

Tribal Strategic Planning for Energy Development

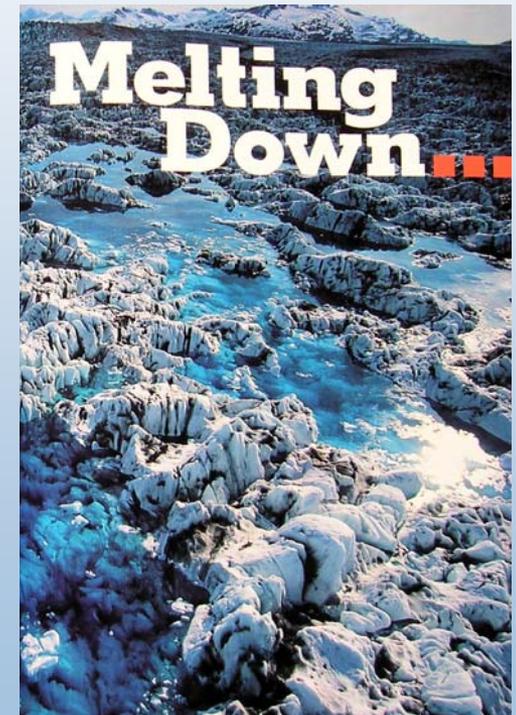
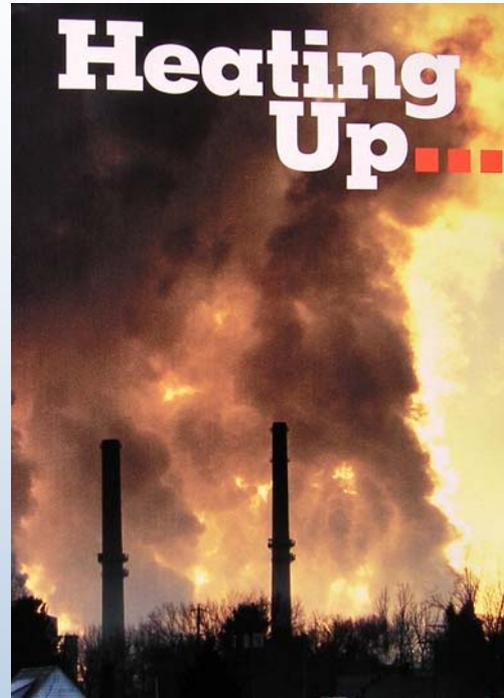
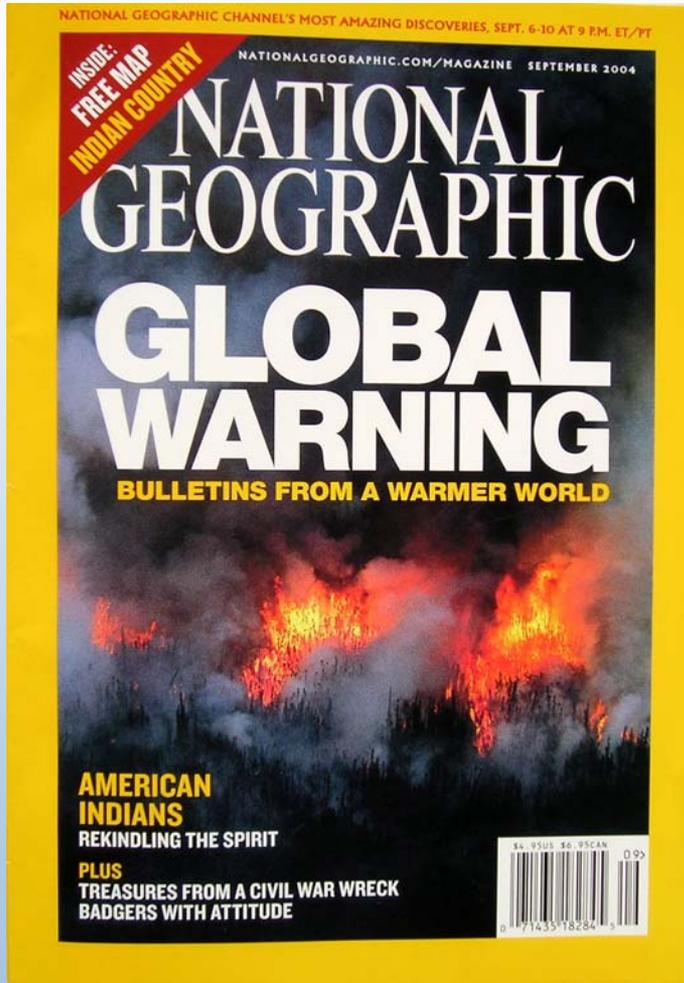
Roger Taylor
October 9, 2007

Strategic Energy Planning

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

So where are we?

