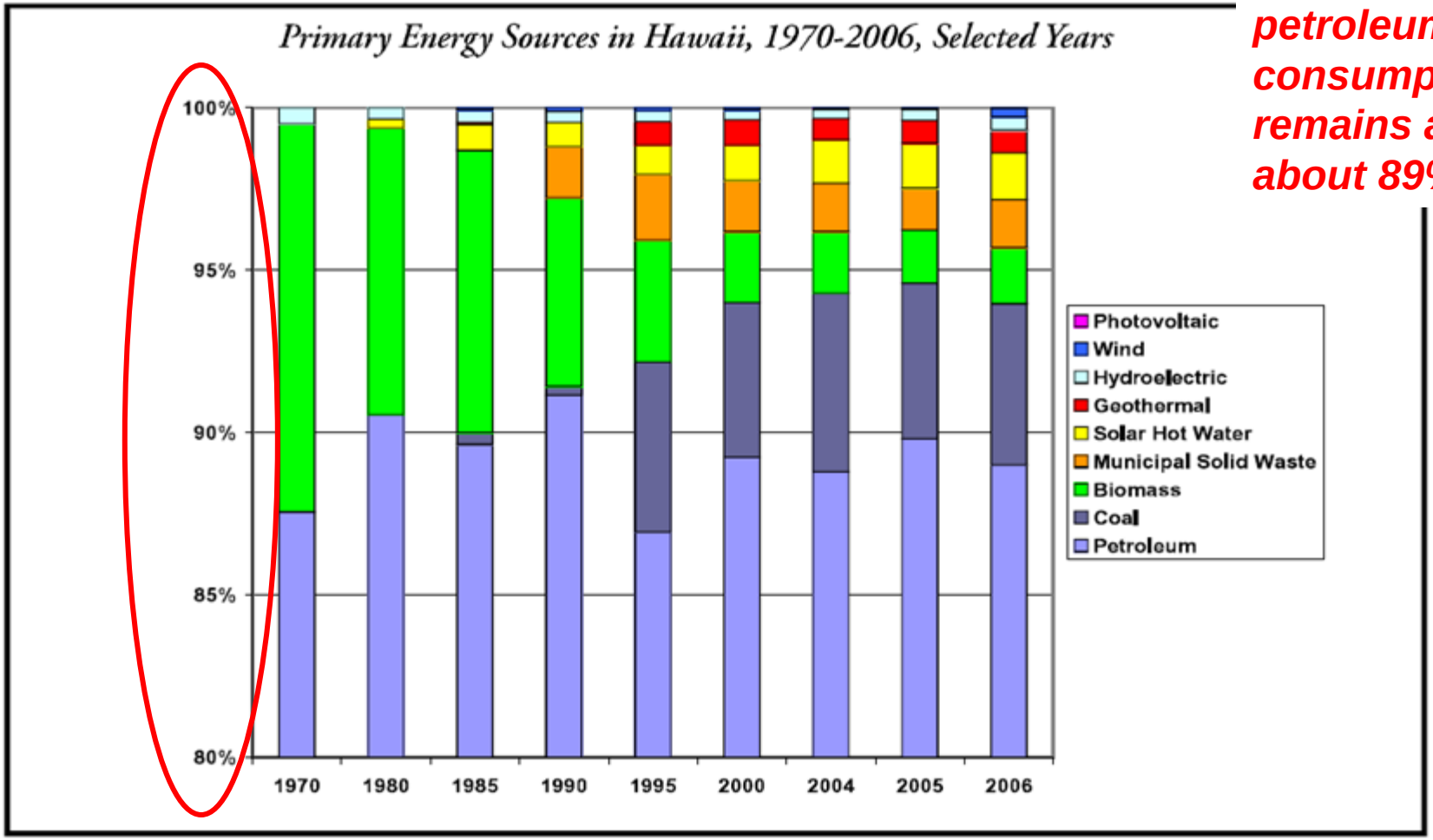
Hawai'i's Clean Energy Initiative

Kaua`i Planning & Action Alliance

February 10, 2009

