# Diversifying Florida's Economy: Cleantech Cluster

**Sena Black**
**Enterprise Florida**

# Cleantech Cluster Strategy


FLORIDA is at
*the leading edge of cleantech innovation.*

## CLEANTECH TRENDS

### ENERGY

**Solar**

The demand for utility-scale PV systems has picked up dramatically in the U.S. over the past several years.

**Biofuels**

Second generation cellulosic ethanol is soon expected to achieve commercialization. Third generation biofuels are rapidly approaching financial feasibility and are expected to hit the market by 2016.

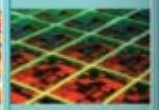
**Ocean**

Oceans offer an abundant, predictable, and dense source of energy—and are attracting billions of dollars of investment in electric generation capacity.

**Storage**

Energy storage technologies will play an integral role in supporting the deployment of renewable energy technologies. New batteries are needed for a broad range of applications, from vehicles to RFID.

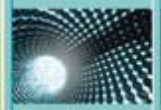
**Smart Grid**



Smart grid is a leading area for U.S. cleantech investment, attracting more than $400 million in venture capital in 2008 and 2009.

### EFFICIENCY

**Advanced Materials**



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

**Green Building**

The U.S. green building market for new construction alone is projected to reach up to $140 billion by 2013.

### ENVIRONMENT

**Water**

Resource constraints, decaying infrastructure, and rising water prices are just a few of the factors driving demand for advanced water technologies across the globe.

**Air and Environment**

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

## FLORIDA INNOVATIONS

Florida utilities have been leaders in the deployment of utility-scale PV systems. In fact, Florida Power and Light's 25 MW Desoto Next Generation Solar Energy Center is the largest of its kind in operation.

Attracted by Florida's biomass resources, climate, and leading biofuel researchers, industry leaders Verenium and BP 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 bio and nano materials and ceramics.

Florida companies are leading the way in green design, building controls and automation technologies, and green building materials and fixtures.

Florida companies are at the forefront in advanced filters, separation technologies, 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 bioassays, biochips, and bioremediation technologies.

2 CLEANTECH MARKET BRIEF | eflorida.com



FLORIDA. INNOVATION HUB OF THE AMERICAS.®

3

# 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:

greentechmedia

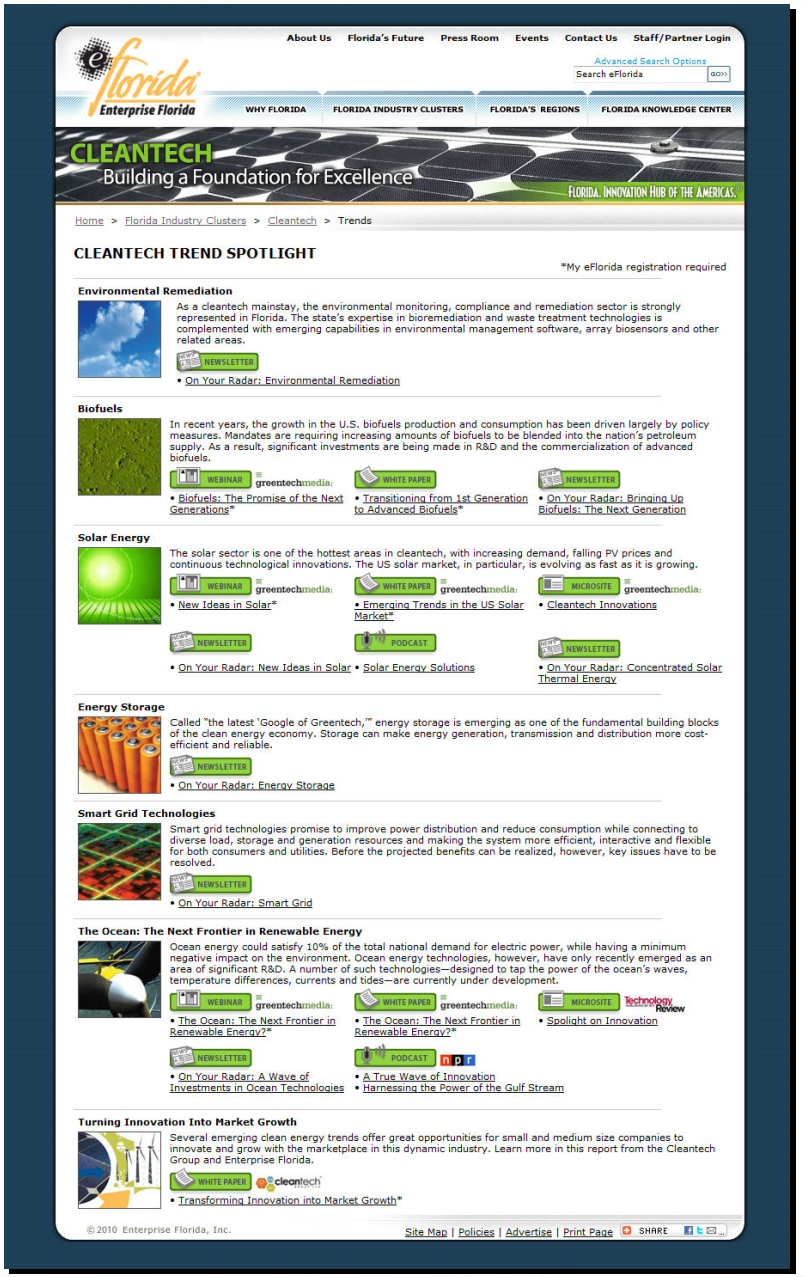
Renewable Fuels Association RFA SmartBrief