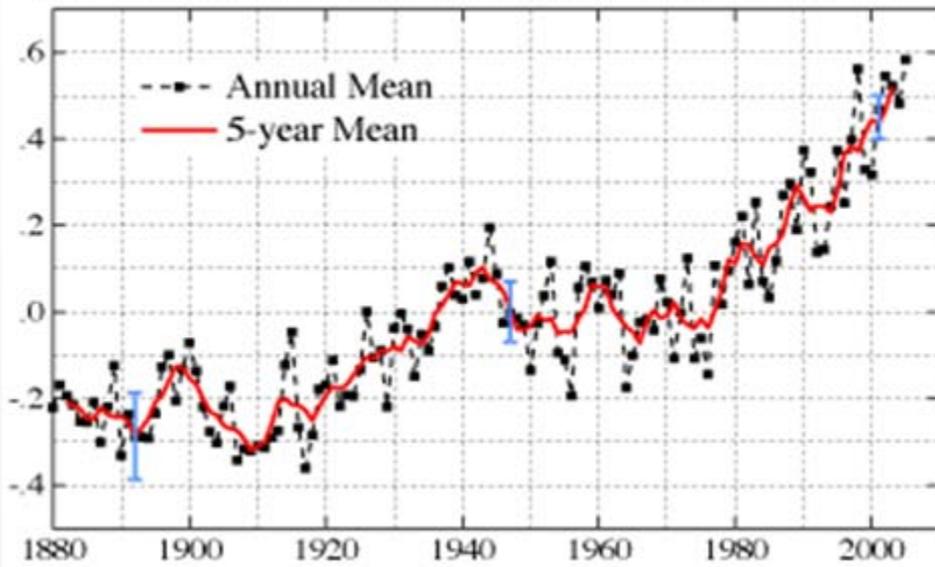
We Live in a Changing World



Where Carbon Reduction is a Requirement

2005 Warmest Year on Record

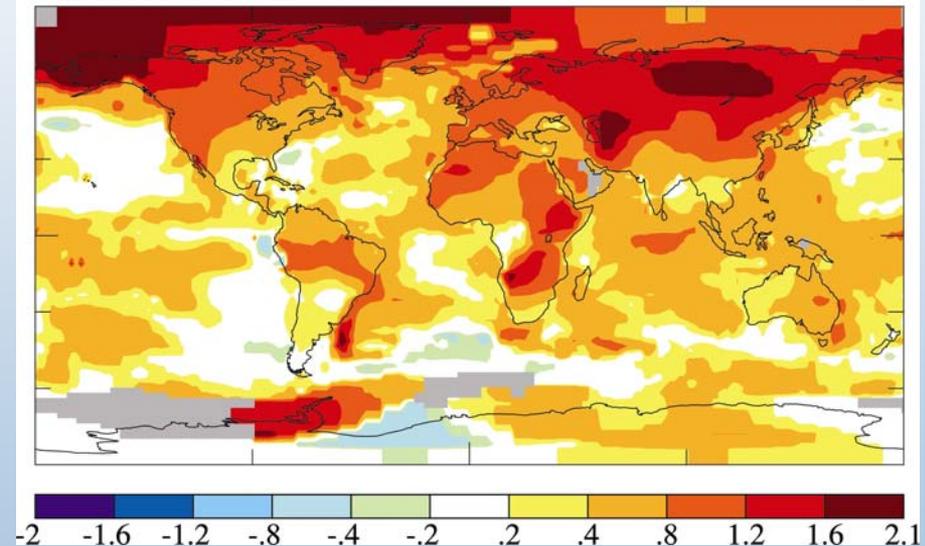
(a) Global-Mean Surface Temperature Anomaly (°C)



2001-2005 Mean Surface Temperature Anomaly (°C)