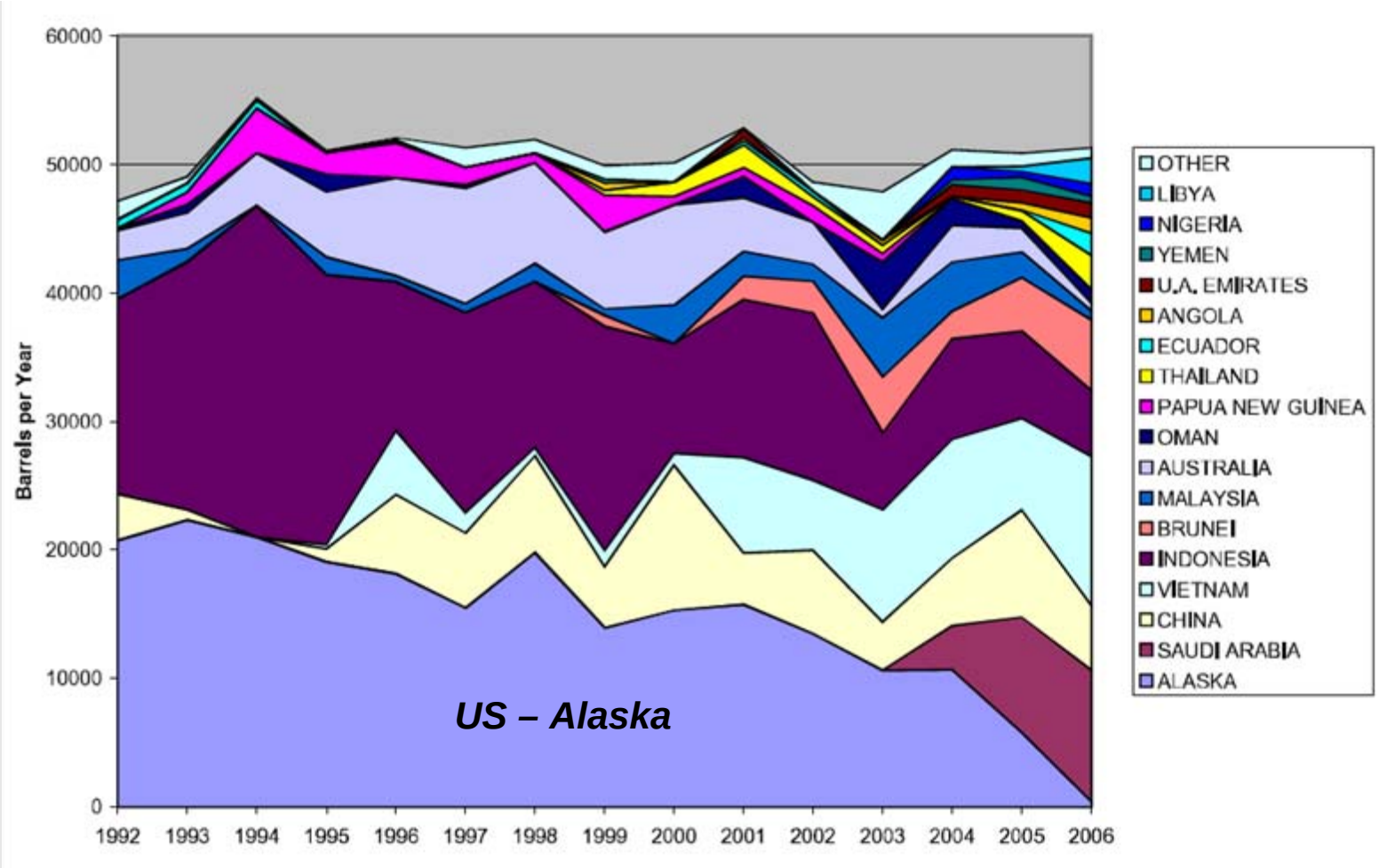
Reducing Hawaii's dependence on fossil fuels is a long-standing objective

