



NREL

National Renewable Energy Laboratory

Innovation for Our Energy Future

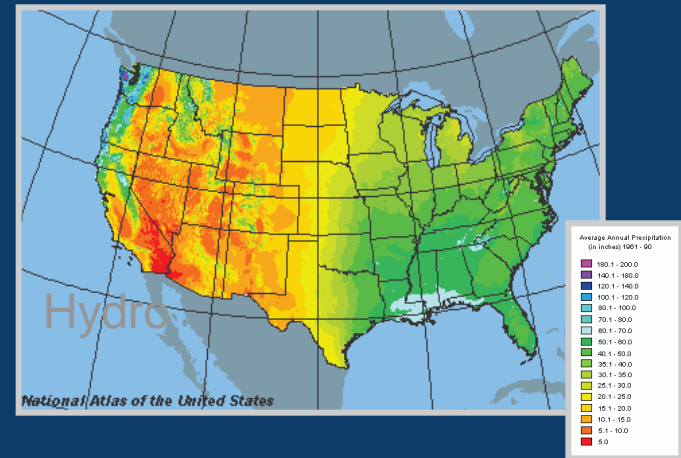
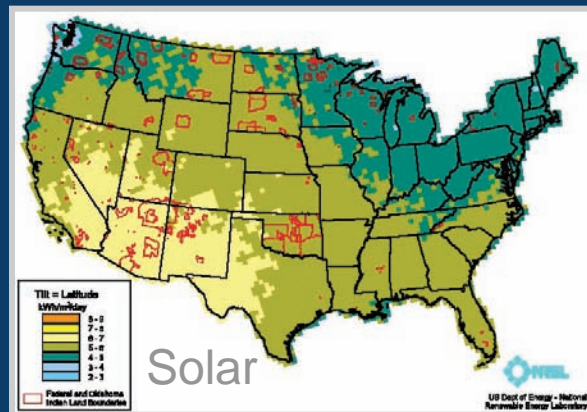
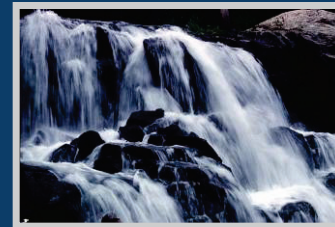
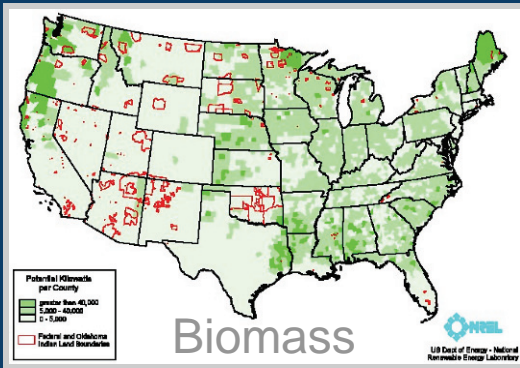
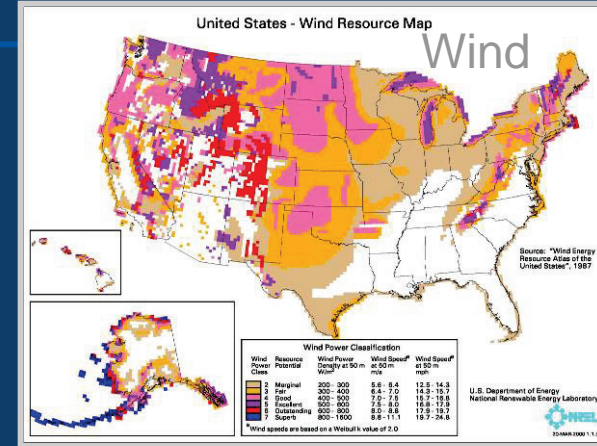
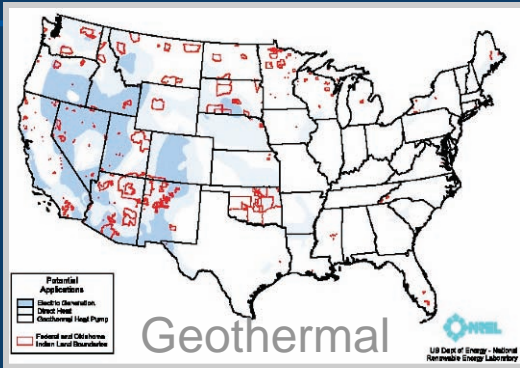
Strategic Energy Planning, Project Development and the Importance of Champions



