

# Sample RESE

## **Overview:**

This section will review client expectations and project goals.

## **The Facility:**

This section includes an overview of the project site.

SAMPLE TEXT:

The ABC Company, built in 2001, is designed with a well-insulated building supported by insulated cast-concrete walls; an east-facing low-weather vestibule entrance; a continuously-run co-gen twin generator system (two 850 kW natural gas); twin, sheltered, roofed truck shelters on the west (supporting 2 large truck bays each) and an extensive 1 million+ SF insulated, gravel surfaced roof.....etc.

## **The Problem/Opportunity:**

This section discusses a comprehensive analysis of the facility's current energy utilization, energy inefficiencies, and opportunities for energy reduction.

SAMPLE TEXT:

The heaviest electrical loads for the entire ABC Company facility occur in the Spring-Summer-Fall months, with both generators sometimes providing up to 1540 kW (850 kW + 680 kW) of operating power during retail operation periods for general power and air-conditioning (AC) in Summer. A major portion of the AC load comes from the 1000 customers typically attending the facility, along with the comings and goings of 500+ employees; and from equipment heat, trucks, fork lifts and typical warm-weather solar heat gain on the large roof.

The 'hybrid' Sun/Wind installation will help determine how much of that heavier electric three-season load can be offset by the renewably generated roof-based system.

The 37+ acre facility maintains a 32-foot high, insulated, gravel-protected facility roof that:

- Reflects excessive sunlight via the light brown gravel and the "gravel shade" it supports
- Carries a 25 SF live-load capable of supporting lightweight "ballasted" support structures
- Offers nearly unlimited solar access, only blocked by occasional vents and AC units
- Offers enough height and open vistas to the S, W and NE to provide high wind power

.....etc.

## **Aeroturbine Performance:**

Includes most current performance and safety data.

SAMPLE TEXT:

Through wind tunnel and field testing – including full-scale "mobile platform (truck bed)" runs of mounted Aeroturbines up to 85+ mph – no difficulties, of any kind, in performance and/or power production have been discovered. Over the last three years of testing and observation, Aeroturbines moving in "field tests" at 85 mph and through storm winds in excess of 70 mph, at rooftop sites, have shown no difficulty in maintaining self-regulation (no more than 380 rpm) while continuing to produce power with no noise or vibration! Where other forms of wind rotor have

failed, Aeroturbines have proven to be extremely safe, completely quiet, vibration-free and “bird – proof”.....etc.

### **Aeroturbine Durability & Maintenance:**

SAMPLE TEXT:

The Aeroturbine system is extremely durable – being composed of welded galvanized steel tubing. High zinc galvanizing has been supporting “chain-link” and architectural steel structures to resist corrosion for over 50 years and longer. With the addition of a covering “powder coat” these durability times should be lengthened with minimum or no special maintenance required. Aeroturbine “plastic” is of a high density, UV-resistant, “window-grade” LEXAN-type (polycarbonate) material guaranteed for 20 years or more. UV-resistant polycarbonate windows have been known to last more than 40 years in Chicago, even on high-heat systems like solar hot water collectors. Aeroturbine alternators are extremely robust simple devices with single moving-part permanent magnet rotors spinning in a “field” of fixed copper coils. They will be designed to withstand the same environment as will be the rest of the components exposed to the wind and sun of Illinois.....etc.

### **Estimated Power Production Per Year – Solar & Wind:**

This section will define the estimated renewable energy production in kilowattage and cost savings for wind and or solar projects. This information is highly variable based on the scope of any potential project moving forward.

This section will also define a project cost estimate and project payback timeframe based on:

- Planning, Permitting, and Engineering Costs
- Aeroturbine and Solar Panel Costs
- Electric conversion and integration equipment costs
- Delivery and Installation Costs
- Contingency Costs

### **\*\*Local or State Incentive Programs for Renewable Energy in Illinois**

Lists current state or local renewable incentive programs.

