

# Leveraging Cleantech Innovation for Economic Development in States

California Energy Commission  
June 6, 2012

**DOCKET**

**12-IEP-1D**

DATE June 6 2012

RECD. June 8 2012

# Brookings Institution/CEG 2012 Paper

**“Washington is again paralyzed and pulling back on clean energy economic development.**

**The federal government, immobilized by debt and partisanship, won’t likely supply new funding solutions any time soon. Existing financial supports, likewise, appear tenuous, given that many of the federal tax incentives, subsidies, and loan guarantees made available through the 2009 stimulus law and elsewhere are set to expire.**

**All of which confronts the nation with a daunting question: If the country is to take advantage of the economic, environmental, and health benefits of clean energy, how will its development be financed, its emerging companies be supported, and its markets be structured—and who is in the best position to decide and act?”**

Milford, Lewis, Mark Muro et al for the Brookings-Rockefeller Project on State and Metropolitan Innovation, “Leveraging State Clean Energy Funds for Economic Development”, January 2012.

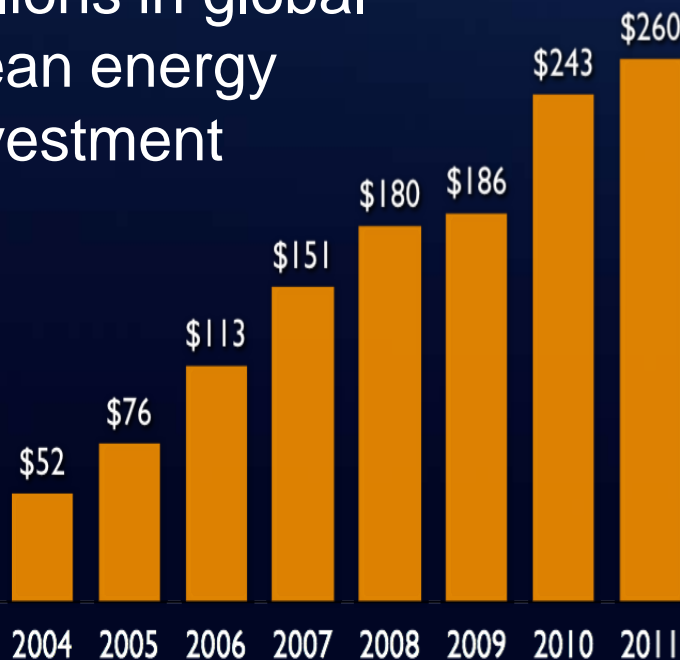
[http://www.brookings.edu/~media/Files/rc/papers/2012/0111\\_states\\_energy\\_funds/0111\\_states\\_energy\\_funds.pdf](http://www.brookings.edu/~media/Files/rc/papers/2012/0111_states_energy_funds/0111_states_energy_funds.pdf)



# The advanced energy economy matters inordinately...

## Site of investment

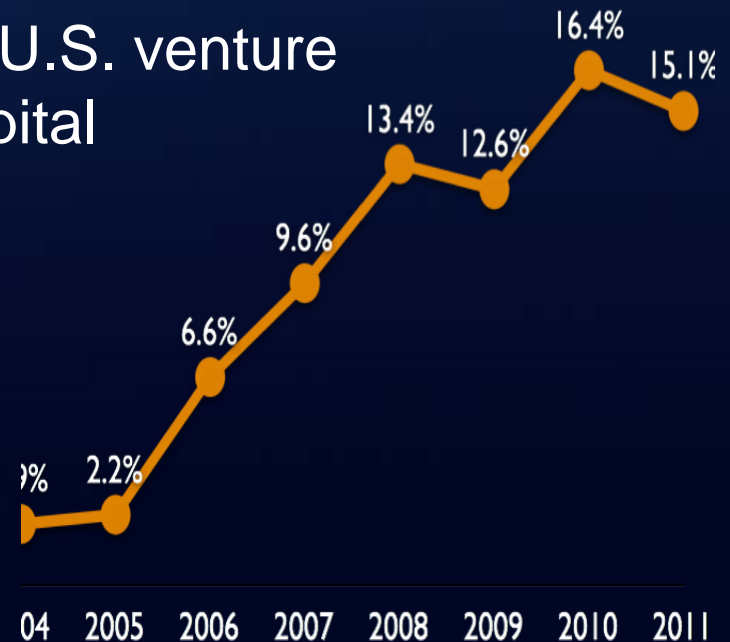
Billions in global clean energy investment