Roger Taylor
Group Manager
State, Local & Tribal Initiatives

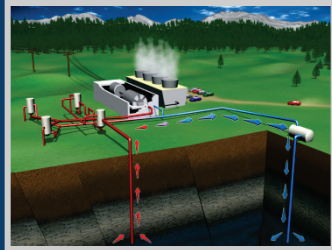
November 18, 2009

Renewable Resource Options



Renewable Technology Options

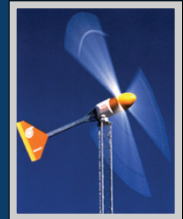
Power



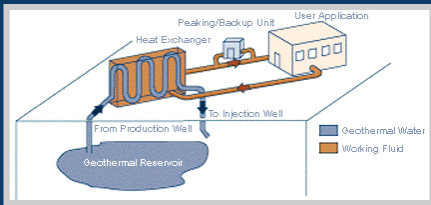
Biomass Heat, Power & Fuels



Small Wind



Direct Use



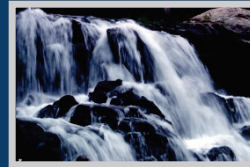
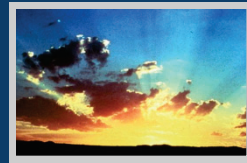
Diesel Hybrids



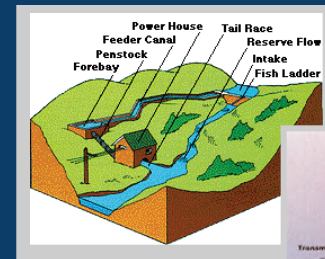
Big Wind



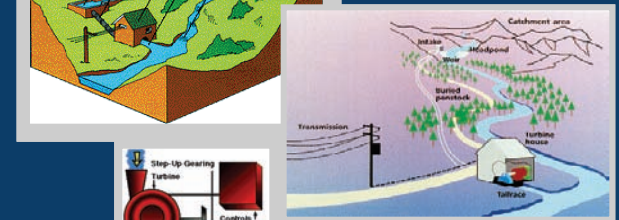
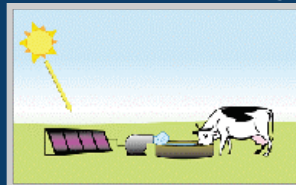
PV - Remote Homes



Small Hydro



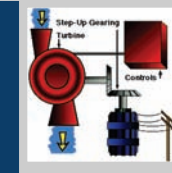
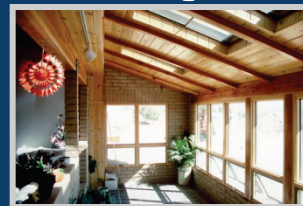
Stock Watering