### **Bil Becker, Aerotecture Intel’s CEO:**

#### **Education/Certifications:**

**Industrial Designers Society of America** – professional member in good standing since 1974

**Illinois Renewable Energy Association** – professional member in good standing since 1999

**Illinois Solar Energy Association** – founding (1974) and professional member since 1995

**NE&TS/ DOE**, Washington, D.C. - Federally certified energy auditor/instructor since 1984

**SIU/ U. of Pennsylvania**, Carbondale/ Philadelphia - Postgraduate work with RB Fuller, 1965 - 1982

**Cranbrook Academy**, Bloomfield Hills, MI - MFA/Industrial Design with Architecture minor, 1965

**Michigan State University**, East Lansing, MI - BA/ Industrial Design with Architecture minor, 1963

#### **Brief Bio**

William ‘Bil’ Becker is currently CEO for Aerotecture International, Inc., a renewable energy engineer and professional industrial designer with 30 years experience. As a renewable energy engineer he has designed and coordinated the installations of:

- Aeroturbine systems in Chicago (4); in Chicago suburbs (1); Wisconsin (1); Taos, NM (2) and San Francisco/Northern California (2) – and at multiple energy fairs (6)

- Standard Wind Generators in Washburn, IL (2); Evanston, IL (2); Cape Cod, MA (2)
- Architecturally-integrated photovoltaic systems in Chicago (6); in Chicago suburbs (4); in Wisconsin (8) – and at multiple energy fairs (12)
- Solaria and solar-heated greenhouses in Chicago (5); in Washburn, IL (1), Stelle, IL (1), Pembroke, IL (4) and at the University of Illinois at Chicago (1) as part of his demonstrated manufacturable “EdenSpace” rooftop solar greenhouse and thermal solar collector
- Geodesic domes in Washburn, IL (2), Chicago (2), Carbondale, IL (3) and Kent, OH (1) – his largest geodesic structure, a wooden dome over 100’ in diameter

As an innovative engineer/inventor, he has:

- Designed, manufactured and patented his Aeroturbine – patent # US 7,132,760 B2
- Designed and modeled for patent a Solar ‘Movable’ Boat Canopy - patent # US 5,044,298
- Designed, manufactured and patented his Modular Furniture – patent # US 3,834,776
- Designed, prototyped and demonstrated his recognized Solar Bike (EXPO 85 show & film)
- Designed, helped prototype/demonstrate his recognized Solar Boats (Lowe 2000, SunWize)
- Assisted with the development of the ‘original’ solar-powered highway signs (SunWize)
- Assisted with the development of solar-powered trailer cooling systems (SunWize/Airstream)
- Assisted multiple ‘Green’ architects with renewable energy systems (Jahn, Farr, et. al)

As an innovative industrial designer, he has:

- Done new product ‘ideation’ projects for S.C. Johnson, Electrolux, Briggs & Stratton, Motorola, Wurlitzer, GE, Kimberly-Clark and others
- As a collaborating design team member he has done pioneering work on solar-electric cars, solar-powered laptop computers, solar and non-solar cellular phones, satellite-linked telephone systems, solar-powered telephone “booths” for village-based satellite phones and solar thermal cookers for 1<sup>st</sup> and 3<sup>rd</sup> World markets

During his tenure as University of Illinois at Chicago (UIC) professor of Industrial Design, he has been doing research in renewable energy since working with R. Buckminster Fuller in the 70’s. In the 80’s, he lead a team of researchers in Evanston, IL (Epoch B Committee of the Evanston Ecology Center) who erected the first permanent urban wind generator in the US. He helped found the Illinois Solar Energy Association (1974) and the Center for Neighborhood Technology in Chicago, in 1979, coordinating the design and construction of 5 solar heated greenhouses located in Chicago. He joined (1982) SunWize Inc, a photovoltaic design, distribution and installation company, collaborating on over twenty photovoltaic projects into the 1990’s. In the 90’s he invented an urban wind generator he calls the Aeroturbine which is now the center of his research and manufacture with Aerotecture International Inc., an Illinois corporation working on all forms of renewable energy and centered on urban windpower. He brings 30 years of design, engineering, and installation experience to his current work as CEO and head researcher for Aerotecture Int’l. Please see [www.aerotecture.com](http://www.aerotecture.com). Becker can be reached through [info@aerotecture.com](mailto:info@aerotecture.com).