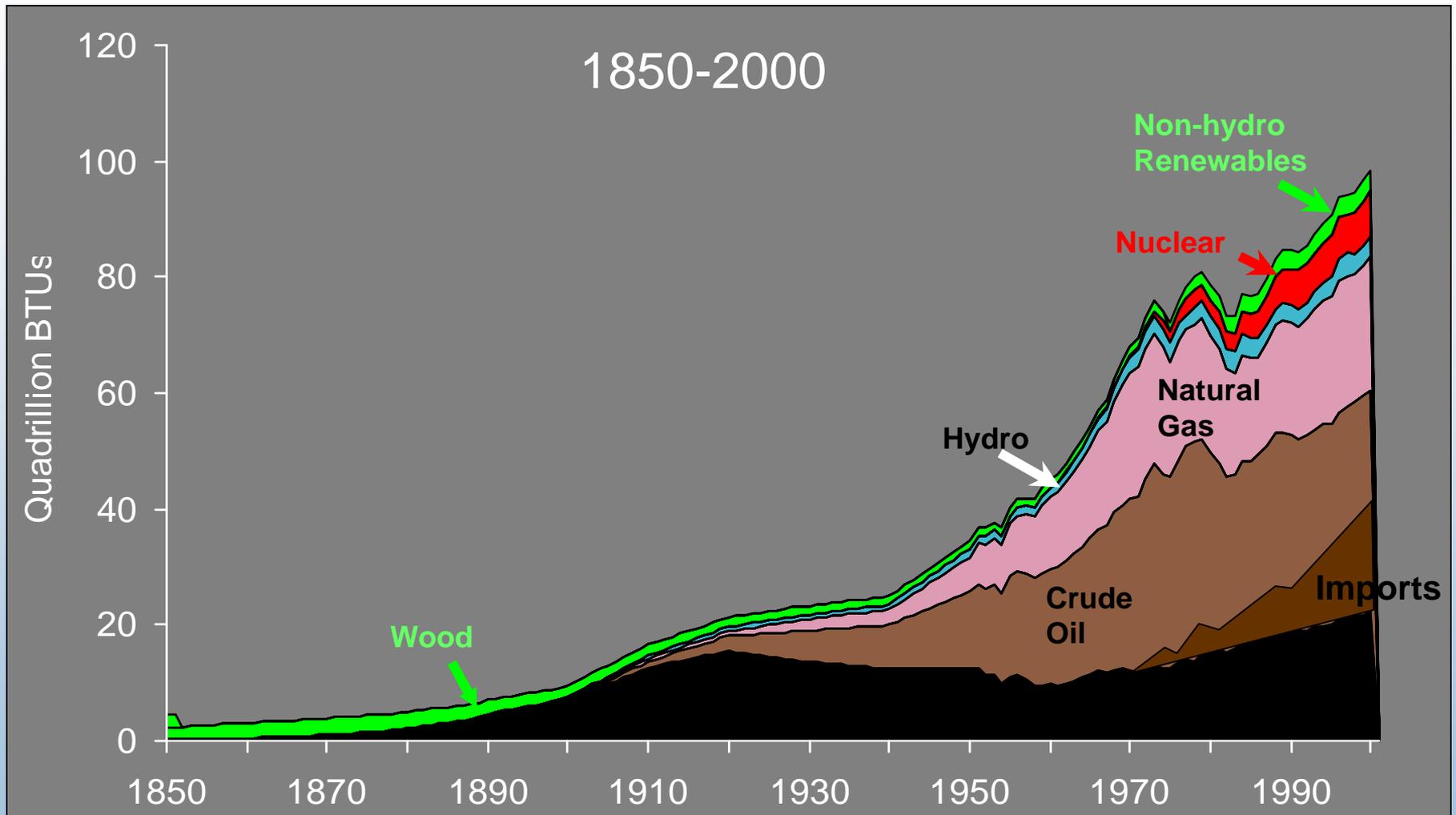
Base Period = 1951-1980

Global Mean = 0.53



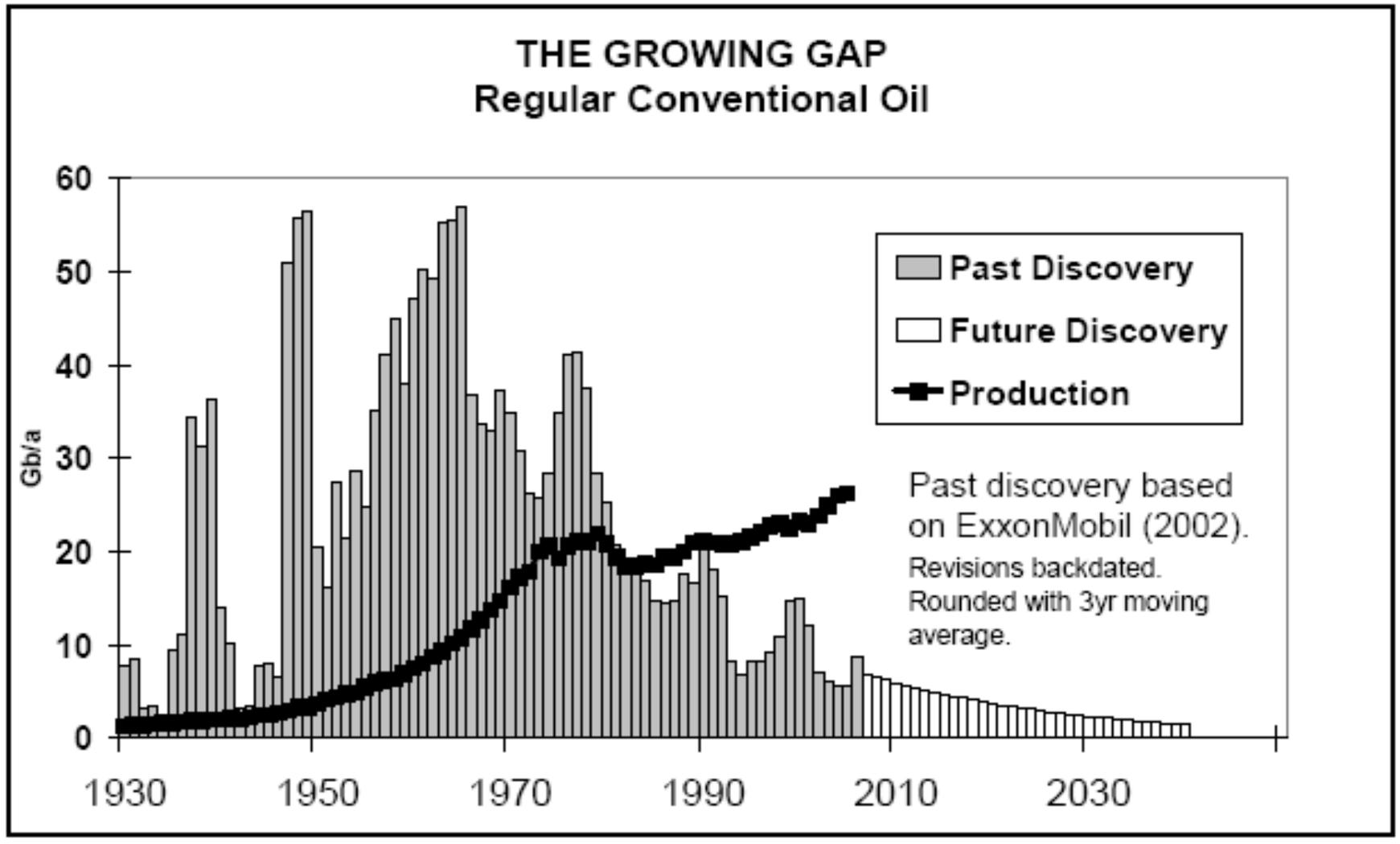
Warming of $0.2^{\circ}\text{C}/\text{decade}$ over last 30 years