CS Power & Heat



Buildings

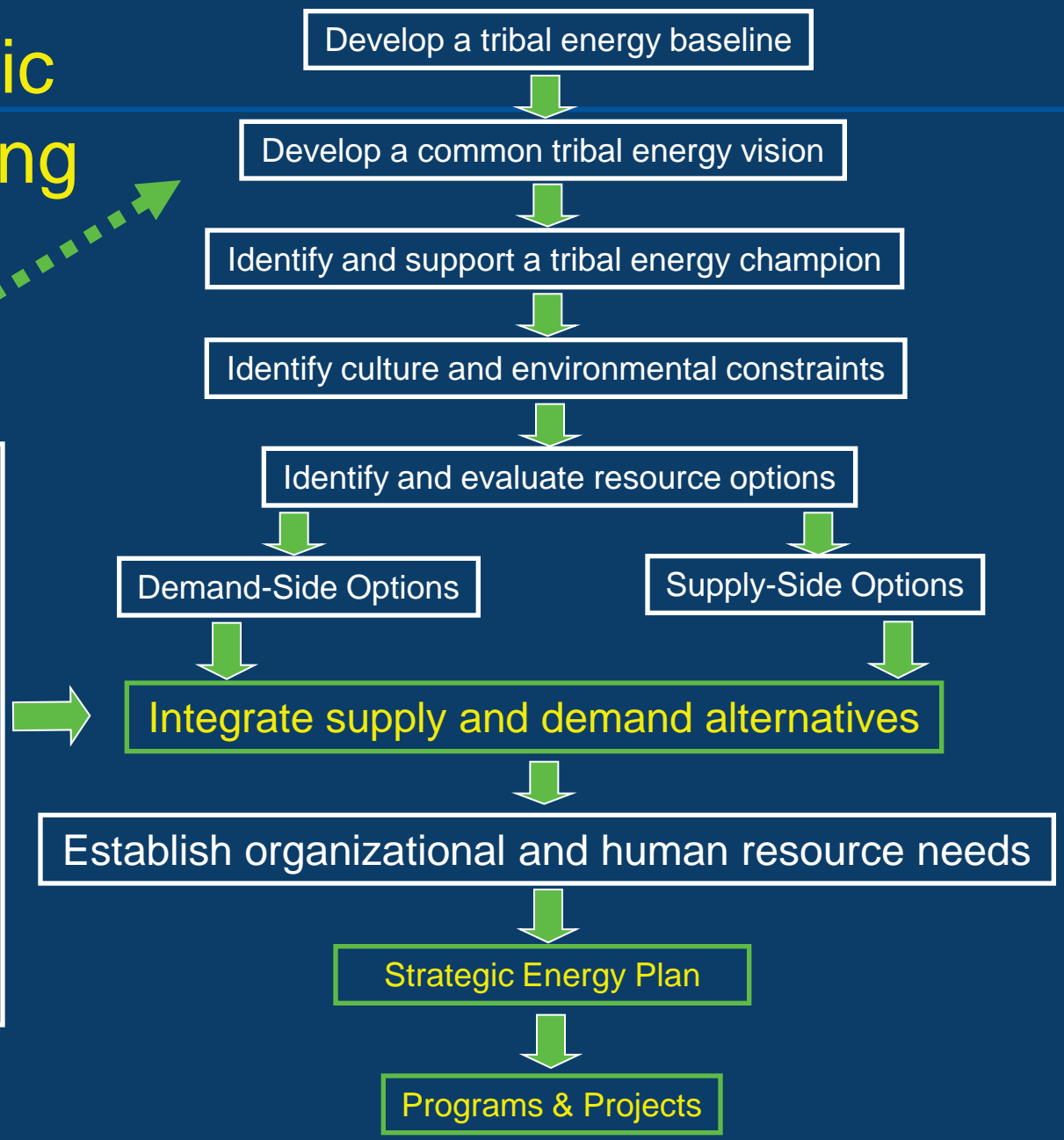


Strategic Energy Planning

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

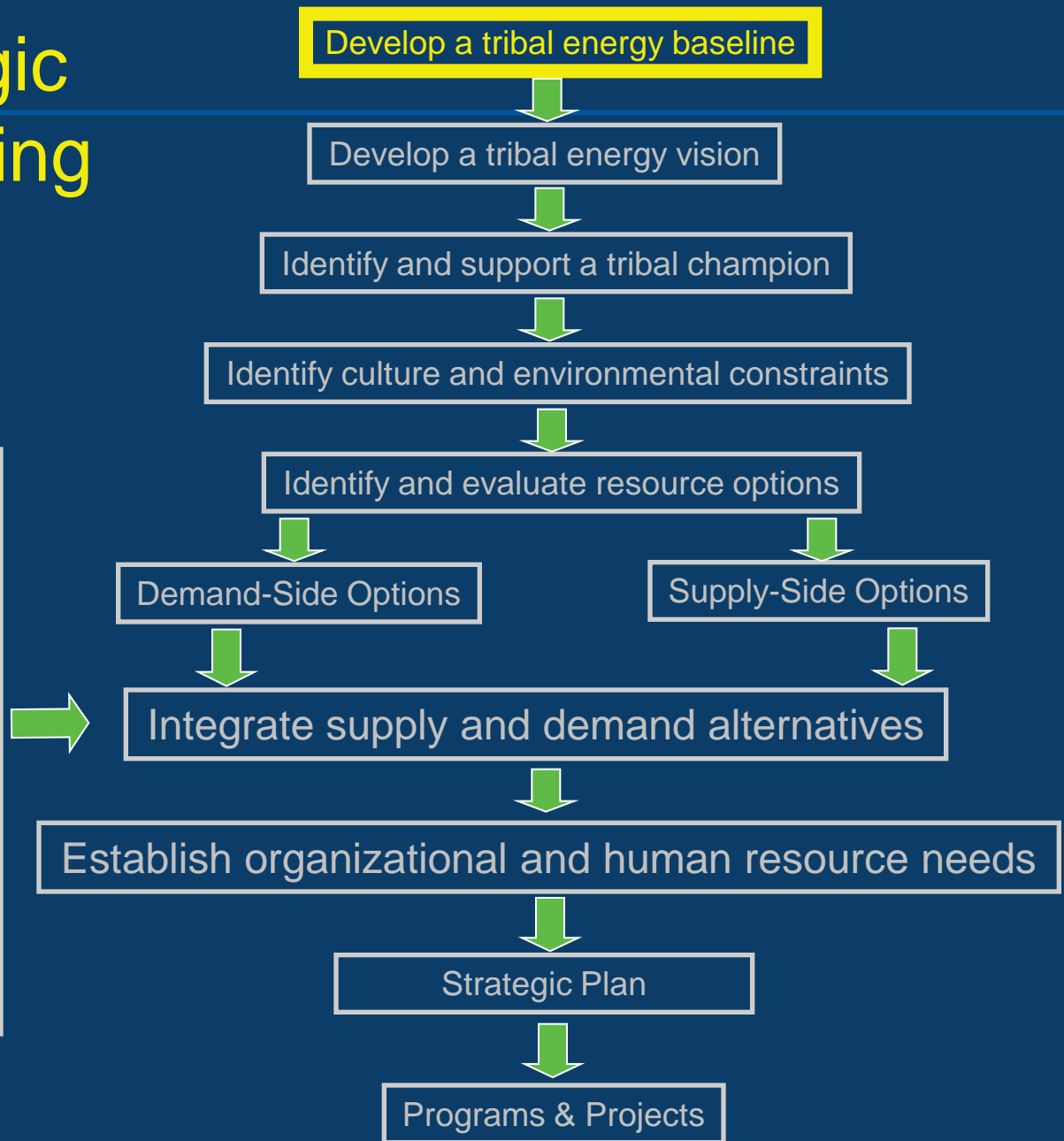
Tribal Strategic Energy Planning

- 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??



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Develop a tribal 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

