



Sustainable Energy: A Vision for Building the Renewable Future

Prepared for: **The Texas Association of Public Employees Retirement System**
2008 Summer Education Forum
August 18, 2008

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The Vision

We believe new technologies and recent regulatory events will re-shape energy markets across the globe resulting in the “perfect storm” scenario for tremendous growth.

United Nations Investor Summit on Climate Risk

- Global energy consumption is projected to grow by 57% over the 2004 to 2030 period. The DOE estimates nearly \$4 trillion in new global energy infrastructure assets will be required by 2030 to meet demand.
- Growing populations in China and India will continue to put enormous pressure on commodities such as Oil, NG, and Coal prices.
- According to the MCC of London, if China and India grow at their present rate between now and 2015, their standard of living requirements would be 4X greater than what the U.S. Europe, and Japan experienced between 1948 -1963.



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- In 2005 Kyoto Protocol takes effect covering 166 countries and over 55% of global GHG emissions. Ratifying countries have committed to reducing their carbon footprint by 5.2% below 1990 levels between 2008 – 2012. Implications for Energy efficiency and renewable energy technologies will impact many sectors and industries.
- World-wide concern about global warming is driving cap and trade mechanisms as seen in the European Union. We believe the U.S. will follow over the next 2-3 years.
- States moving to 4-day work weeks as seen by recent legislation in Utah could impact productivity in the long run.
- Cleantech Venture Network research has also shown that for every \$100 million invested into green-backed companies, 2,700 new jobs are created and the overall economy receives a 5X positive impact in related economic growth.





Fast Growing Market Opportunity

There has been significant growth globally in the use of renewable energy and energy efficient technologies driven by both innovation and governments recognizing the need to:

- *Maintain the security of energy supply*
- *Secure energy resources in the face of increasing global competition for scarce fossil fuel resources and high oil/coal prices*
- *Reduce greenhouse gas emissions to mitigate the impact of climate change*

1. European Union – 34% of electricity in the EU will be generated by renewable sources by 2020. \$300Billion is required to meet this goal with Wind and Solar expected to attain the largest market share.
2. China's new Renewable Energy Law, one of the world's largest economies has now made one of the largest state-sponsored commitments toward renewable energy. China's government imposed a national renewable energy requirement that is expected to boost the use of renewable energy capacity up to 10 percent by the year 2020. China has said it intends to spend an estimated US\$200 billion on renewable energy over the next 15 years, partly to build hydropower, wind, and solar-powered plants to fuel its growth.





Fast Growing Market Opportunity

3. According to the 11th New and Renewable Energy five-year plan proposed by the government of India, from 2008-2012 the renewable energy market in India will reach an estimated US \$19 billion. Investments of US \$15 billion will be required in order to add the approximately 15,000 megawatts (MW) of renewable energy to the present installed capacity.
4. To date, 21 states and Washington D.C. have implemented renewable electricity standards. Washington's clean energy initiative requires electricity providers to generate 15 percent of their power from renewable energy sources by 2020. Delaware, Hawaii, Maryland, Montana, New York, Pennsylvania, Rhode Island, and Washington D.C. have also enacted standards since the beginning of 2004. Several other states—including Arizona, California, Nevada, New Jersey, Pennsylvania, Wisconsin, and most recently, New Mexico and Colorado—have also increased or accelerated their standards.
5. Energy efficiency technologies are emerging in areas such as pollution control, building materials, advanced lithium batteries, and LED lighting. For example, currently lightning uses 22% of all electricity generated. LEDs are estimated to use only 5 – 10% of the electricity required of incandescent bulbs, which by the way, were outlawed in the new U.S. Energy Bill by 2012. Potentially 10% to 15% of all our electricity needs will be obviated within the next 5 – 10 years. LED's are expected to grow at a compound annual growth rate (CAGR) of 35% to nearly \$1.4bn by 2012.





Technology Overview

- Solar/Photovalics
- Thin Film Solar
- Concentrated Solar Power
- Wind Power
- Geothermal Power
- Hydro Power
- Bio Fuels





Key Drivers for Investor Demand

Key Market Drivers for Demand:

- Financial Return/Alpha Opportunity
- Strong Demand Continues for Alternatives vs. Traditional Investment Strategies
- “Investors Emotional Involvement “
- Satisfy SRI Objectives or Constraints without Sacrificing Financial Return
- Infrastructure – Growth vs. Income
- 2008 Presidential Campaign Platforms
- 2008 Public Pension Fund Capital Commitment/United Nations Summit
- Carbon Constraints