

The Wind Alternative

James H. Keil
20 July 2007



One Team. Infinite Solutions.



Stantec

Green Renewable Energy Resources

- Wind
- Solar
- Hydro
- Geothermal
- Biomass
- Fuel Cells
- Other

Renewable Energy Resources Not New

- 125 Years Ago, Wood Provided 90% of Our Energy Needs

2005

- About 6.1 Quadrillion Btu (Quads) of U.S. energy came from renewable fuels.

Source: Energy Information Administration, Annual Energy Review, August 2006

Maine's Energy Generation Portfolio

As of 20 July 2007

??? Not generally known

Maine's Energy Generation Portfolio

What Should it Be?

As of 20 July 2012

As of 20 July 2017

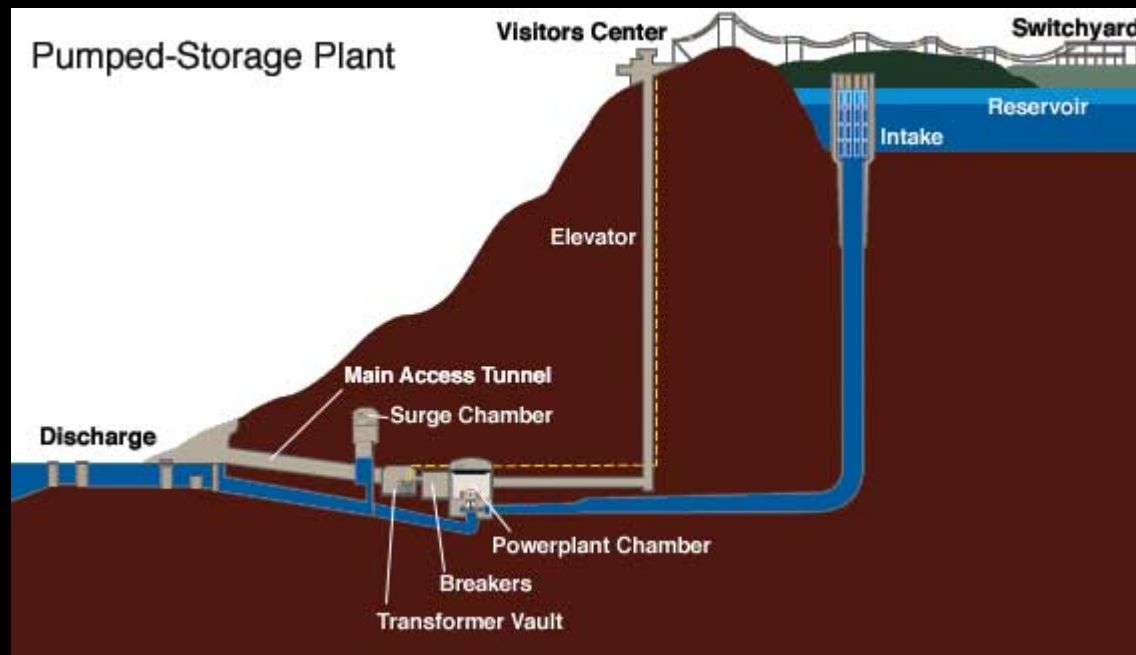
What is the target?

Let's Reframe the Question:

How Should Wind Power fit into the State's Overall Renewable Target?

- The variable nature of power generation from intermittent sources has raised concerns about the ability of electricity grids to absorb intermittent power and the economic implications.

Pumped Storage Plant



Pumped Hydro Energy Storage (PHES) to Support Wind Energy

A new concept is wind-pumped water storage where variations in availability of wind power can be leveled out by using the wind power to fill a reservoir, thereby also generating grid power from the reservoir turbines.

Maine Policy

- Wind Power gets used in the Right Place at the Right Time
- Maine Emerges as the Leader of the Industry
- Maine Protects its Unique Character
- Maine People get the Maximum Benefit
- Developers have a Fair Process within which to Operate
- There is a Process for Timely, Fair Consideration of Proposals
- There is Clarity of Process
- Maine Encourages Renewable Energy Development

Stantec

- Prepared detailed designs for over 1,200 MW
- Interconnect planning services for over 6,000 MW of wind
- Assessment, permitting, and approvals for well over 750 MW
- Project management services for over 150 MW of wind power

Stantec Projects:

- Elk River Wind Farm (150 MW) Kansas Client: PPM Energy
- Erie Shores Wind Farm (99 MW) Ontario Client: Clean Power Income Fund
- Kingsbridge Wind Power Project (40 MW) Ontario Client: EPCOR Power Development Corp. (Plus other projects)
- Shiloh Wind Farm (150 MW) California Client: PPM Energy
- Klondike Wind Project Phase II (75 & 25 MW), Oregon Client: PPM Energy
- Melancthon Grey Wind Project (68 MW) Ontario Client: Canadian Hydro Developers Inc (Plus other projects)
- Miller Mountain Wind Power (54 MW), Quebec Client: Northland Power