

## Introduction To The Residential Wind Industry

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Southwest Windpower, Inc



## Small Residential/ Commercial Wind



Proven Wind Systems



Northern Power Systems



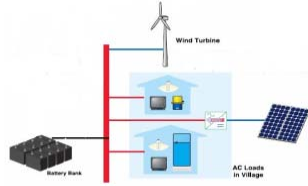
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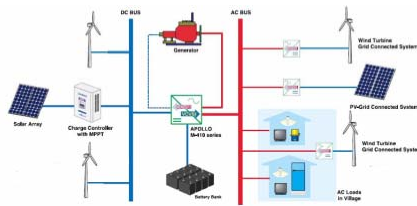
Entegrity Wind

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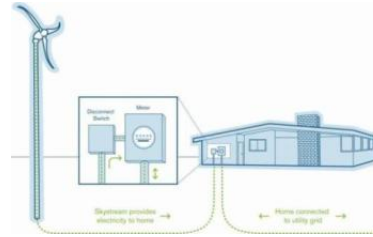
# How Small Wind Systems are Used



Remote Stand-alone system



Micro-Grid for Village Electrification



Grid Connected Home

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# Battery Charging Applications

Antarctica (Remote Monitoring)



Wyoming (water pumping)



Sailboat



Texas (Pipeline Protection)



Offshore platforms



Mongolia (Rural Development)

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## Residential Applications



Proven Wind



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Bergey Wind

Small wind systems are used to reduce/eliminate A homes monthly energy bill. These systems typically range from 2-10 KW in size. The installed cost ranges from \$13 – 50K.

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## Commercial Applications



Electric Co-op (Colorado)



Telecomm



Visitor Centers (NASA)



Restaurant (Utah)

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## Grid Connected Residential Renewables

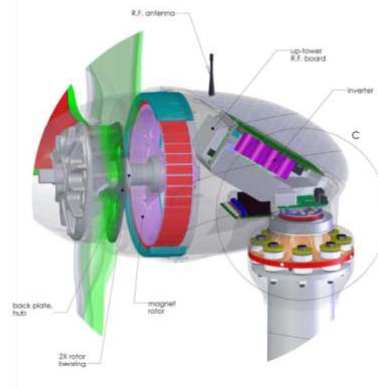
### What 's driving the market?

- 1) **Cost of Electricity:** Electric rates are on the rise
- 2) **Climate Change:** Concerns with Co2 Emissions
- 3) **Energy Security:** Concerns that energy resources are coming from unstable countries

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## Today's Technology: Reliable, Safe and Quiet

- Minimal moving Parts
- Produced with Corrosion resistant materials
- Survives winds in excess of 140 mph
- Maintenance is annual inspection from the ground
- Low speed (50-300 rpm)
- Electrical standards require compliance with all the latest IEEE and UL 1741 Safety Standards such as anti-islanding
- Mechanical standards have been created by the IEC. Small wind systems must comply with the new standard

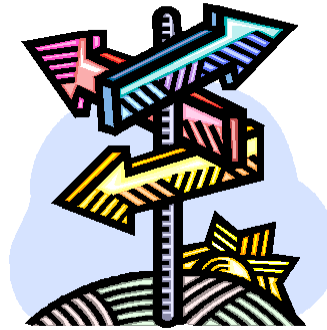


Skystream is the result of a SWWP/DOE partnership

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## Jobs for Rural America

- Residential wind is typically sold through local dealers that are close to their customers
- Most of these dealer jobs are in rural areas
- Market growth is dependent on economics of the technology
- As many as 50,000 new jobs could be created over the next 10 years installing and sighting residential wind systems



According to the American Wind Energy Association, more than 13 million homes and 1 million businesses have the right resources for a small wind generator

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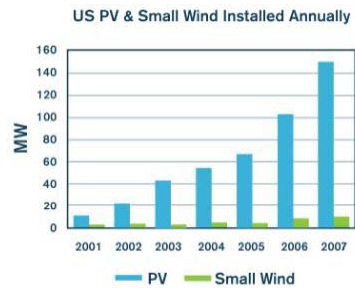
## The Roll of Small Wind in the National/Global Market

- Allows consumers to supplement their monthly energy consumption
- Reduces their carbon footprint
- Protects consumers from future electrical rate hikes
- Reduces stress on already aging power lines which are often at capacity
- Energy is used at the place where it is produced minimizing transmission losses
- Reduces consumption of imported LNG used for electricity (National Security).

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## Thoughts about Policy Changes

- Continued investment in renewable energy research. Current annual budget for wind energy, large and small, is less than \$80M/yr. Distributed wind is less than \$4M/yr.
- A National Net-Metering/Interconnection standard should be adopted
- Investment incentives (ITC's) that level the field with other technologies such as solar.
- Investment in deployment research for the military and other remote installations



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## Small Wind in DC



A Skystream is currently installed at the U.S Botanical Gardens

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**THANK YOU**  
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