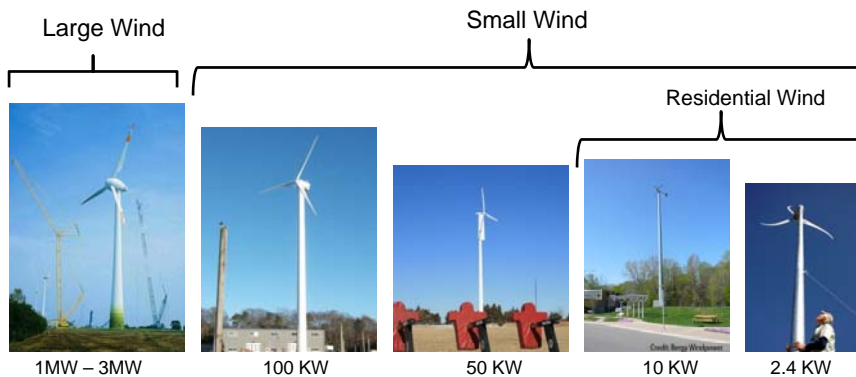


## An Introduction to Small Wind and Distributed Generation Systems

Andy Kruse  
**Southwest Windpower, Inc.**



## What is Small Wind?



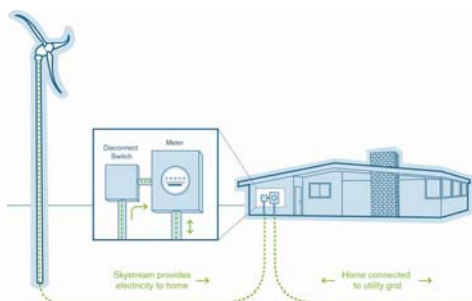
**Large wind systems:** Typically non-distributed applications that sell bulk power to a utility or very large energy user

**Small wind systems:** Exclusively distributed applications that produce energy for homes, farms, ranches, schools and factories (same as solar) (less than 20MW)

**Southwest Windpower**  
Renewable Energy Made Simple

## How They Work

- Typically do not use batteries
- Minimal permitting
- Maintenance is an annual inspection
- Installs in 2-3 days
- Designed to supplement a home or commercial business's monthly energy consumption



Southwest Windpower  
Renewable Energy Made Simple

## Residential Applications



Oak Harbor, OH



Rapid City, SD



Brownfield, TX

One Skystream will typically reduce a home's grid consumption by 20-90% depending on the wind speed and typical energy consumption. Currently, the installed cost of a Skystream on a 33' mono-pole tower ranges from \$12-14,000.

Southwest Windpower  
Renewable Energy Made Simple

# Commercial Applications



Electric Co-op (Colorado)



Parking lots (Arkansas)



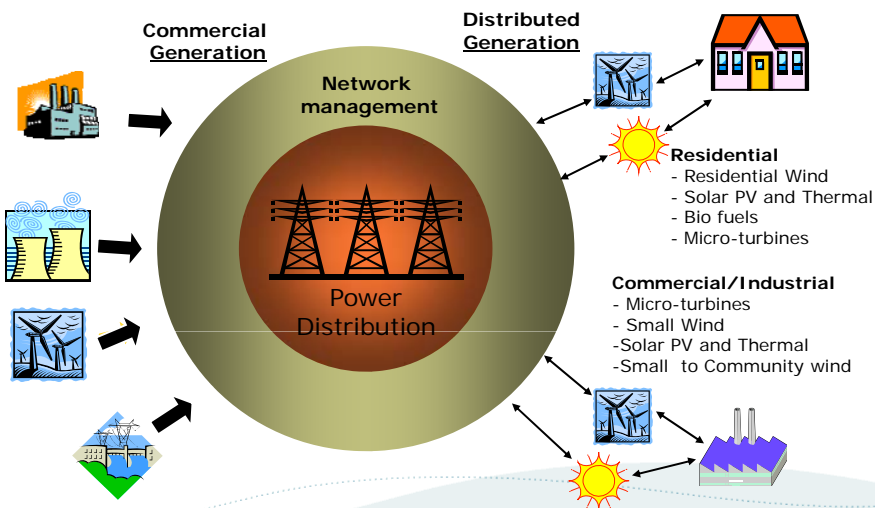
Visitor Centers (NASA)



Restaurant (Utah)

Southwest Windpower  
Renewable Energy Made Simple

## The Power Generation Trend is Moving Towards Distributed Systems



Southwest Windpower  
Renewable Energy Made Simple

## Building Jobs

- Small distributed systems are sold through local independent businesses close to the customer
- Small wind dealers are largely in rural areas and solar dealers are in the cities
- As many as 70,000 new jobs will be created over the next 10 years installing small distributed systems
- Every single family home and commercial building in America has the potential of benefiting from a DG system



Southwest Windpower  
Renewable Energy Made Simple

## New Applications



Simulation

Building small wind systems into existing parking lot lighting systems



Small DG systems will be a critical component of the emerging "Smart Grid"



Incorporate broadband wireless transmitters into small wind towers adds value to system and improves economics for both

Southwest Windpower  
Renewable Energy Made Simple

## Federal Policy Suggestions

- Develop a new generation of renewable resource maps to improve accuracy of resource assessment
- Support the current Renewable Energy Standard and require the inclusion of small energy producers
- Support national net-metering and universal interconnection requirements for all utilities
- Establish a Rural Electrification Act for renewables to bring electricity to the still un-electrified regions (Primarily Native American lands) of the US
- Incorporate renewable energy into the Energy Star Program



*All renewable energy policy should be “technology neutral”. Let consumers decide the best technology to use based on the renewable resource around them*

**Southwest Windpower**  
Renewable Energy Made Simple

## Where to Learn More

- American Wind Energy Association (AWEA)  
[www.awea.org/smallwind](http://www.awea.org/smallwind)
- Solar Energy Industries Association (SEIA)  
[www.seia.org](http://www.seia.org)
- State Incentive Programs  
[www.dsireusa.org](http://www.dsireusa.org)
- National Renewable Energy Laboratories (NREL)  
[www.nrel.gov](http://www.nrel.gov)
- Do you have wind? 3-Tier’s “First Look” wind map  
[www.3Tiergroup.com](http://www.3Tiergroup.com)

**Southwest Windpower**  
Renewable Energy Made Simple

## Thank You

### **Southwest Windpower, Inc.**

1801 W. Hwy 66  
Flagstaff, Arizona 86001- USA

Phone: 928-779-9463  
Fax: 928-779-1485

Web: [www.windenergy.com](http://www.windenergy.com)  
Web: [www.skystreamenergy.com](http://www.skystreamenergy.com)  
Web: [www.airbreeze.com](http://www.airbreeze.com)

Contact: Andrew Kruse

Email: [andy@windenergy.com](mailto:andy@windenergy.com)

***"Renewable Energy Made Simple"***



Jerome, ID Middle School  
DOE Wind For Schools Program  
[www.windpoweringamerica.gov](http://www.windpoweringamerica.gov)

**Southwest Windpower**  
Renewable Energy Made Simple