Over 36 years, petroleum consumption remains at about 89%



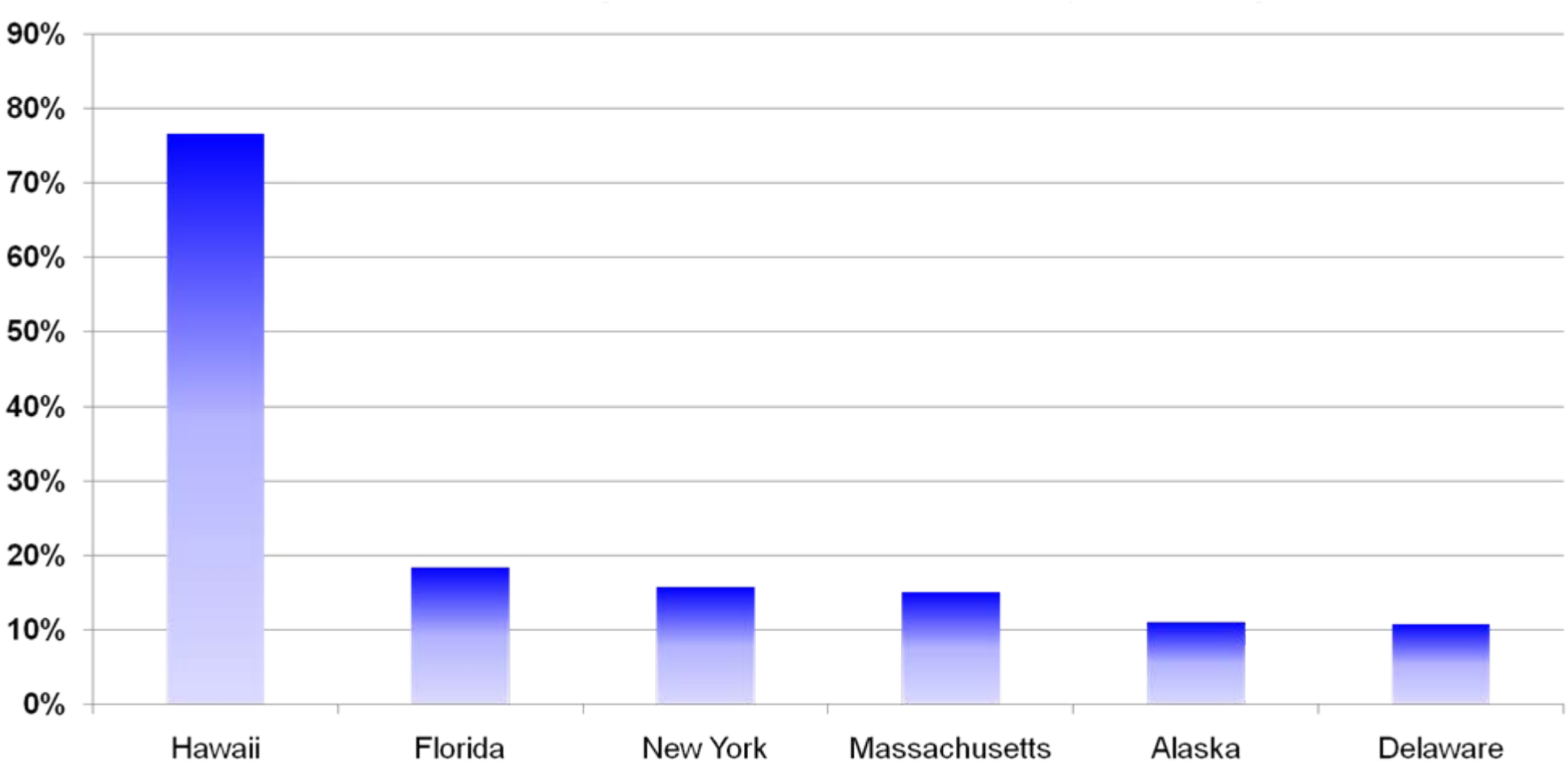
Despite objective, little progress made – the needle has not moved

