



## Growing Renewable Energy Companies in Western New York



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# About RENEW NY

- Renewable Energy Network of Entrepreneurs in Western New York
- Initiated by NYSERDA 5/1/04 with \$150,000, 3-year funding.
  - Extended by NYSERDA in 2007
- “Virtual” Incubator serving NY west of Utica
  - Stimulate business formation and growth of renewable energy companies
  - Companies < 5 years old
- Facilitates new company development via:
  - Education (all facets of new venture development)
  - Federal and State grant alerts
  - Equity (angel, seed, venture, project finance) and debt sources
  - Linking and Networking (e.g. collaborative university research or grants)



# Booming World Market

QuickTime™ and a decompressor are needed to see this picture.

- 2007 = \$77.3B vs. \$55B in 2006 and \$40 billion in 2005
- Wind power grew 30% in 2007 to over \$30 billion
  - \* Constrained by turbines
- Solar PV grew 32% in 2007 to over \$20 billion
  - \* Constrained by polysilicon
- US Ethanol production 34% in 2007 to 6.5B gallons

## 2005 World Ethanol Production – All grades, in millions of gallons

USA	4264	South Africa	103	Ukraine	65	Australia	33	Guatemala	17	Zimbabwe	5
Brazil	4227	UK	92	Canada	61	Japan	30	Cuba	12	Kenya	4
China	1004	Saudi Arabia	32	Poland	58	Pakistan	24	Ecuador	14	Swaziland	3
India	449	Spain	93	Indonesia	45	Sweden	29	Mexico	12	Others	710
France	240	Thailand	79	Argentina	44	Philippines	22	Nicaragua	7		
Russia	198	Germany	114	Italy	40	South Korea	17	Mauritius	3	<b>Total</b>	<b>12150</b>

Source: F.O. Licht



# Global Investors

- World's largest energy companies in renewables
  - GE – Ecomagination tagline
    - Wind business \$3.6 billion in 2006 (from \$200MM in 2002)
  - Siemens, Mitsubishi, Sharp, BP, Chevron, Shell, FPL, etc.
  - Ford and GM flex fuel (E85) vehicle marketing
- Personal high-profile investors
  - Richard Branson, Bill Gates, Vinod Khosla, Larry Page, Bill Clinton, etc.
- Bankers and Wall Street
  - Goldman Sachs, Credit Suisse, Chase, etc.
  - 3 of the largest U.S. 2005 initial public offerings were in solar energy
    - \$400 million offering for China-based Suntech Power (made a new billionaire of the Chinese founder)
- Venture Capital
  - Number of dedicated clean technology (cleantech) firms growing
  - Premier venture capital firms expanding into cleantech
    - Kleiner Perkins, Draper Fisher Jurvetson, NEA, etc.
  - % total venture capital dedicated to cleantech from .5% in 1996 to 9% in 2007



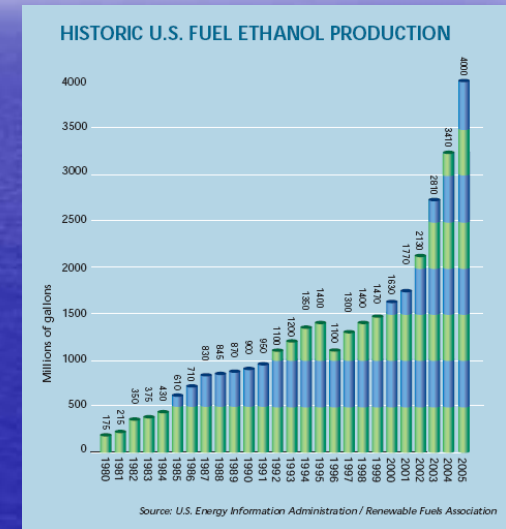


# United States RE

- < 5% penetration in renewables, yet:
  - #1 in ethanol production (passed Brazil in 2005)
  - #1 in new wind installations 2005, 2006, and 2007
  - #1 in geothermal
  - #3 in new solar PV installations in 2005
    - 7% world total vs. Germany 57% and Japan 20%.

