**Wind for Schools Turbine Economics Worksheet**

Distributed Wind: Skystream 2.4 kW turbine on 45’ tower

Capacity of turbine: 2.4 kW

Hours in a year: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total annual potential energy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Capacity Factor (% of time generating): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Annual average predicted energy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cost of turbine installed: $20,000

Incentives available: 30% federal tax credit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

APS $2.25/watt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

State tax credit $1000

Total cost to consumer after incentives: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cost of electricity (cents/kWh): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Annual avoided cost of energy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Multiplier for 20 years at 4% annual increase: 1.48

Avoided cost over 20 years: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Questions: Does it “pay for itself”? What if there are maintenance costs? What if the electricity rates go up faster than 4% a year, or slower?

Utility-Scale Wind: 100 MW Wind Farm

Capacity of wind farms: 100 MW

Hours in a year: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total annual potential energy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Capacity Factor (% of time generating): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Annual average predicted energy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cost of wind farm installed (use $2000/kW): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Incentives available:

30% federal cash grant \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*\*OR\*\*

Production Tax Credit $0.021/kWh \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total cost to developer after incentives: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sale price of electricity ($/MWH): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Annual revenue for energy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Multiplier for 20 years at 2% annual increase: 1.21

Revenue over 20 years: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Questions: What if there were no tax credits? What if some of the turbines have a lot of maintenance issues? What if there is curtailment for wildlife impact mitigation? What if the wind resource isn’t as good as the developer predicted? What if it’s a lot better?