Alaska North Slope oil, the basis for the design of our refineries, is no longer available



More than 96% of petroleum in Hawaii now comes from foreign sources

Hawaii is the most petroleum dependent state

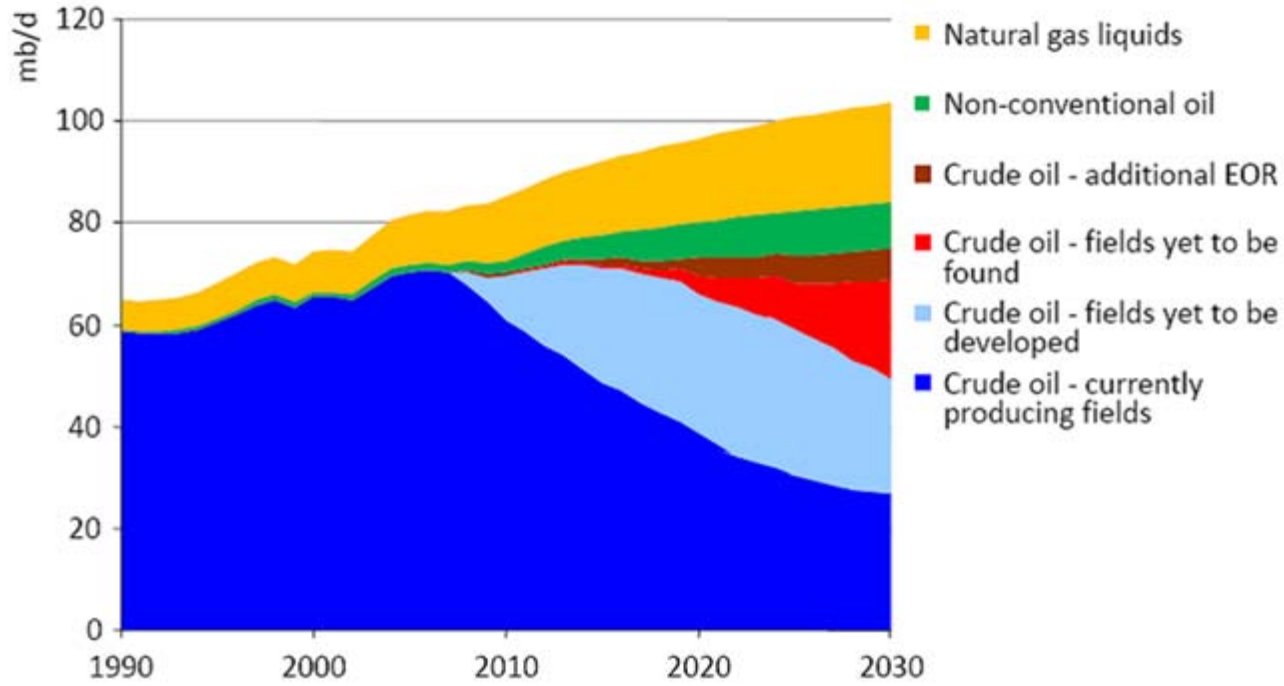


Petroleum dependence for electricity – top six states

World oil production in the Reference Scenario