Where U.S. Energy Consumption Continues to Grow



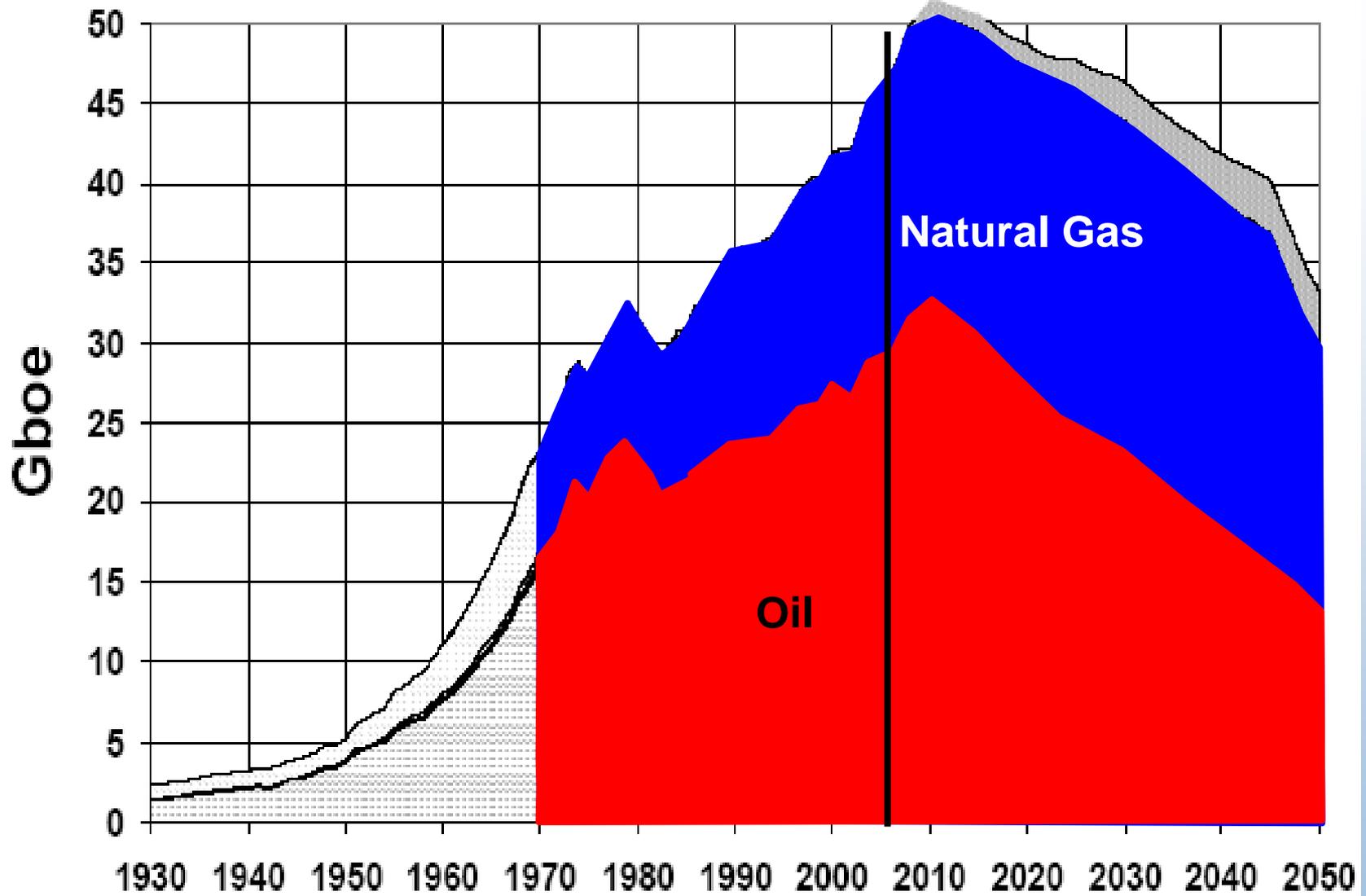
Source: 1850-1949, Energy Perspectives: A Presentation of Major Energy and Energy-Related Data, U.S. Department of the Interior, 1975; 1950-2000, Annual Energy Review 2000, Table 1.3.

