



# City of Portland Green Purchasing Case Study

## On-Site Wind Turbine Electricity Generation

### Purchasing Green

In June 2005, Sunderland Recycling Facility, in partnership with Energy Trust of Oregon, completed construction of the City's first wind turbine. The 10 kilowatt turbine is a Bergey BWC Excel-S wind turbine with a GridTek 10 Power Processing Center that sits atop a 100-foot self-supporting lattice tower.

Electricity generated by the wind turbine is used to power the facility's office and conference room. Additionally, solar photovoltaic panels power two red beacon lights, required by the Federal Aviation Administration (FAA) because of the tower's proximity to Portland International Airport.

### Benefits

The wind turbine at Sunderland Recycling Facility helps Portland meet its goal of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050, as outlined in the City's 2009 Climate Action Plan.

The wind turbine reduces the City's reliance on fossil fuels. Unlike electricity generated from sources like coal, petroleum, and natural gas, wind energy produces no emissions and requires no water to operate. By using wind energy, the Sunderland Recycling Facility saves 1.4 tons of CO<sub>2</sub> emissions, or the equivalent of consuming 142 gallons of gasoline, annually.

The impact of wind turbines on bird and bat deaths has been a subject of concern. However, collisions with wind turbines are several orders of magnitude lower than impacts from other human-related causes of bird and bat mortality. Advances in the siting and design of wind turbines have greatly reduced bird and bat fatalities, and research continues to find ways to make wind turbines even safer for wildlife. Sunderland's wind turbine has had no problems with bird or bat deaths.

### Cost

It cost about \$63,000 to purchase and install Sunderland Recycling Facility's wind turbine. Energy Trust of Oregon contributed about 57 percent of the project's price. The wind turbine generates an estimated 2,000 kilowatts—about \$265 worth of electricity—per year. Any power that is not utilized by the facility is returned to the grid.



*Sunderland Recycling Facility features a 10kW wind turbine that powers its offices.*

### At a glance –

#### *Who –*

- Sunderland Recycling Facility

#### *Product –*

- 10 kW wind turbine

#### *Cost –*

- \$63,000 initial cost
- Generates 2,000 kW per year

#### *Benefits –*

- Helps City meet renewable energy goal
- Produces no emissions
- Saves 1.4 tons of CO<sub>2</sub> emissions annually

*“The Sunderland Recycling Facility is a showcase for the city’s sustainable efforts and demonstrates the City’s commitment to increasing our solid waste recovery efforts. With the addition of the wind turbine, we can add energy conservation to the list of sustainable activities at Sunderland.”*

Jill Jacobsen, Program Manager,  
Portland Bureau of Transportation

## Performance

Some minor maintenance was performed on the beacon in 2006, but overall the wind turbine has experienced no major problems. Sunderland Recycling Facility has been pleased with the wind turbine’s performance, and views this project as an opportunity to showcase the benefits of a small wind turbine and help the City of Portland achieve its renewable energy goals.

## Lessons Learned

Since Sunderland is located near an airport, additional provisions—including lighting—needed to be met. Regulatory requirements for wind turbines can vary by county and city, and certain restrictions may apply depending on the site’s characteristics. It’s important to research these regulatory requirements to ensure compliance.

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## About Sunderland Recycling Facility

*Sunderland Recycling Facility, operated by the Bureau of Transportation’s Maintenance Operations program, is Portland’s recycling site for asphalt, concrete, and leaf composting. City crews use this material for maintenance and repair projects. Some of the recycled material, such as leaf compost and crushed rock, is sold to the public as part of their outreach program.*

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