Source: Bloomberg New Energy Finance

## Site of innovation

Cleantech share of all U.S. venture capital



Source: National Venture Capital Association

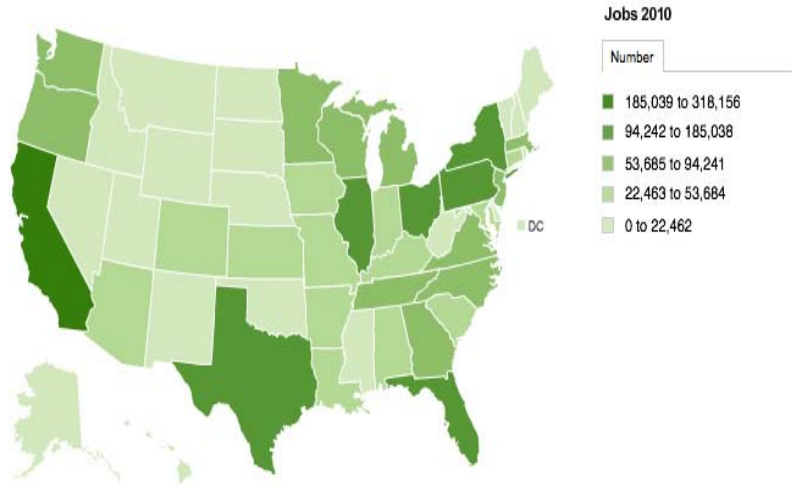
# ...and it is spatially arrayed

BROOKINGS

AGGREGATE CLEAN ECONOMY

## Aggregate Clean Economy

Jobs 2010

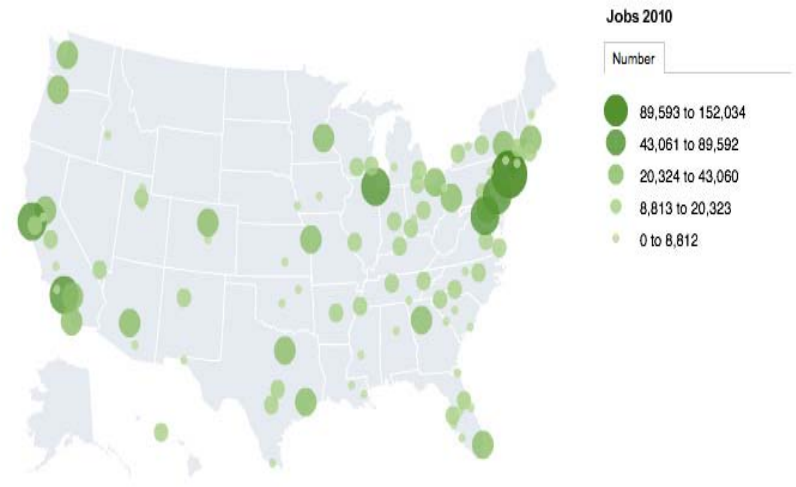


BROOKINGS

AGGREGATE CLEAN ECONOMY

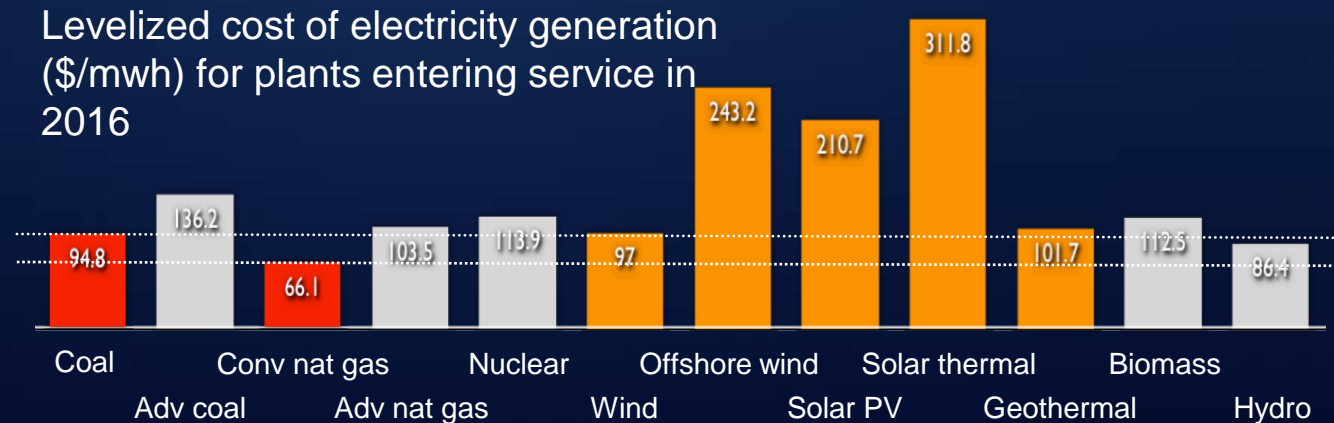
## Aggregate Clean Economy

Jobs 2010