World Energy Outlook 2008

Source: International Energy Agency

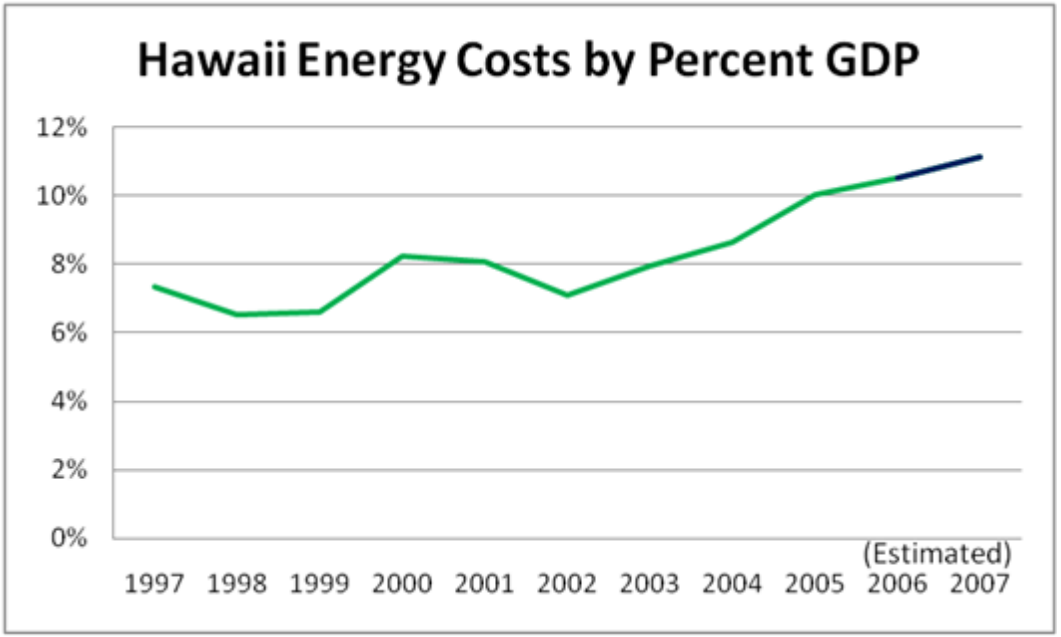


To generate the energy required worldwide by the 2030s would require us to find an additional 1.4 MBD every year until then.

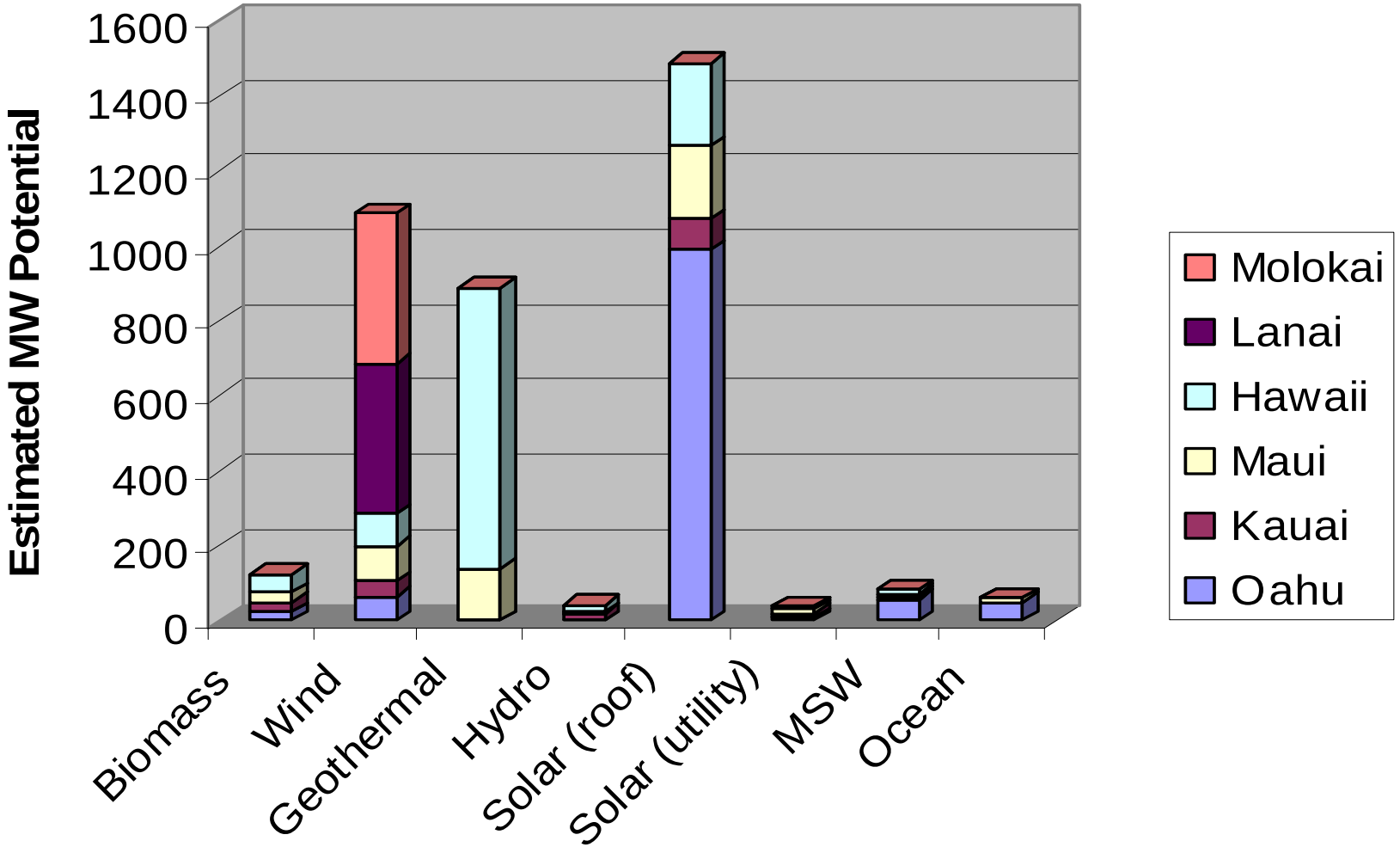
Can Hawaii assume this will happen, and base our future on it?

