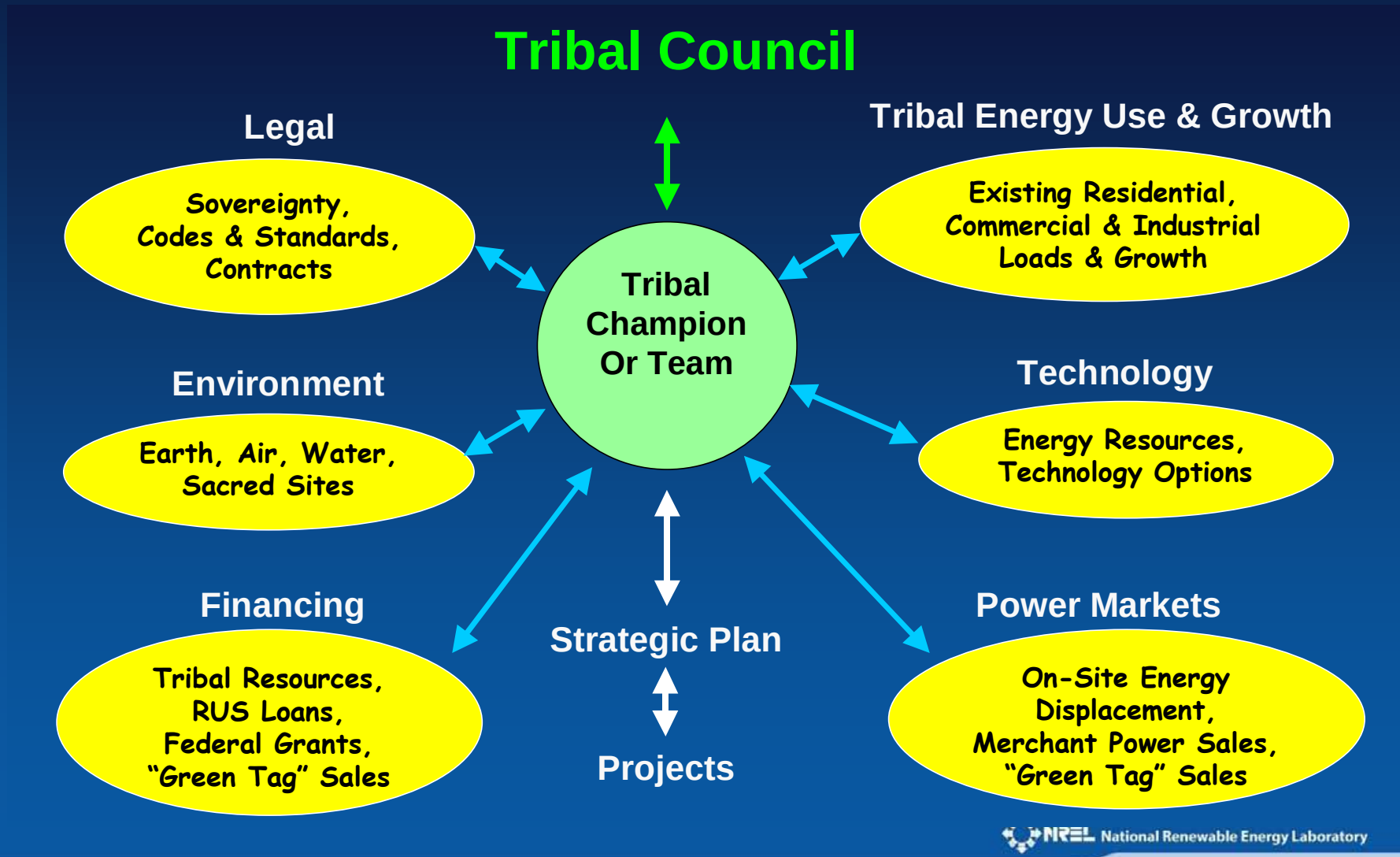
Establish implementation program & projects

Characteristics of a Solution

- Rapid
- Technically & Institutionally Sustainable
- Maximize Coordination
- Politically Feasible
- Attracts Financing, Capital, Sweat Equity
- Reinforces tribal enterprises

Establish organizational and human resource needs

How do you want to make it happen?



Opportunities & Strategies

- Tribal utility formation
- Strategic industry partnerships
- Tribal cooperatives
- Education

Barriers Identification

- Financing
- Human Capacity Development
- Organizational Development
- Tribal Laws and Regulations
- Clear Decision Making Process
- Stable Leadership