

# Implementation of a Small-Scale Wind Turbine

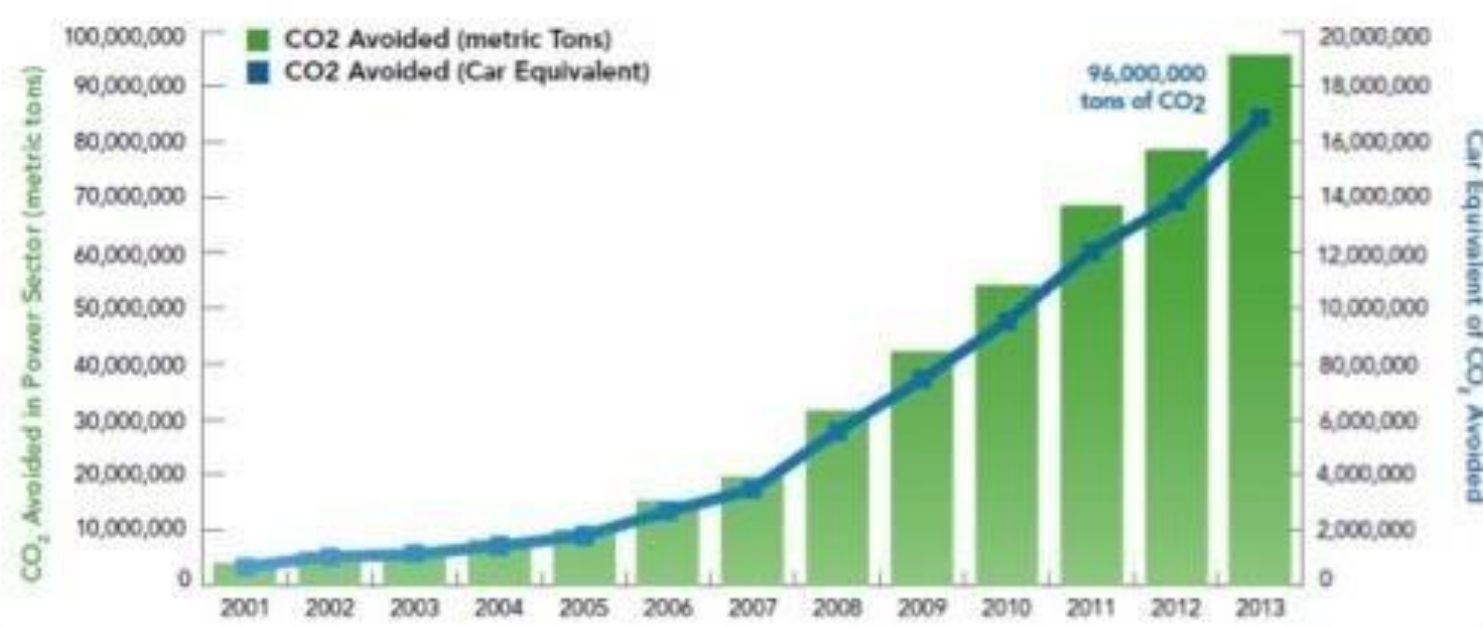
The energy portfolio of Lewis University was expanded by the introduction of solar energy. The energy portfolio can be diversified further with the inclusion of small-scale residential wind turbines. This is important because renewable energy will decrease the demand from the conventional power grid, and we are currently in a location where wind energy can work at its optimal use.

## Why Wind Power?

Utilizing renewable energy, rather than relying on conventional energy, reduces the demand for fossil fuels, which in turn decreases the campus carbon footprint. We can be part of the collective effort that is acting to lower CO<sub>2</sub> emissions. This project is financially promising since there is a return on investment, as costs can be recuperated from the wind turbine after a period of time.



## Avoided CO2 Emissions from Wind Energy



- In 2013, wind generation avoided an estimated 95.6 million metric tons of carbon dioxide (CO<sub>2</sub>)— the equivalent of reducing power-sector CO<sub>2</sub> emissions by 4.4%, or taking over 16.9 million cars off the road.
- The 12,000 MW of wind power capacity under construction at the end of 2013 would reduce another 20 million metric tons of carbon dioxide (CO<sub>2</sub>) when it is operational — the equivalent of reducing power sector CO<sub>2</sub> emissions by another 1%.