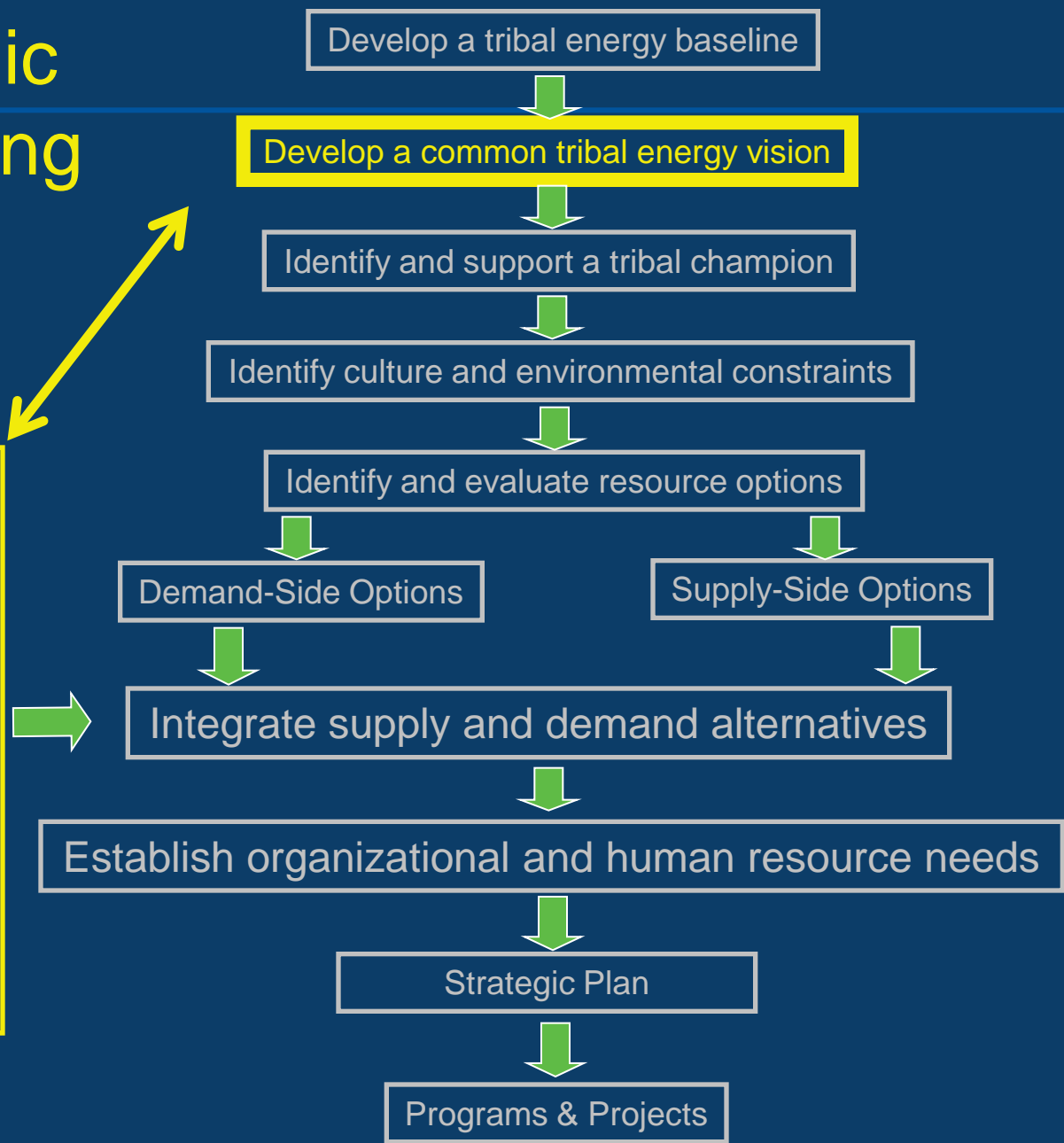
Local Energy Supply Options

RE and fossil fuel inventory

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

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Develop a common Tribal energy vision