Where Oil is Becoming Precious Commodity



Source: Campbell, February 2007

Where Oil & Natural Gas will Soon be in Decline



Regular Oil ■ Heavy etc ■ Deepwater □ Polar ■ NGL □ Gas ■ Non-Con Gas

7 Generations Span The Age of Oil & NG

Our Grand Parents

Our Parents

Our Generation

30

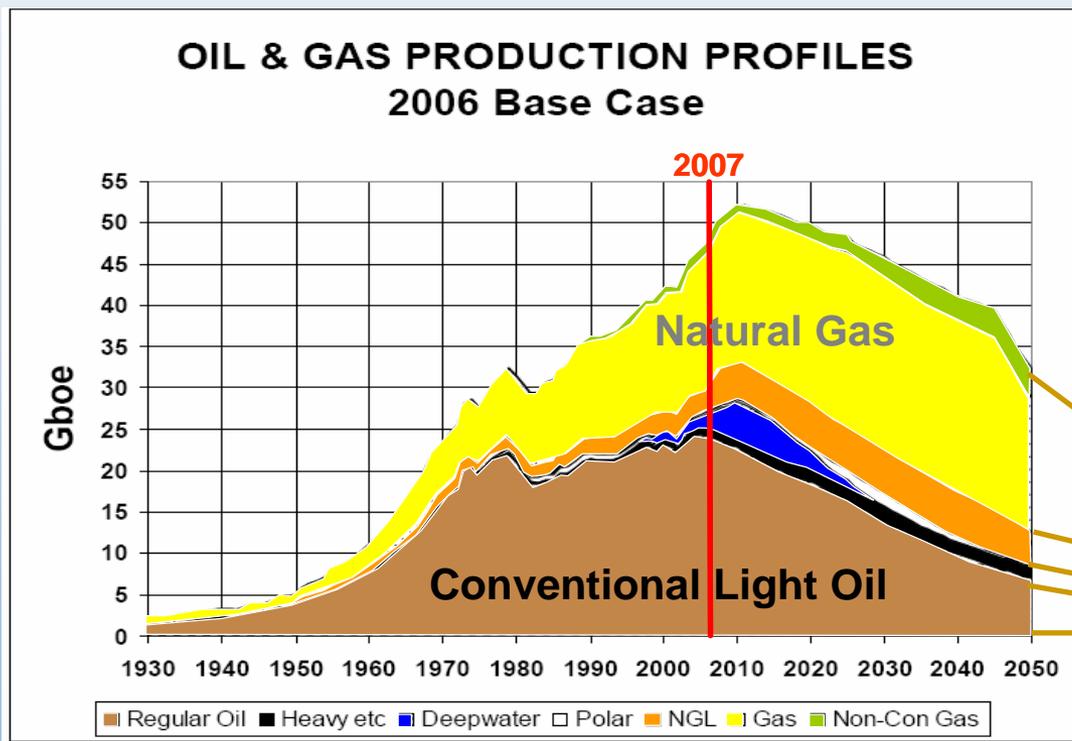
Our Children

80

Our Grand Children

Our Great Grand Children

Our Great-Great
Grand Children



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

Develop a common community energy vision

Identify and support a Tribal energy champion

Identify culture and environmental constraints

Identify and evaluate resource options

Demand-Side Options

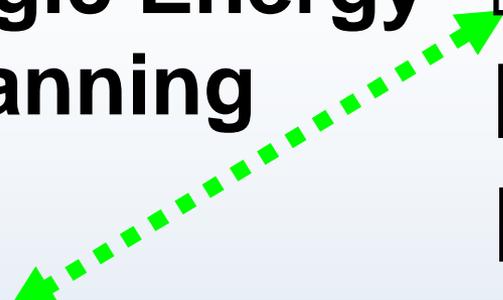
Supply-Side Options

Integrate supply and demand alternatives

Establish organizational and human resource needs

Strategic Energy Plan

Programs & Projects



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Strategic Plan

Programs & Projects



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

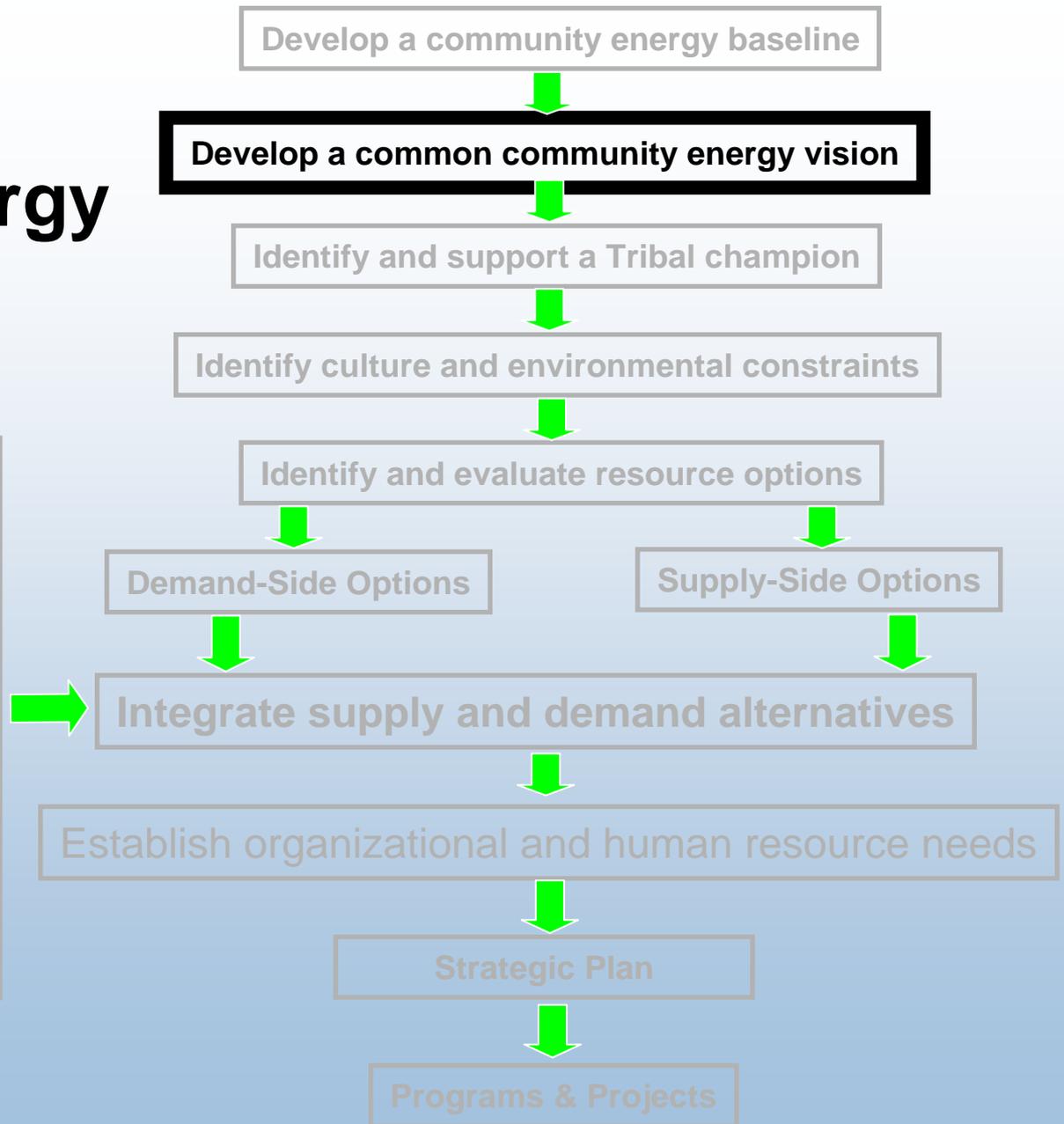
- RE and fossil fuel inventory

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

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Develop a common community energy vision