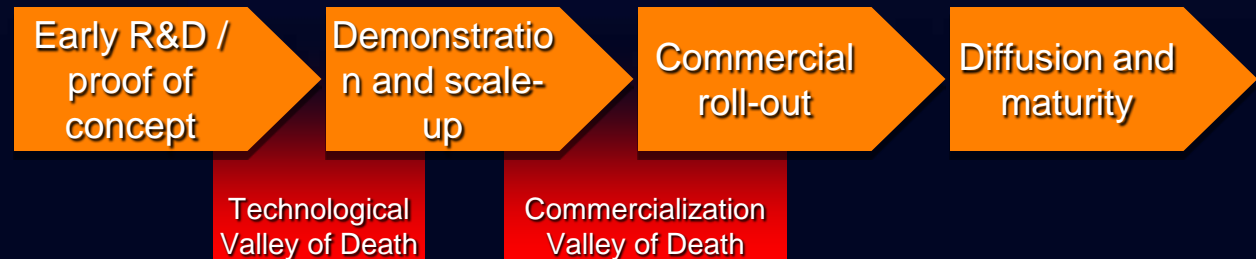


# Despite huge price declines in recent years, cleantech still requires special treatment

Renewables technologies are **not yet competitive with coal and natural gas**

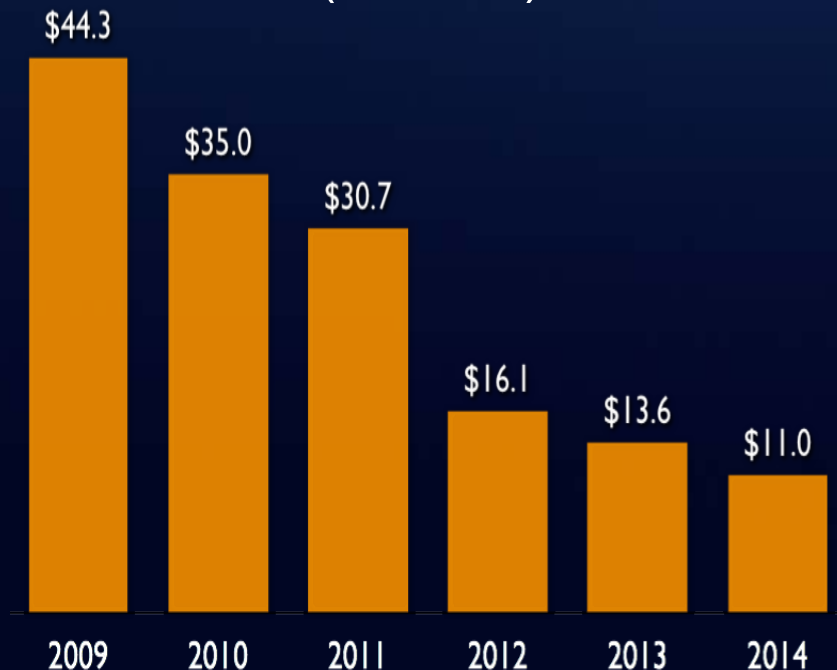


Multiple “Valleys of Death” hinder innovation and scale-up



# Federal policy and financial supports have been critical but are heading for a cliff

Federal cleantech spending by year (billions)