Place a “marker” on where the tribe wants to be –
in 10, 20, or 30 years

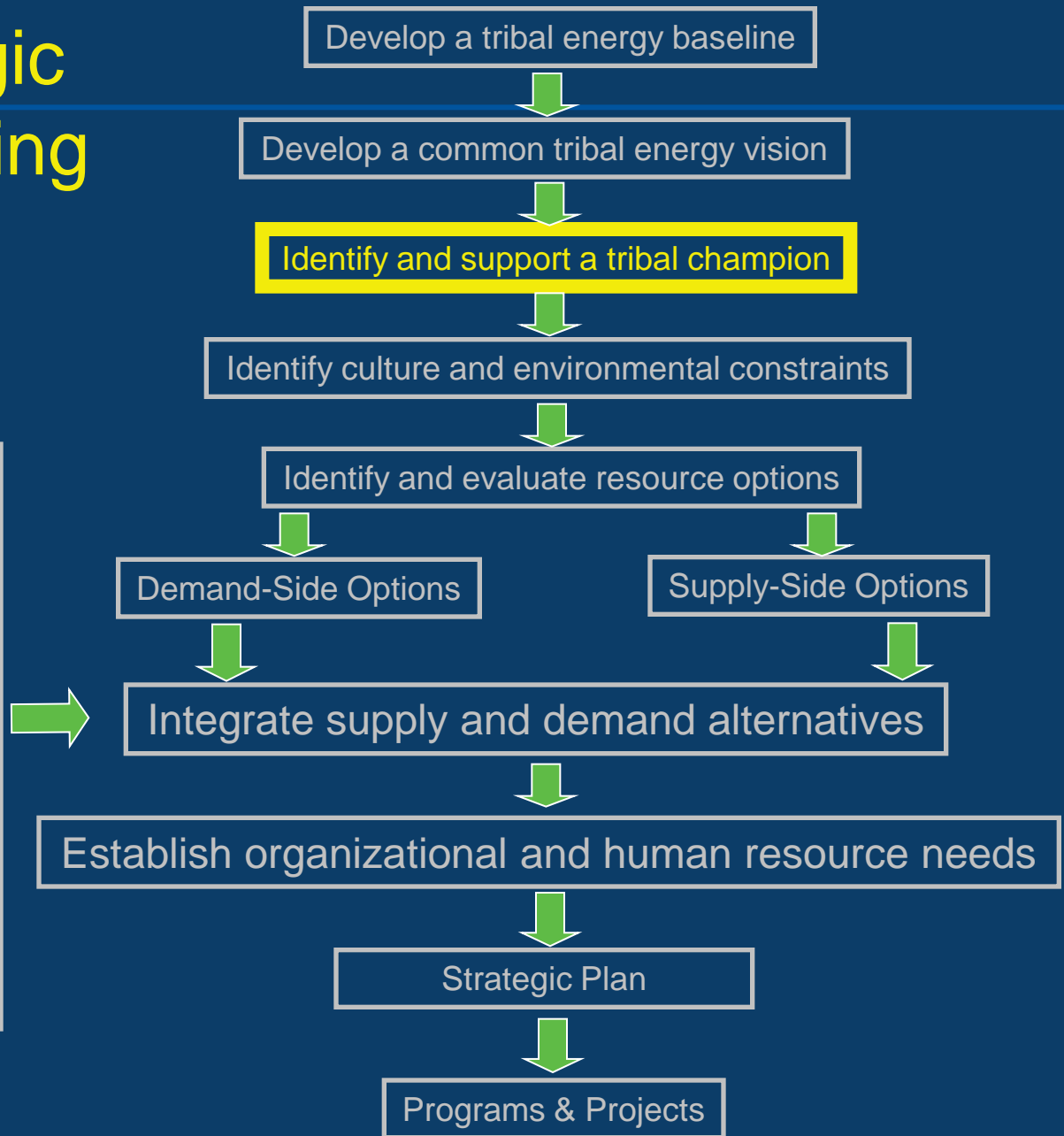
A statement, or resolution, approved by the Tribal Council
following input from broader tribal community

The vision sets clear direction, but is not too prescriptive
(where not how)

Draft a Vision Statement

Tribal Strategic Energy Planning

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Identify and support a Tribal champion



A tribal champion (or team) is key – this individual or, more likely, team must be empowered to:

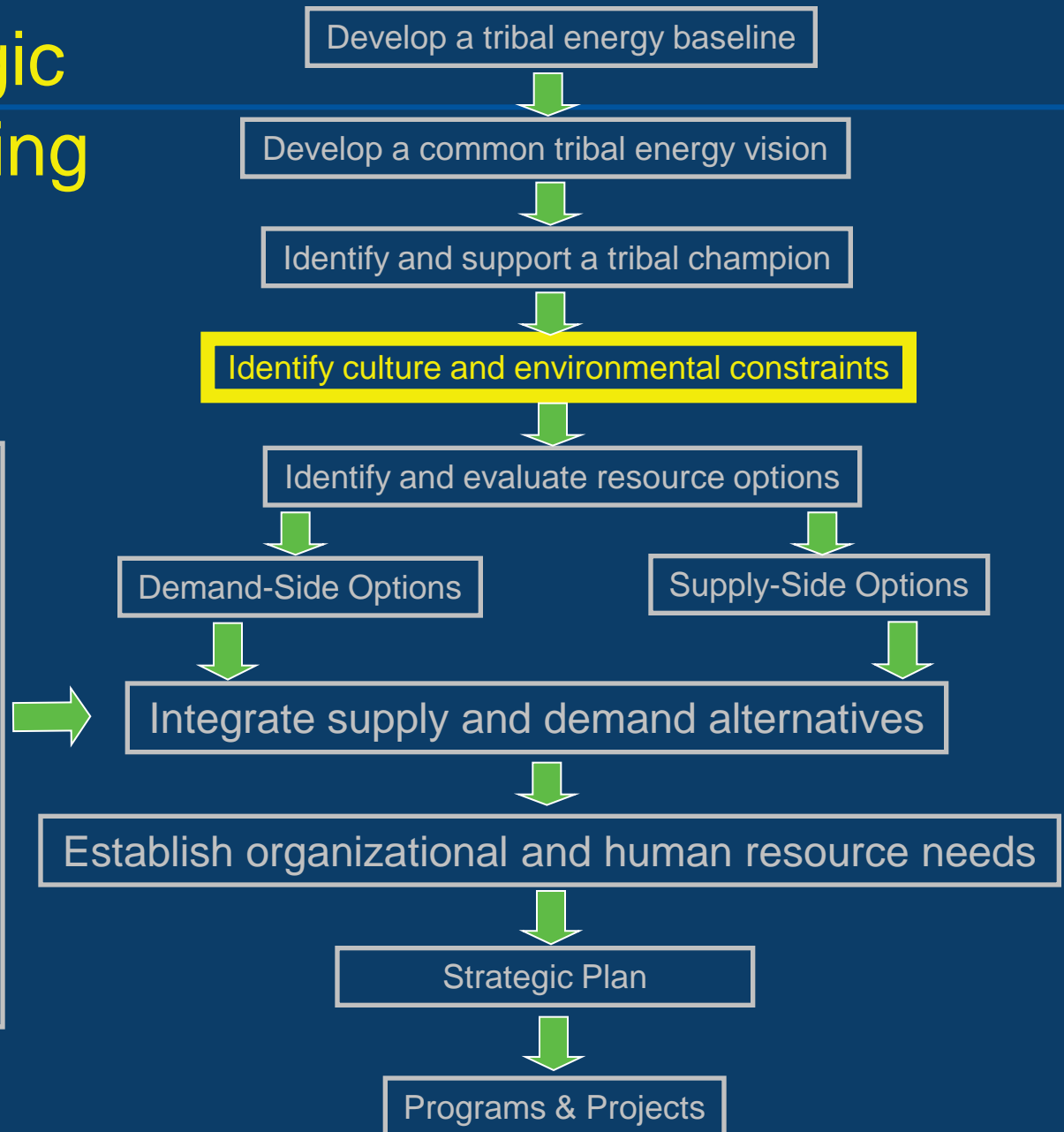
- explore the range of supply & demand options,
- facilitate tribal consensus,
- lead the strategic energy planning process forward,
- make recommendations to Tribal Council, and General Council

What are the challenges you face in your community to establishing a tribal energy champion or team?

Tribal Strategic Energy Planning

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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

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 tribal energy baseline



Develop a common tribal energy vision



Identify and support a tribal champion



Identify culture and environmental constraints



Identify and evaluate resource options



Demand-Side Options



Supply-Side Options



Integrate supply and demand alternatives



Establish organizational and human resource needs



Strategic Plan

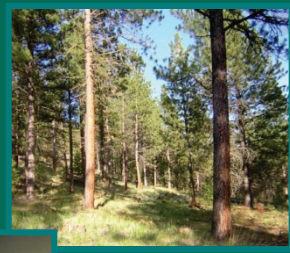


Programs & Projects

Electricity



Fuels



Project Development Steps

See also: http://www1.eere.energy.gov/tribalenergy/guide/assessing_energy_resources.html



- Phase I
 - Strategic plan completed
 - Champion identified and empowered
 - Initial project planning meeting(s)
 - Project team/company formed
 - Secure early stage funding (grant? equity investment?)
 - **Feasibility assessment**
 - Go/No-Go
- Phase II – Development
 - Permits, interconnect, PPA, finance
- Phase III - Construction

Feasibility study (FS) general steps

See also:

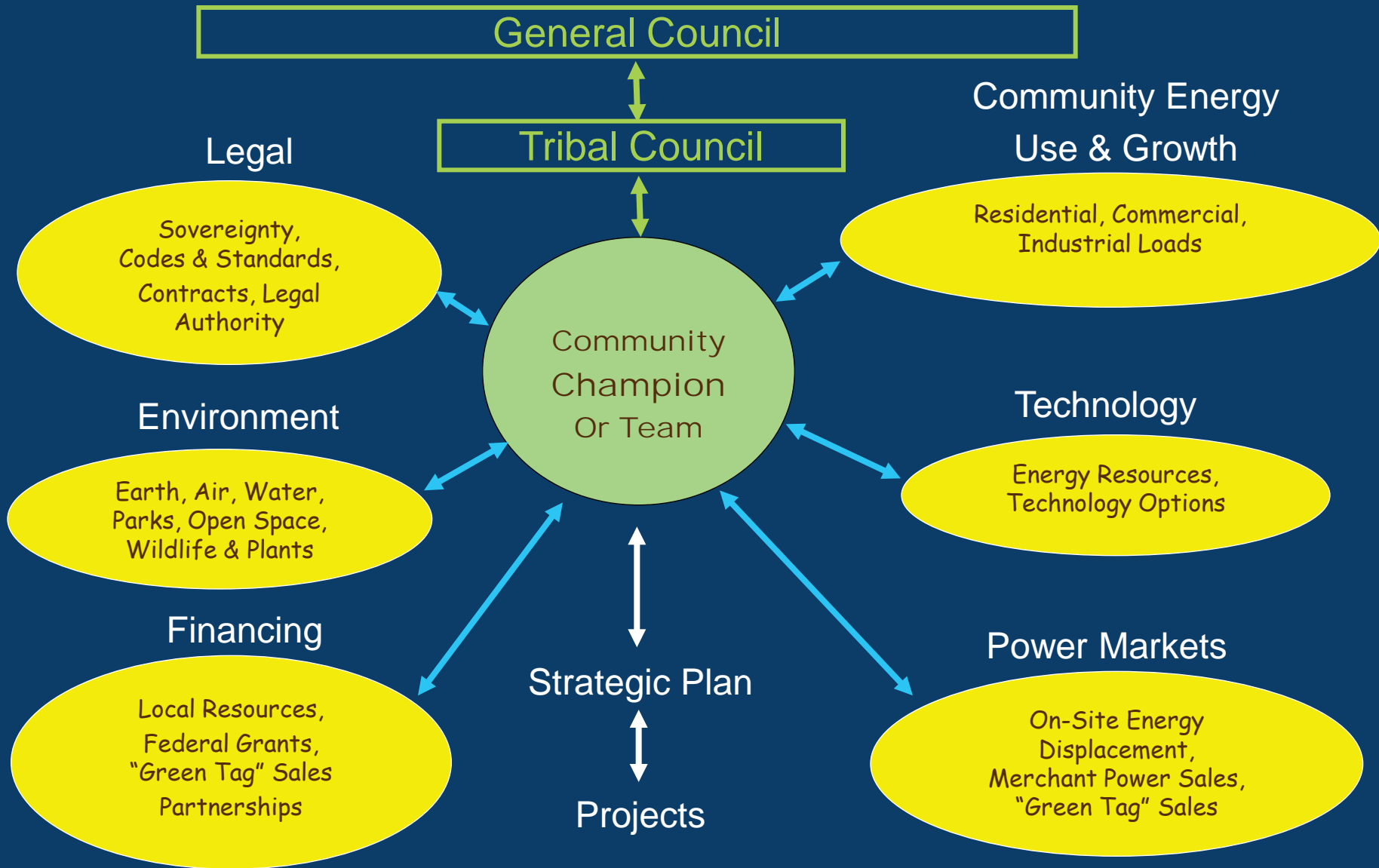
http://www1.eere.energy.gov/tribalenergy/guide/assessing_energy_resources.html

Last chance to spend a little money before you spend a lot

- Resource assessment
- Market analysis (community vs. commercial scale)
 - Load assessment if looking at community or small-scale
- Site analysis/site selection
 - interconnection, water, roads, host site, natural gas, rail
- Technology characterization
- Preliminary environmental review
- Economic and financial analysis
- Barriers and opportunities

The level of complexity of your project will dictate whether you do the FS in-house or hire a consultant.

The Tribal Energy Development Challenge





Establish implementation program & projects

Characteristics of a Solution

Rapid

Technically & Institutionally Sustainable

Maximize Coordination

Politically Feasible

Attracts Financing, Capital, Sweat Equity

Reinforces tribal enterprises

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