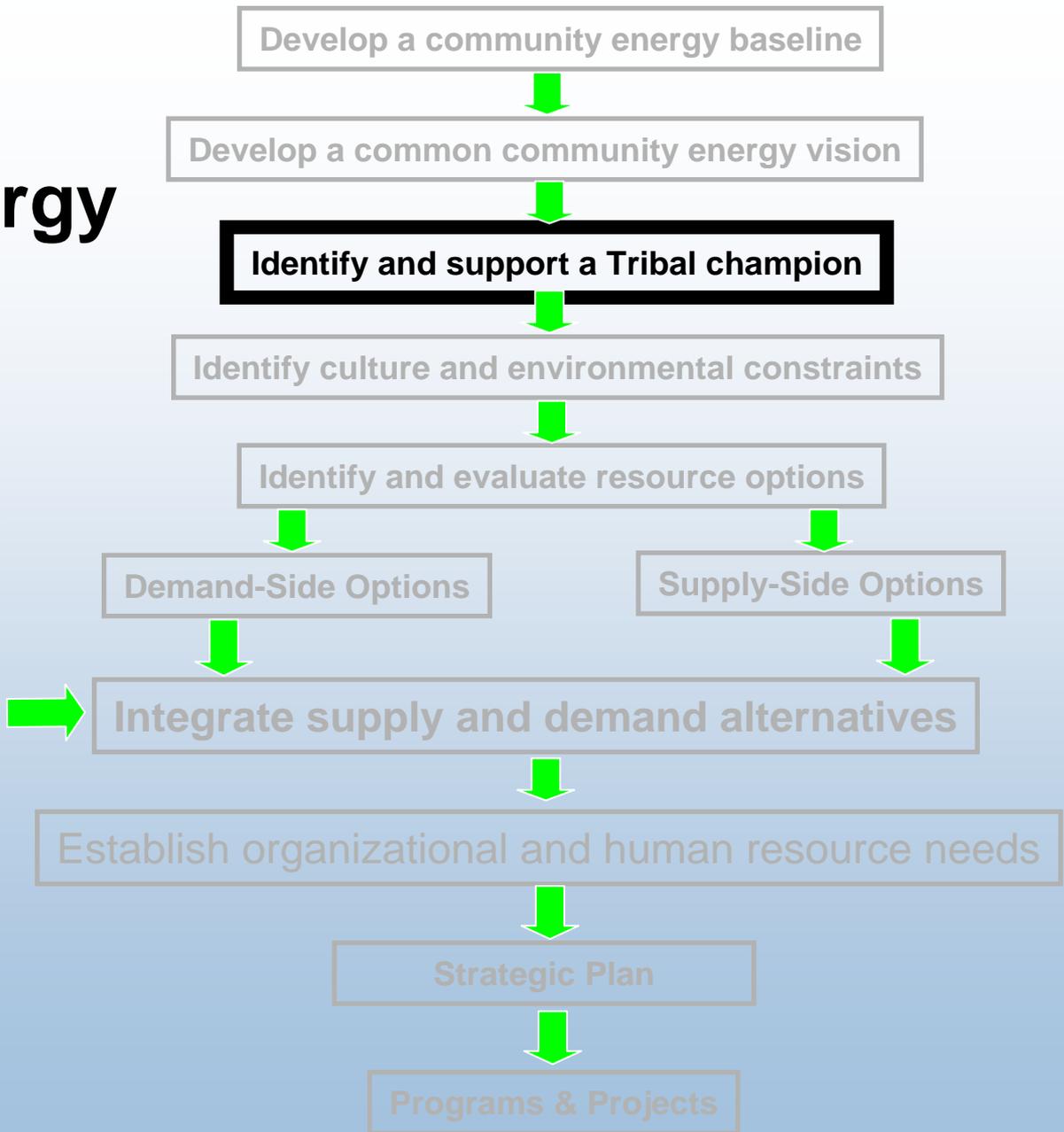


- Place a “marker” on where the tribe wants to be – in 10, 20, or 30 years, one generation
- A statement, or resolution, approved by the Tribal Council following input from broader tribal community
- The vision sets clear direction, but is not too prescriptive (where not how)

