

The Economics of Small Wind Turbines



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Lab 1

State Incentives for

Residential Wind Energy Systems

Learning Objective:

Student shall demonstrate understanding of the value of various economic incentives with regard to residential wind systems with no more than two research errors.

Lab:

Each student will pick three US states or territories in class and research the following:

- 1.) The average price of electricity in those states or territories
 - 2.) The net metering policies of those states or territories
 - 3.) State incentives for renewable energy systems or territories
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- a.) Create a table comparing your findings on the three states.
 - b.) Compare and contrast the states electrical costs against the states net metering policies and write a paragraph summarizing your findings.



Resources:

www.dsireusa.org

www.irecusa.org

www.windustry.org/SmallWind

Outcomes:

Students shall be able to compare and contrast the three states' various incentives and how they affect the residential consumer.

State	price per kWh	Net metering pay-back	System Size Cap	States Incentives (i.e. rebates, tax credits, production incentives, or other comparable data...)
Of Confusion	\$0.16	Full Retail	25 kW	Free Fries with every kW, one month of free i Tunes,.....


This table is an example; your table should reflect the comparable data that represents your research.



Lab 1

*State incentives for residential wind
energy systems
Assessment*

<i>Paragraph</i> <i>Max 50 points</i>	<i>Value</i>	<i>Points</i>
Quality of writing	Proper Grammar, Spelling	10 points
Content	Accurate	5 points
	Comprehensive	5 points
Analysis	Comparison	30 points
<i>Table</i> <i>Max 50 points</i>	<i>Value</i>	<i>Points</i>
Table structure	Neatness and design	5 points
Content	Quality of Description	25 points
	Comprehensive	10 points
	Grammar, Spelling	10 points

A grayscale, blurred image of a wind turbine. The turbine is the central focus, with its blades and tower visible. The background is a soft, out-of-focus landscape. Overlaid on the center of the image is the text "Other Labs" in a blue, italicized serif font.

Other Labs

Lab #2

With a base load average of 850 kWh per month, what would your electrical cost per month be in each of the three states?

Lab #3

Based on the information gathered so far, choose the state you would consider to make the most economic sense to install a small scale wind generator. Explain why.

www.windustry.org

Lab #4

Based on a wind speed of 12 mph and a capacity factor (usually figured in Power Output) of 20%, select a generator that would:

- a. offset $\frac{1}{2}$ of your load**
- b. offset $\frac{3}{4}$ of your load**



Lab #5

**Using the selected generators,
research cost on each system using
an 80 meter tower.**

Classroom discussion:
Are there considerations other than economics when deciding to install a small scale system?
(list them)

www.windustry.org/SmallWind/zoning_permitting

www.windustry.org/SmallWind/insurance

www.windustry.org/SmallWind/equipment