Economic impact of dependence on expensive energy

- Household fuels and utilities **costs rose 36.4 percent**, year-over-year, in the Honolulu CPI during 2Q'08
- Mainland energy costs are 4% of a state's Gross Domestic Product; in Hawaii, it approaches 11%, **almost 3 times as much**
- Between 2007 and 2008, State Government **consumption** of electricity has **decreased 1.17%**, but **expenditures** have **increased 19.55%**

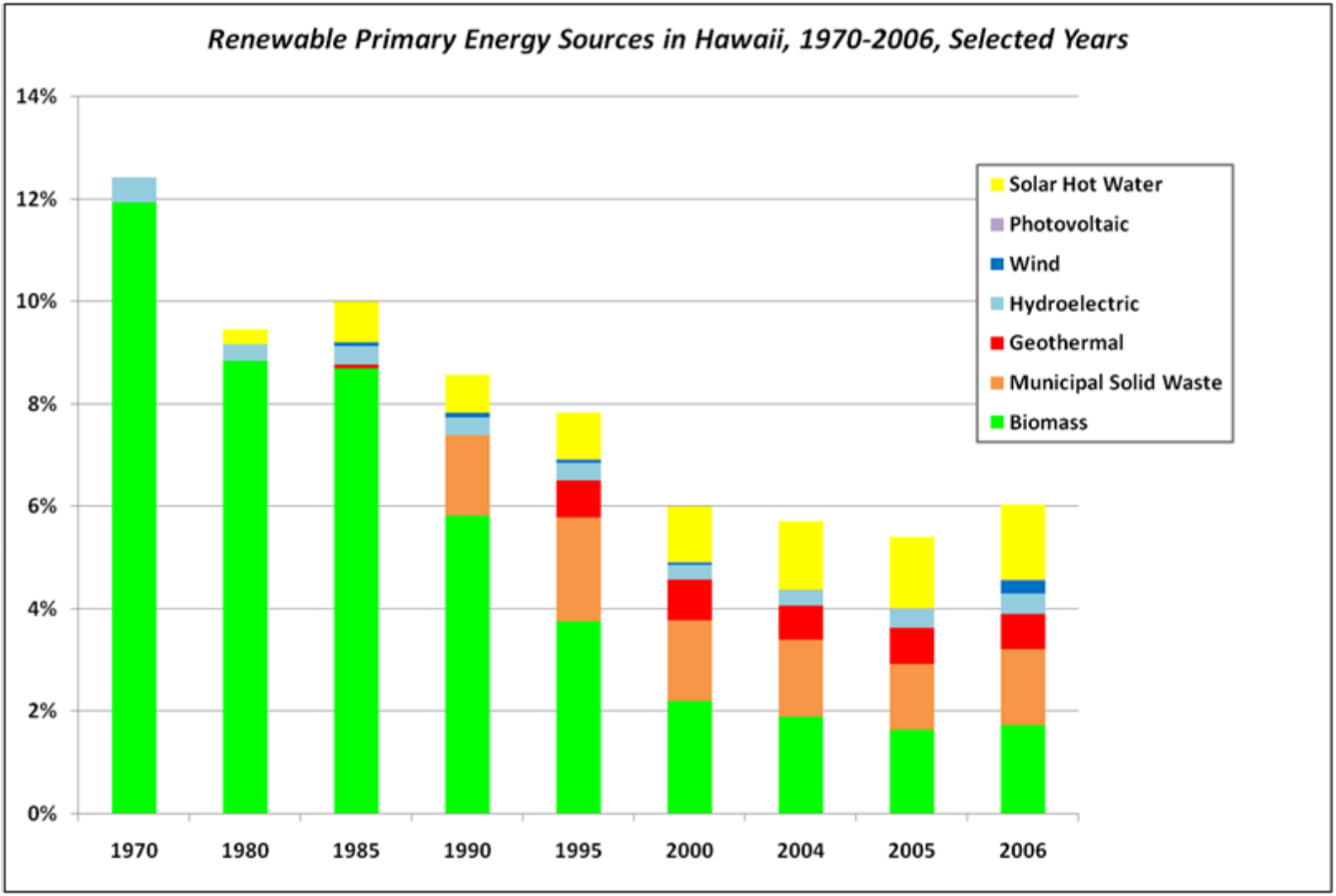


Hawaii has a wealth of renewables: estimated @ 150% of current installed capacity



http://hawaii.gov/dbedt/info/energy/

What has held back renewable penetration?



Barriers must be removed for Hawaii to realize energy independence and economic stability

Problem: Four legacy drivers support the status quo and represent barriers to be overcome

Policy/Regulatory Framework

- Utilities compensated for increased electricity sales; pass-through of fuel price increase is renewable disincentive
- IPPs need transparent “rules of the road,” certainty and predictability
- No clear policy support or incentives for significant new investment and technology upgrades in renewable generation, advanced transmission and distribution
- Need policy on net metering, interconnection, wheeling, and utility protocols for integrating variable generation which will impact transmission and distribution systems

Technology Development & Integration at System Level

- Solutions needed for reliable integration of high levels of variable renewable generation with traditional baseload generation and with existing grid
- Energy storage and “firming” technologies are probably part of the solution, but which technologies will be most effective and how much storage is needed to effectively manage the grid is under development
- Few incentives for advanced metering, dynamic rates, load management, demand response or distributed generation

Financing/Capital

- Need a healthy and financially viable utility to make necessary investments
- Significant new public and private investments required to support the magnitude of system changes needed for a clean energy future: Open up Hawaii’s markets to private capital
- Costs have to be understood and rate structures designed to balance utilities' financial and consumers’ rate needs

System Planning

- Hawaii’s energy system is built on the assumption of consistent supply of low-cost oil, central power plants, grids that could be continually adjusted to meet load needs; utilities are structured to control transmission and distribution as well as generation