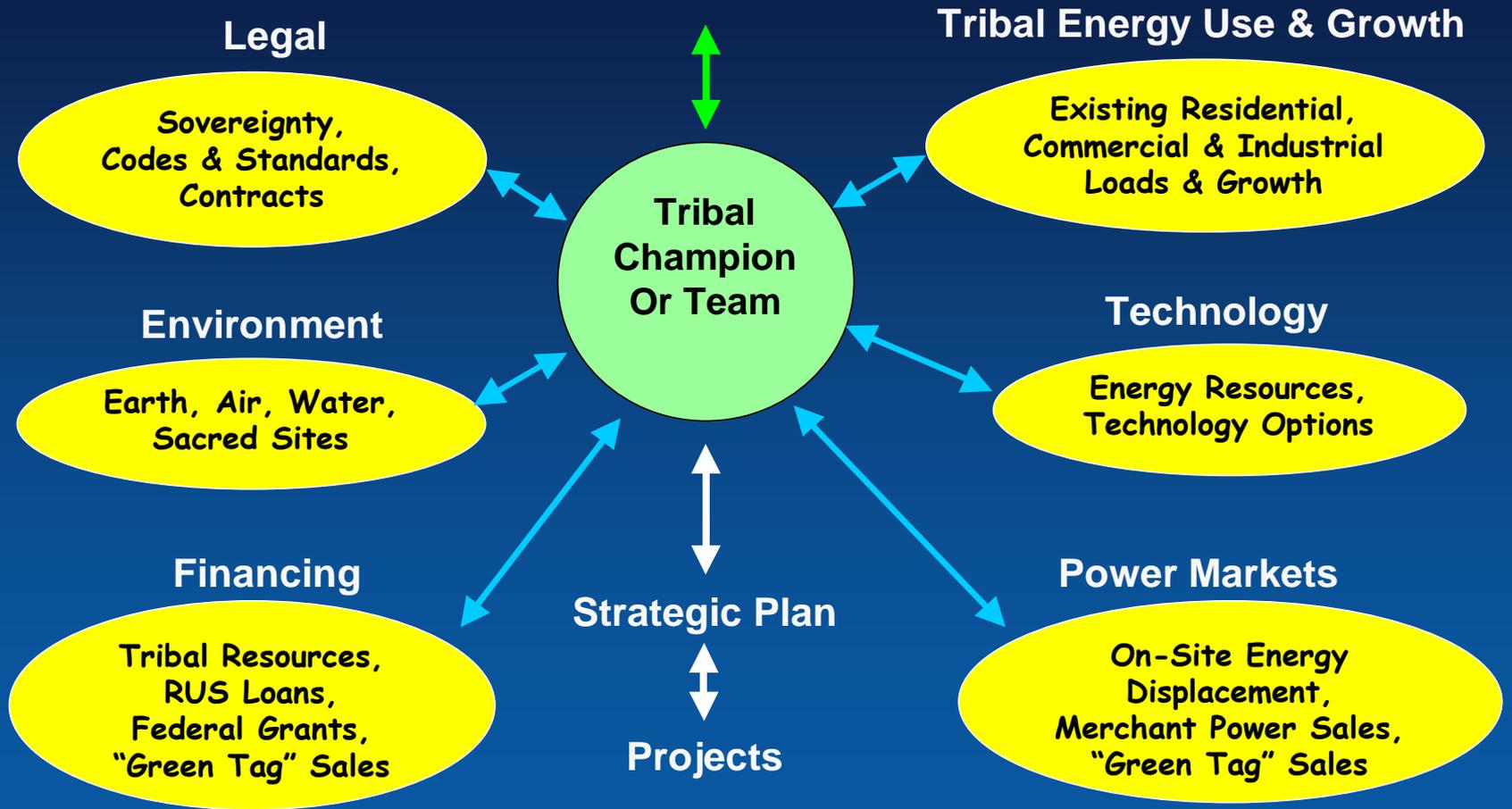
Tribal Strategic Energy Planning

Village Objectives

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Tribal Council



Identify and support a Tribal champion



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

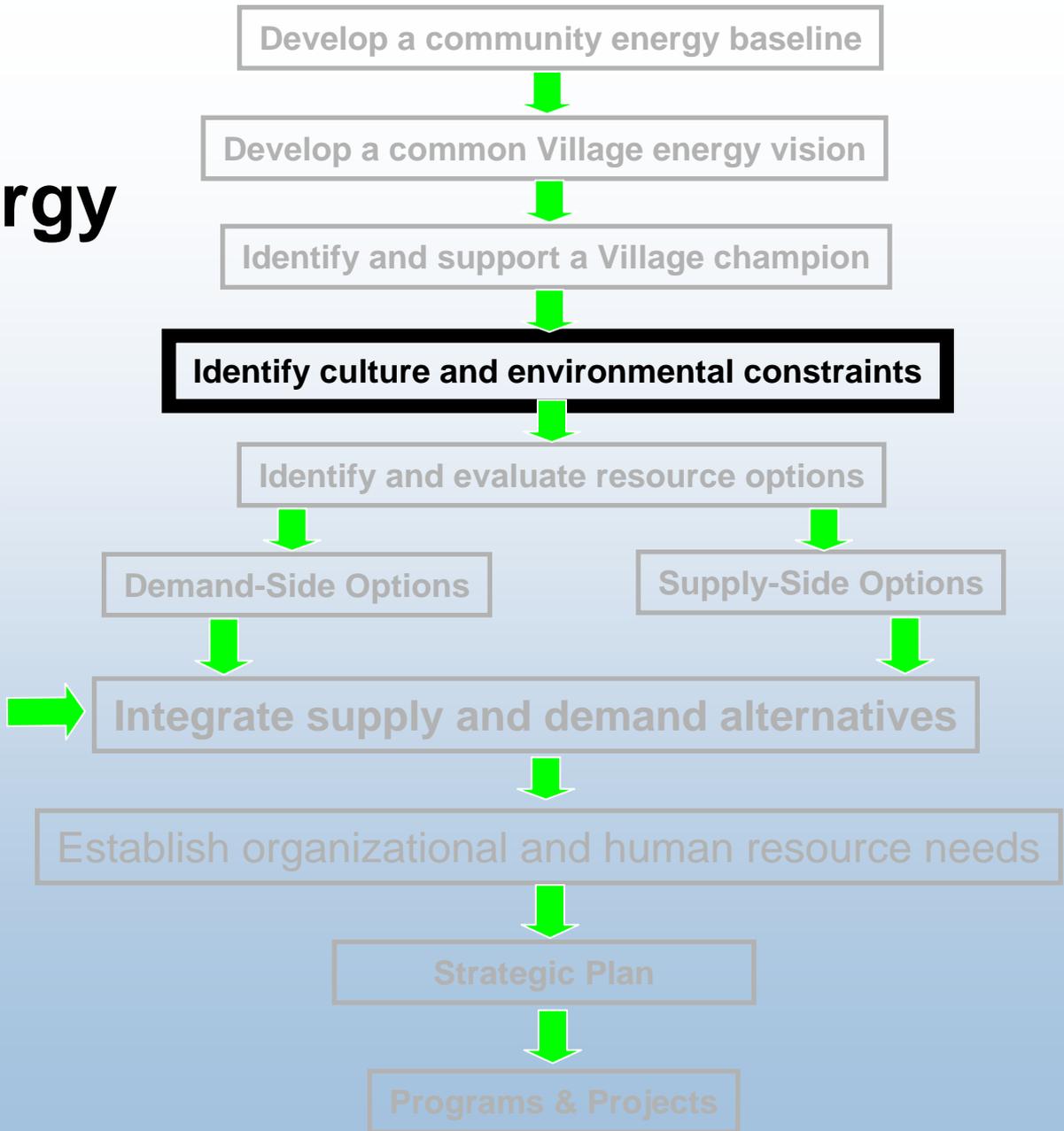
- explore the range of supply & demand options,
- facilitate tribal consensus,
- lead the strategic energy planning process forward,
- make recommendations to Tribal Council, and General Council

