Zephyr Energy Corporation is a Boston startup company developing an innovative non-rotating wind energy generator that can provide clean electrical power to wireless sensors and other low power devices. Zephyr’s generator is compact and silent, and operates under light wind conditions. Zephyr aims to capitalize on the rapid growth of wireless sensor deployment and a worldwide need for clean, renewable energy.

**Overview**
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**Generator Design**
- The device consists of a hollow beam that is suspended by springs within its outer frame
- A lack of bearings and gears eliminates frictional inefficiencies
- The beam oscillates rapidly when exposed to 3+ mph airflow due to the effects of multiple fluid flow phenomena
- A unique linear alternator assembly converts the kinetic energy of the oscillating beam into usable electrical energy
- Electricity generated is conditioned and stored until use

**Key Advantages**
- Low Wind Speed Requirement
- Simple, Low Cost Design
- Compact Form Factor
- Safe, Silent Operation
- Scalable, Modular Design

**Market Need**
- Wireless sensor nodes powered by batteries have a finite lifespan
- Battery replacement labor costs can be prohibitively high in large wireless sensor networks (100+ nodes)

**Primary Application**
- Wireless Sensor Nodes

**Usage Scenarios**
- In-duct HVAC control systems
- Infrastructure monitoring (e.g. bridges)
- Remote weather stations
- Smart city and ‘Internet of Things’ applications

**Our Solution**
Zephyr’s micro wind generator serves as a primary or supplemental power source, extending the operational lifetime of wireless sensor devices

**Technology and Funding Milestones**
- April 2011: IDEA Prototype Grant
- August 2013: CRI Catalyst Grant
- November 2013: IDEA Gap Funding Grant
- Spring 2014: Beta Prototype

**Proof-of-Concept**
- Beta prototype optimization
- Wireless sensor integration
- Environmental testing