SmartBrief on Sustainability
The Future of Responsible Business is Now

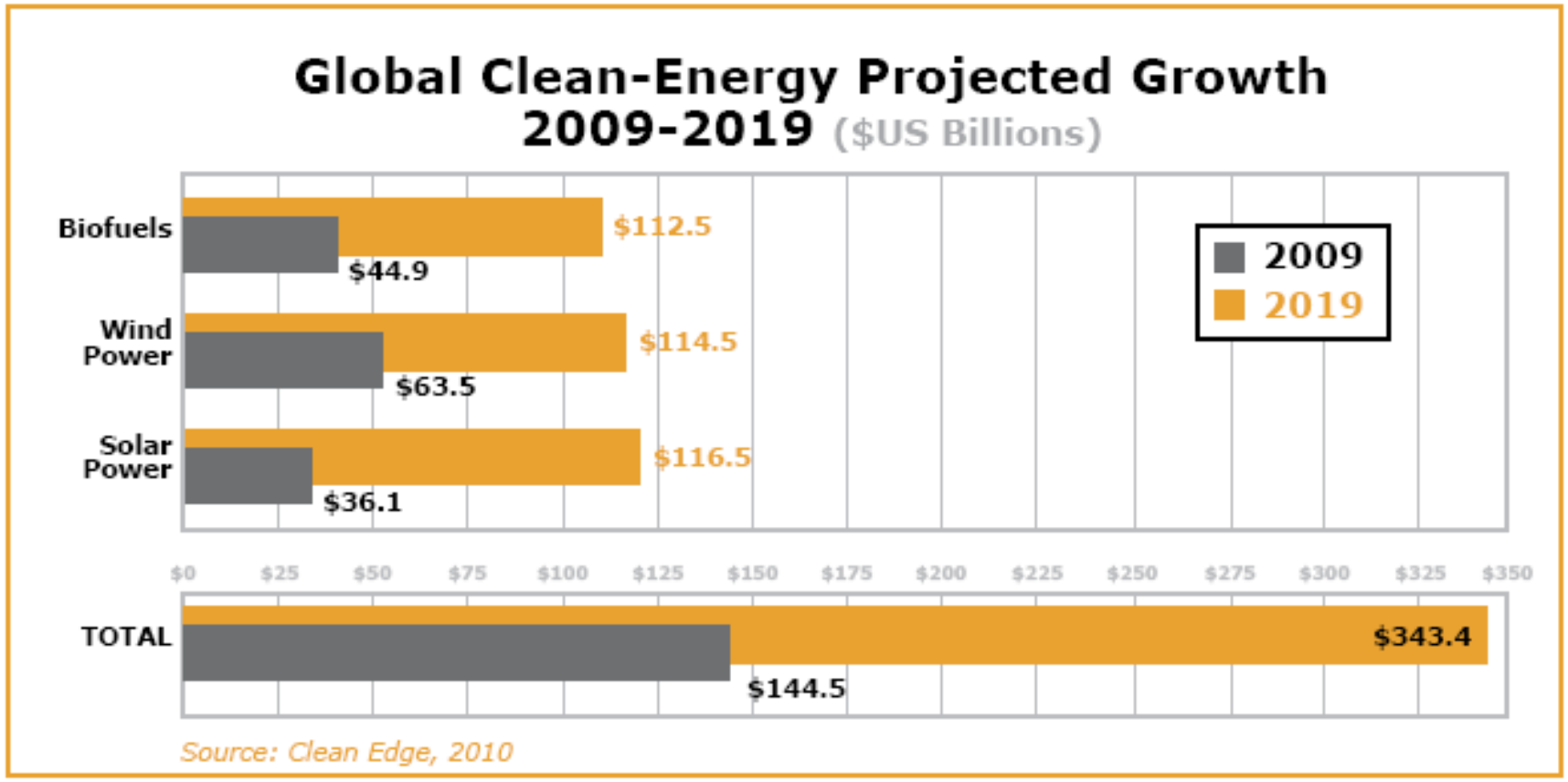
ENERGY CENTRAL

cleantech GROUP LLC

Technology Review PUBLISHED BY MIT



# Large Growth Market



# Potential for Job Growth

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

| | 2009 (Current) | 2019 (Projected) |
|---|---|---|
| Solar Photovoltaics | 267,562 | 2,178,919 |
| Wind Power | 563,577 | 1,122,815 |
| TOTAL SOLAR AND WIND JOBS (Global) | 831,139 | 3,301,734 |