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

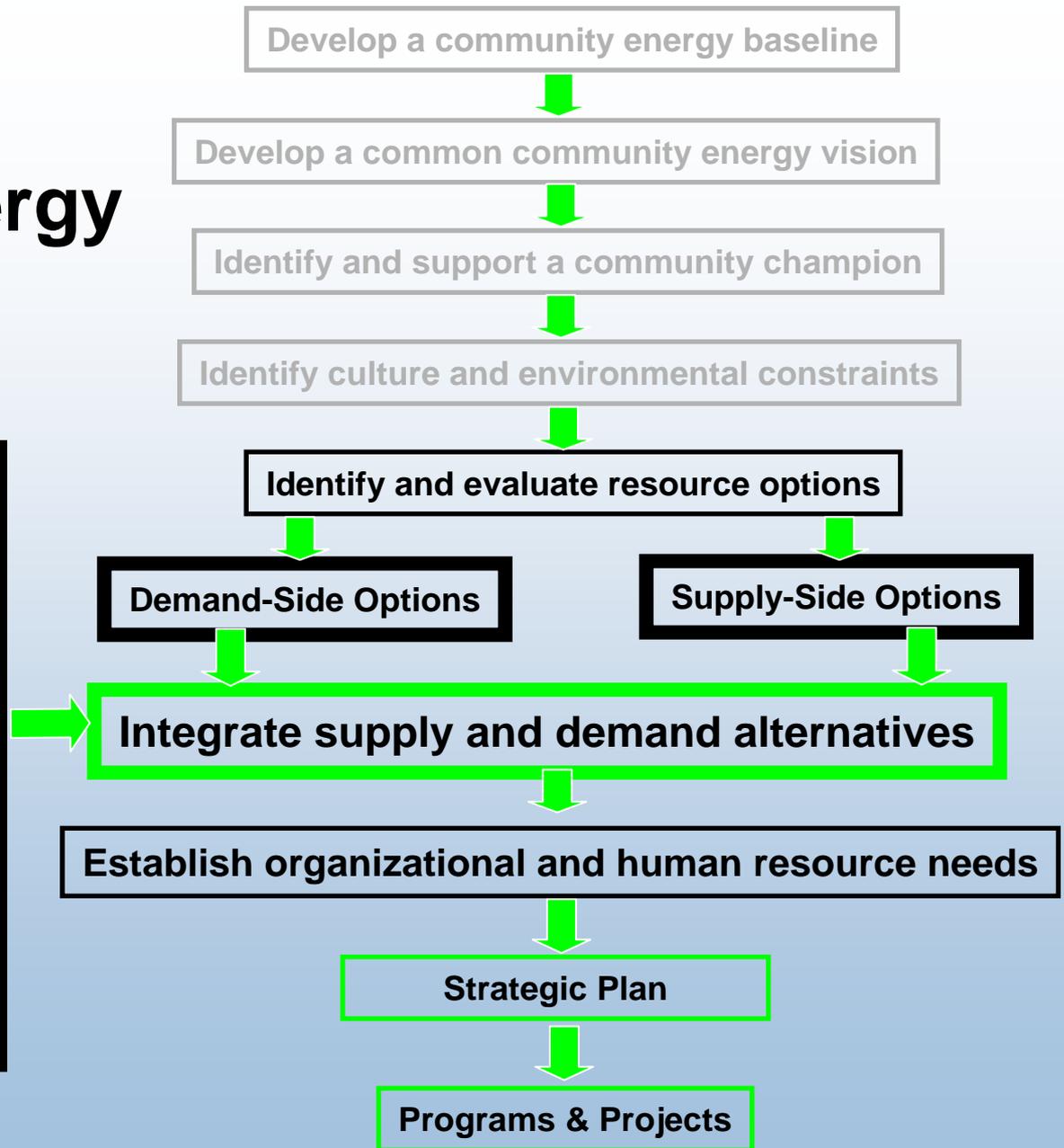


- Natural Resource Valuation
 - Water and Air
 - Wildlife Habitat
 - Forests, rangelands, wetlands, other
- Technology Effects
 - Emissions, Aesthetics, Noise
- Economic Development Trade-offs
- Cultural Impacts – (Sacred Sites, Plants, Burial Grounds)
- Tribal Impact – Community & Government
- Other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

Tribal Strategic Energy Planning

Community Objectives

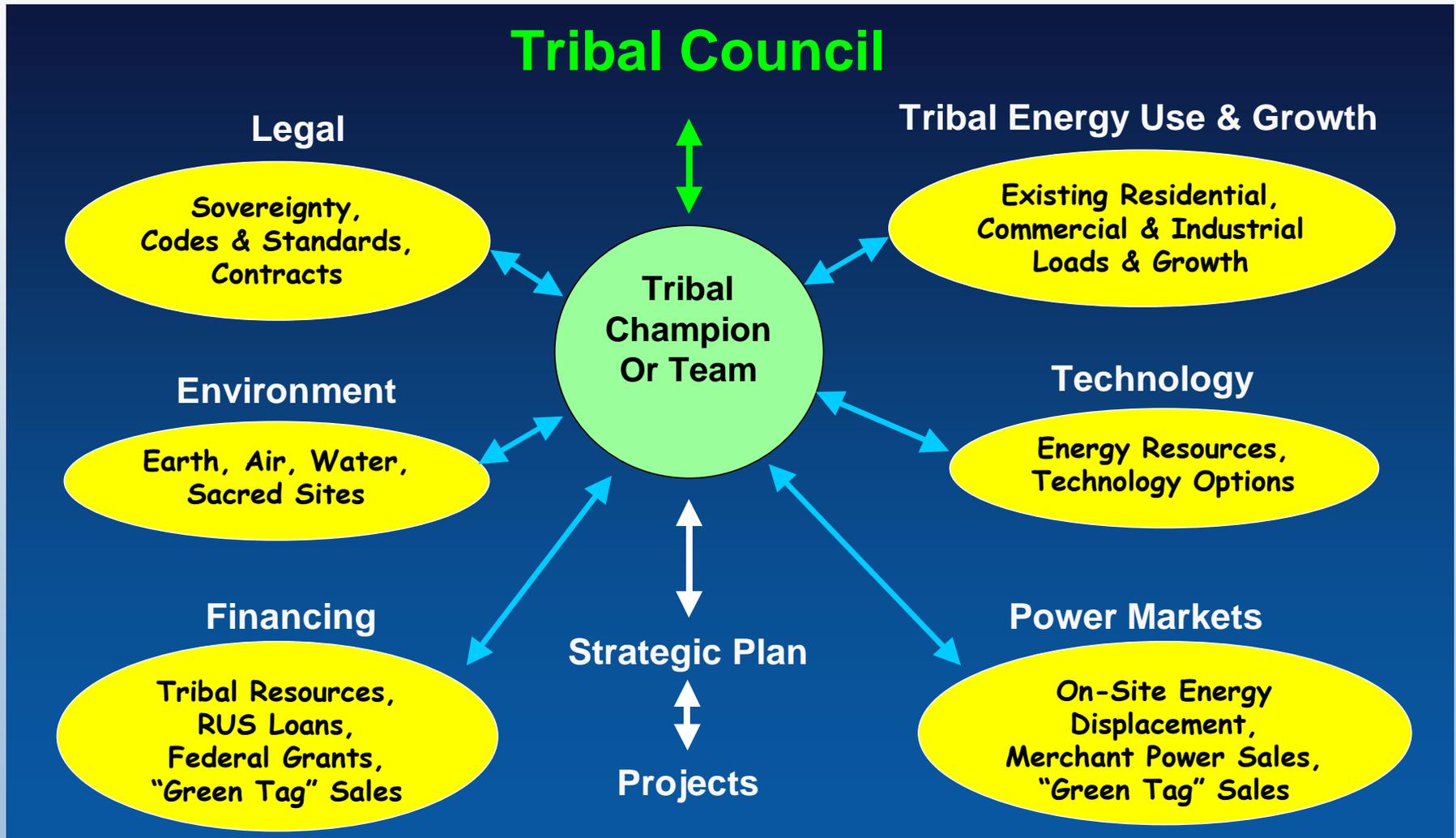
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Establish organizational and human resource needs



What's the business & financing framework?





Establish implementation program & projects

Characteristics of Successful Solutions

- **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

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