Diversifying Florida’s Economy: Cleantech Cluster

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Enterprise Florida
Florida’s 21st C Innovation Economy

CleanTech a targeted cluster strategy for diversification and growth

- Emerging Technology/ Horizon Market Research
- Cleantech innovation infrastructure
- Branding Florida as emerging cleantech hub
- Business development: from recruitment to start-ups; venture capital to workforce
- Global expansion with international commerce
Large Growth Market


- Biofuels: $44.9 (2009), $112.5 (2019)
- Wind Power: $63.5 (2009), $114.5 (2019)

TOTAL: $144.5 (2009), $343.4 (2019)

Source: Clean Edge, 2010
## Potential for Job Growth

### Global Clean-Energy Jobs (Direct and Indirect): Solar and Wind

<table>
<thead>
<tr>
<th></th>
<th>2009 (Current)</th>
<th>2019 (Projected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar Photovoltaics</td>
<td>267,562</td>
<td>2,178,919</td>
</tr>
<tr>
<td>Wind Power</td>
<td>563,577</td>
<td>1,122,815</td>
</tr>
<tr>
<td>TOTAL SOLAR AND WIND JOBS (Global)</td>
<td>831,139</td>
<td>3,301,734</td>
</tr>
</tbody>
</table>

*Source: Clean Edge, Inc., 2010*
## Increase in VC Investments

### Clean-Energy Venture Capital Investments in U.S.-Based Companies as Percent of Total 2001-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Venture Investments (US$ Billions)</th>
<th>Energy Technology Investments (US$ Millions)</th>
<th>Energy Technology Percentage of Venture Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>$40.6</td>
<td>$351</td>
<td>0.9%</td>
</tr>
<tr>
<td>2002</td>
<td>$22.0</td>
<td>$271</td>
<td>1.2%</td>
</tr>
<tr>
<td>2003</td>
<td>$19.7</td>
<td>$424</td>
<td>2.2%</td>
</tr>
<tr>
<td>2004</td>
<td>$22.5</td>
<td>$650</td>
<td>2.9%</td>
</tr>
<tr>
<td>2005</td>
<td>$23.0</td>
<td>$797</td>
<td>3.5%</td>
</tr>
<tr>
<td>2006</td>
<td>$26.5</td>
<td>$1,308</td>
<td>4.9%</td>
</tr>
<tr>
<td>2007</td>
<td>$29.4</td>
<td>$2,867</td>
<td>9.8%</td>
</tr>
<tr>
<td>2008</td>
<td>$28.3</td>
<td>$3,213</td>
<td>11.4%</td>
</tr>
<tr>
<td>2009</td>
<td>$17.7</td>
<td>$2,216</td>
<td>12.5%</td>
</tr>
</tbody>
</table>

Source: Bloomberg New Energy Finance with supporting data from Clean Edge and Nth Power, 2010. NOTE: New Energy Finance’s energy-tech VC numbers include investment in renewable energy, biofuels, low-carbon technologies, and the carbon markets. VC figures are for development and initial commercialization of technologies, products, and services, and do not include private investments in public equity (PIPE) or expansion capital deals.
Cleantech Cluster Strategy

Florida is at the leading edge of cleantech innovation.

Cleantech Trends

Energy

- Solar
- Biofuels
- Ocean
- Storage
- Smart Grid

Florida Innovations

Florida utilities have been leaders in the deployment of utility-scale PV systems. In fact, Florida Power and Light's 15 MW DeSoto Next Generation Solar Energy Center is the largest of its kind in operation.

Attracted by Florida's business resources, climate, and leading biofuel researchers, industry leaders, and venture capital have already broken ground on a commercial scale bioethanol plant in rural Florida. Several Florida companies are also ramping up algal biodiesel production.

Florida's long coastline, proximity to the Gulf Stream, and marine research strengths are supporting a broad range of ocean energy deployment activities, including turbine, wave, and thermal technologies.

Florida companies are involved in all aspects of energy storage and battery technologies—developing and manufacturing everything from hybrid fuel cells to advanced lithium-ion batteries.

Florida companies develop and manufacture smart meters, integrated circuits for powerline communication, and smart grid software systems. Florida is also home to some of the nation's largest smart grid demonstration projects.

Florida researchers are at the forefront of solid state lighting innovation—recently breaking the world record for OLED efficiency. The state also offers great strength in advanced materials—especially in bio and nanomaterials and membranes.

Florida companies are at the forefront in advanced filters, separation membranes, and reverse osmosis desalination systems.

Florida is home to one of the nation's top biotechnology industries, and the state's biotech companies possess particular skills in the development of biosensors, biophysics, and biobased technologies.

Efficiency

- Advanced Materials
- Green Building

Advanced materials— including nanomaterials, coatings, and biomaterials— will play an important role in reducing the environmental impact of production, transportation, and daily activities while delivering improved products and lower costs for consumers.

The U.S. green building market for new construction alone is projected to reach up to $340 billion by 2015.

Environment

- Water
- Air and Environment

Environmental monitoring, air pollution prevention, and bioremediation technologies are an important part of the clean technology industry.
Cleantech Microsite

eFlorida.com/Cleantech

- Industry Quick Links
- Latest Buzz
- Current News
- Fresh Content
- RSS Feed

- Cleantech Market Brief
- Industry Newsletters
- Expansion Assistance

- Cluster Videos
- EFI YouTube Channel Feed

- Thought Leadership
  - Webinars
  - White Papers
  - Podcasts

- Florida In Depth
  - Cluster Snapshot
  - Market Brief

- Cluster Map
Marketing Florida Innovations

- Environmental Remediation
- Biofuels
- Solar
- Energy Storage
- Smart Grid
- Ocean Energy
- More in future……..

Strategic Alliances:

[Image: Greentech Media, Renewable Fuels Association, SmartBrief, Energy Central, CleanTech Group LLC, Technology Review]
Some Early Results (2008-10)

- Projects: 18
- Projected Jobs: over 2,000
- Projected Investment: over a billion dollars
- Broad representation:
  - Cellulosic ethanol manufacturing
  - Solar/wind turbine manufacturing
  - Lithium-ion battery manufacturing
  - LED lighting
  - Biofuels production from organic waste
    -- trash to renewal fuel
    -- algae biofuels