Source: Forthcoming AWEA U.S. Wind Industry Annual Market Report Year Ending 2013

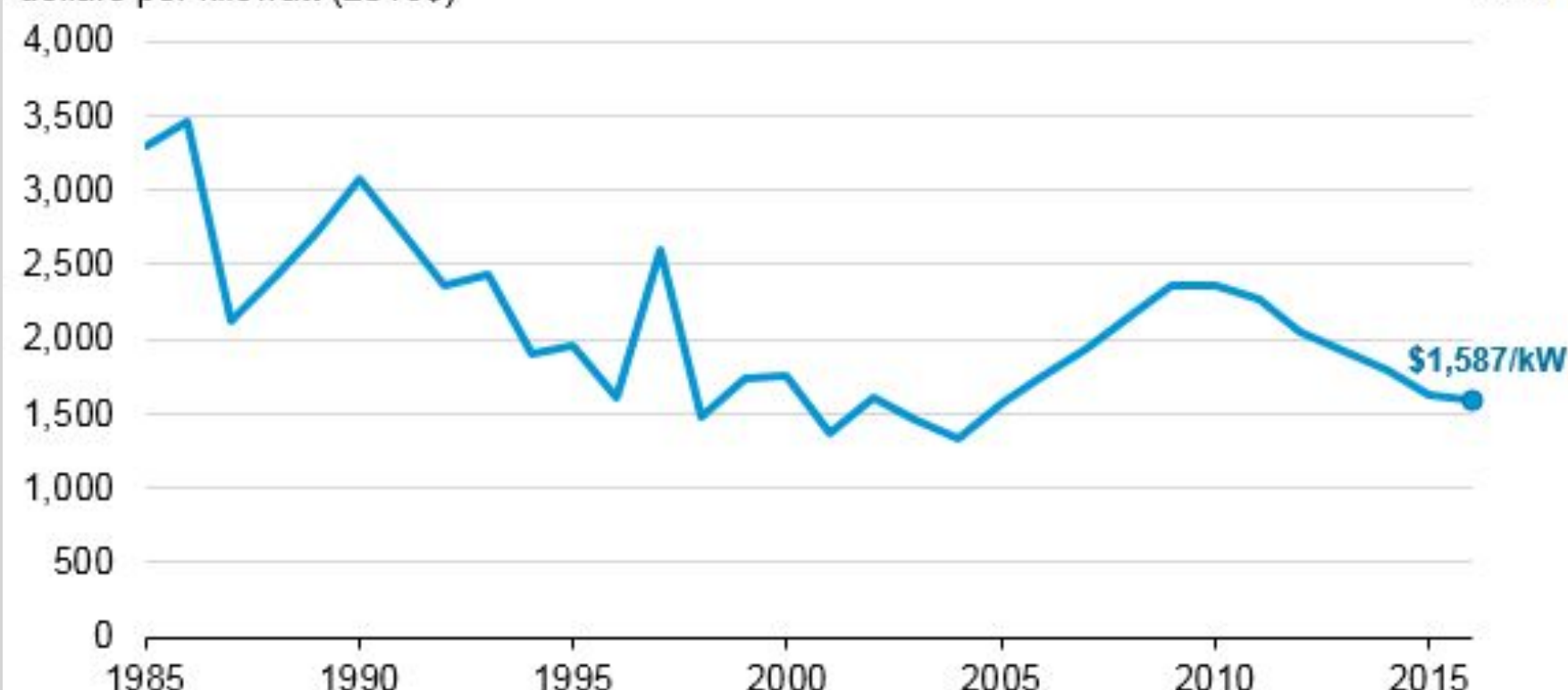
AWEA

## Return on Investment

It is estimated that \$18,000 to \$20,000 is saved over time when integrating wind energy into campus energy portfolios. Other than cost savings, a wind turbine would allow academic departments to develop new curricula that benefits us, such as wind turbine design, developing software to monitor its usage, and so on. Clearly, a wind turbine can save money in the long run, increase our sustainability portfolio, and enhance our curriculum.

## U.S. onshore wind capital costs

dollars per kilowatt (2016\$)



## Mission

Diversification of our energy portfolio and reducing the campus environmental impact are important goals. We can have a cleaner and less environmentally damaging future, while working towards our economic and social goals for current and future generations of Lewis University students.