*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

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

*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.*

# Top VC investment States (# deals)

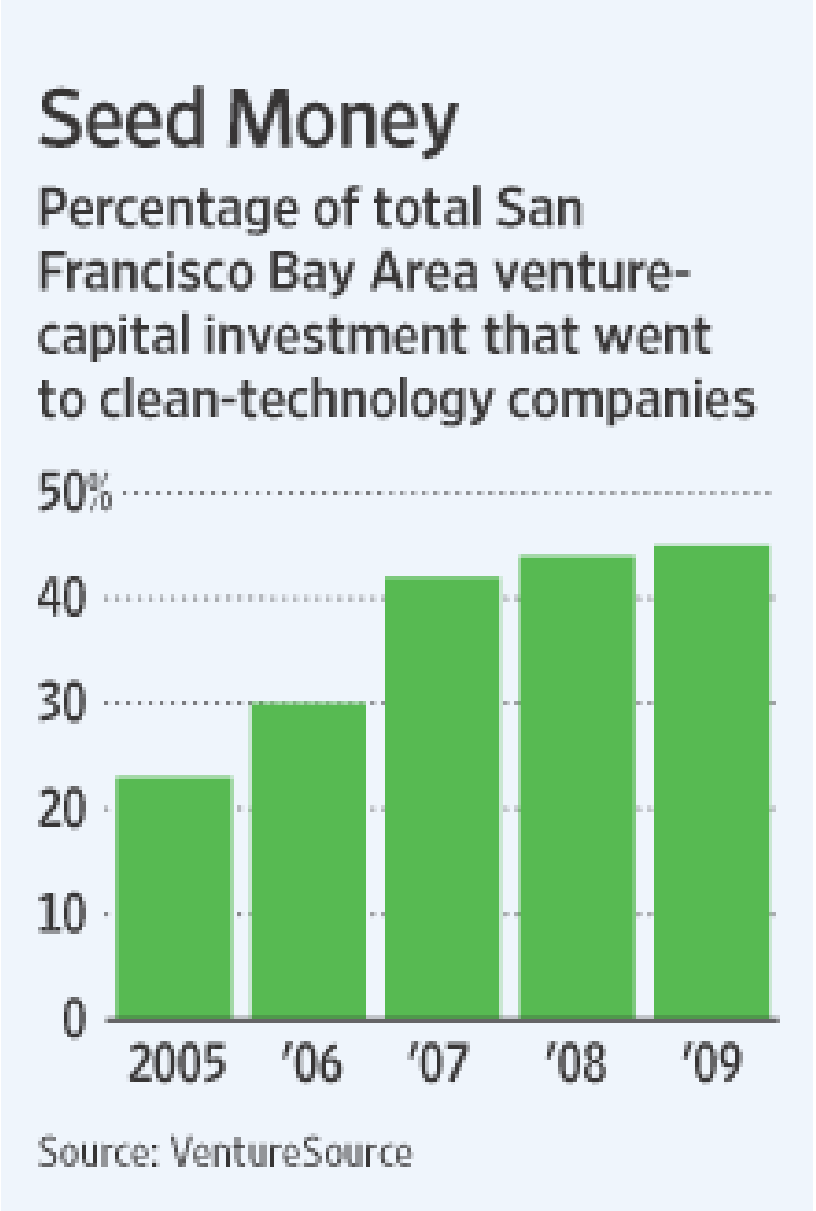
1. California
2. Massachusetts
3. Texas
4. Washington
5. New York

# California – the leading state

- Captured most VC dollars: 40% of total $
- Highest number of deals
- 4X as many venture backed deals as Massachusetts
- 6X as many venture backed deals as Texas

# Silicon Valley 3.0

Clean tech start-ups replacing IT as major growth sector (WSJ, Oct. 21, 2001)



# Why? Multiple drivers

- Large entrepreneurial base
- R&D (universities, labs)
- Early-stage capital
- Supportive state and local policies for innovation
- Clean energy policies

# Florida Cleantech

- The average wage in Florida's representative Cleantech companies is 21.6% to 112.7% higher than Florida's statewide average wage, with the exception of Electric Bulb & Part Manufacturing which has an average wage that is 18.5% lower that the statewide average wage.
- Florida is a national leader in its number of Cleantech establishments.
- In terms of Cleantech employment, Florida's rankings are mixed, with 40% of its industries above the national average.
- The average wage in Florida's Cleantech companies is generally below the national average.
- Florida's top competitors in Cleantech employment are California, Texas, Massachusetts and Pennsylvania.

# Florida cluster growth strategy

- Become Cleantech innovation hub – R&D
- Advance Cleantech Commercialization
  - Incubators, matching grants, “gap funding”
- Expand VC market in Florida
  - “Valley of death” – early stage seed capital
  - Florida Opportunity Fund, Florida Growth Fund
- Attract innovation and capital intensive projects

# Attraction/Expansion: 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 biofeuls

# www.eflorida.com/cleantech