

Wind Energy Summary:

The Commonwealth of Massachusetts has the ambitious goal of using 25% renewable energy by 2020. The Global Warming Solutions Act of 2008 requires reduction of greenhouse gas emissions by 25% relative to 1990 levels by 2020 and 80% by 2050. These are ambitious goals; meeting them will require major development of wind energy. With success major benefits would accrue: lower energy costs, a stronger economy, a contribution to mitigation of climate change, and diversification of our energy supply.

The fuel diversity problem looms over the entire New England region. The heavy dependence on natural gas (46% of electric power in 2010) is growing owing to the low current price of natural gas. While price and supply are favorable now, gas prices will rise and supplies diminish sometime in the future. If the New England fuel mix has not diversified by the time this happens we, and our economy, will pay a heavy price.

New England has meager domestic energy resources. As a result it has depended on imported primary energy, mostly fossil fuels; and energy costs have been high. Among the possible local types of low-carbon, sustainable energy that could help break this dependence, only wind is poised for major commercial-scale energy generation in the coming decade.

There are abundant sources of wind energy in New England, the best in northern Maine and offshore south of Cape Cod. Offshore wind is stronger and more reliable than onshore wind and suffers less from the negative reactions of host communities to proposed wind projects. The wind resource off Cape Cod is the best offshore wind resource in the US, and is close to the major load centers in eastern Massachusetts, Rhode Island and Connecticut. A 2012 study of Massachusetts' response to climate change by MassINC states, "The offshore wind potential is tremendous, especially in deep waters. The amount of energy that could be secured off the coast dwarfs the amount that can reasonably expected to be developed on land in the region." However, the variability of wind combined with the impracticality of large-scale electrical energy storage currently limits the fraction of the total load wind can supply.

Current offshore wind technology is less mature than onshore technology and its costs are 2-3 times higher. But experience with offshore wind is accruing rapidly in Europe; and since offshore turbines can be much larger than those onshore, they are more efficient. A recent study by IHS Emerging Energy Research forecasts that despite the potential lapse of US production tax credits in Jan 2013, turbine installation will continue leading to 75,000 units in 2025 compared to 40,000 today. New turbines will be larger than current equipment.

New England has the potential to become a commercial center for offshore wind energy. Possible economic benefits are not small. A 2011 MassCEC study reported 4,909 clean energy firms in MA with 64,310 clean energy workers (1.5% of total workers in MA) with a 6.7% growth rate from July 2010 to July 2011.