- Federal Policy

- Energy Independence & Security Act 2007
  - Renewable Fuel Standard - 36B gallons by 2022
- Energy Policy Act of 2005 (EPAAct 2005)
  - 19% dedicated to renewable energy
- President's Advanced Energy Initiative
  - Includes additional wind, solar, and biofuels research funding
- Senate and House Renewable Energy & Energy Efficiency Caucus – bipartisan with over 250 members
- 25 States + DC with renewable portfolio standards
  - Mandated percentage of electricity from renewables





# New York State Assets

- NYSERDA
  - Annual budget \$200MM and growing with Energy Efficiency Portfolio Standard
  - Cited by DOE among the best research organizations in North America
- NYS Renewable Portfolio Standard (RPS) – 25% by 2013
- Governors Spitzer/Paterson - 15X15 Energy Portfolio Standard
- Former Governor Pataki
  - Initiated the RPS, and NYSERDA budget increased from \$25MM to \$200M
  - Executive Order 111 – Purchase of Renewable Energy by State Entities
    - 10% by 2005
    - 20% by 2010
  - Executive Order 142 – Purchase of biodiesel by State Entities
    - 10% in vehicles by 2012
    - 5% in heating by 2012
  - \$20MM for development of a pilot cellulosic ethanol plant (Mascoma – Genencor initially Greece, now Rome - NY, not Europe)
  - Directed Thruway Authority to install E85 pumps at all rest stops
- Senator Clinton
  - Helping brand upstate as hotbed for renewable energy
- Senator Schumer
  - Working on PSC to bring Iberdrola wind investment



# Western NY companies

- 56 early-stage companies
  - 22 companies pre-revenue.
  - 1-70 employees per company
  - ~ 400 current jobs with significant growth potential
  - > 40 patents (granted + pending)
  - Investment
    - Local entrepreneurs closed > \$275MM in equity and debt in 2006
      - Northeast Biofuels (ethanol)
      - Western NY Energy (ethanol)
      - NextGen Fuels (biodiesel).
      - Northern Biodiesel (biodiesel)
    - SolarSentry (Pittsford) and Cerion (Rochester) each closed > \$1MM venture capital in 2007
    - Wakonda (Fairport) and Upstate Biodiesel expect to close soon
- 2000-2008 > \$1 billion cumulative regional Renewable Energy investments (including established companies)
  - E.g. Wind farms, Ethanol refineries, landfill gas, biodiesel, etc.



# Western NY companies

- 20 Biofuel and biomass
  - 6 ethanol
  - 9 biodiesel
  - 5 biomass (biofuel for Power Generation application)
- 7 Fuel cell, hydrogen, and components
- 7 Photovoltaic and Solar
  - 3 PhotoVoltaic
  - 1 Solar heating
  - 3 other (solar panel and string performance monitoring)
- 10 Services (e.g. solar/wind installation)
- 4 Wind
- 2 Geothermal
- 2 Developers of renewable energy (e.g. wind, landfill gas, biomass)
- 4 other (Anaerobic Digester, Soy insulation, and diesel fuel catalyst)



# Clusters

Biofuels



Fuel Cell



Solar/PV



Wind



Service / Installation



Other





# RENEW NY Resource Matching

- Angel investors (e.g. Rochester Angel Network, Insyte Consulting)
- Economic development incentives
  - GRE, ESD, County IDA's, etc.
- Venture Capital
  - Local, Strategic (e.g. DTE), & Energy (e.g. Enertech, Rockport, etc.)
- Project Financing (> \$20MM)
  - GE, US Renewables Group, etc.
- Grant email alerts
  - NYSERDA, Federal Government (e.g. DOE, EPA, SBIR, etc.), Private sector
- Grant Writers
- University Research Partners
  - Clarkson, Cornell, Rochester Institute of Technology, SUNY Environmental School of Forestry, University of Rochester
- Center Of Excellence in Energy & Environmental Systems
- Volunteers



# Summary

- Renewable energy is a big (\$77 billion in 2007) market, mostly sold out, and growing rapidly
  - Continuing in the foreseeable future due to bipartisan Global, Federal, and state policy
  - Mainstream investment moving into renewable energy
- No “silver bullet” for powergen or transportation fuels. It will remain a mix of technologies depending on local resources.
- Potential for breakthrough technology to bring costs down
  - Biofuels (dedicated energy feedstocks including algae and willow)
  - Thin film Solar PV
  - Other?
- Tremendous amount of activity in startup renewable energy companies in our region. (56 known today)
- > \$1 billion regional investment 2000-2008 including both larger companies and startups



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