- ✓ 92 programs investing over \$150 billion from 2009-2012
- ✓ One-third of spending tied to ARRA
- ✓ Adoption and deployment subsidies and credits will bear 75 percent of reductions
- ✓ Cleantech manufacturing support has already expired
- ✓ Chronic underinvestment in R&D

# States have innovated on advanced energy policy support

States have mainly focused their efforts on **finance and market creation**

- ✓ Fuel emissions standards and systems
- ✓ Renewable portfolio standards
- ✓ Energy efficiency resource standards
- ✓ Net metering and interconnection policies
- ✓ Energy efficient building codes
- ✓ Carbon trading schemes (e.g. RGGI)
- ✓ Clean energy funds
- ✓ PACE financing authorization
- ✓ Green banks
- ✓ Loan programs, rebates, and tax credits



# However, state policy support has been slower to address innovation and industry building

Project financing--needed as it is--will not be sufficient to drive the growth of large and innovative new companies or to create the broader economic development taxpayers demand from public investments



# Renewable portfolio standards are insufficient to drive innovation and a full-scale transition to cleaner energy

- ✓ RPSs enable deployment of existing technologies but do not guarantee a market for new ones as utilities seek least cost least risk options
- ✓ Key elements of RPS statutes like eligible technologies and stringency vary across states, preventing advanced technology scale-up in a well-lubricated market
- ✓ Relevant utility markets are fragmented and cross state boundaries too
- ✓ Although stable now, pressure could mount on RPS policies and lead to uncertainty



# Clean energy funds, for their part, face five major challenges

- ✓ Dominance of project-based funding
- ✓ Limited funding for clean energy economic development programs
- ✓ Inadequate industry information
- ✓ Limited collaboration among stakeholders
- ✓ States acting in isolation



# Outline

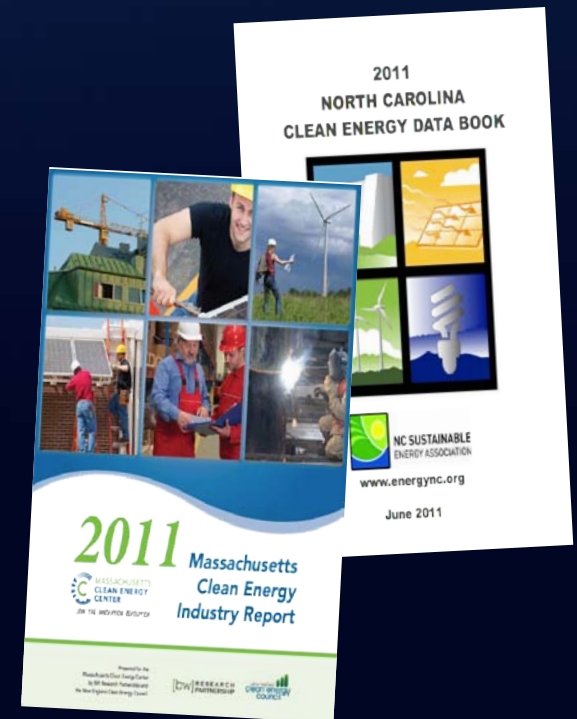
- 1 Context
- 2 State advanced energy efforts
- 3 Recommendations

# As states continue to build indigenous markets through public investments in projects, their advanced energy policies should flow from a number of core principles

- ✓ Build the **data** base
- ✓ Focus on **innovation**
- ✓ Move **economic development** and industry-building to the center
- ✓ Support ground-up cleantech **cluster** initiatives
- ✓ **Collaborate** with other tiers of government for policy innovation

# Build the data base

- ✓ Improve ongoing data collection and monitoring on industry strengths and weaknesses in the state
- ✓ Invest in smart intelligence about regional industry clusters--jobs, fast-growing companies, activities within a sector, supply chain gaps, export potential, and more
- ✓ Work with universities and research institutions
- ✓ Analyze current policies for greater job creation and economic development impact
- ✓ Use that information to create informed and targeted programs
- ✓ Establish program metrics



# Focus on innovation

- ✓ Support research and development
- ✓ Use procurement to drive not just demand but competition and innovation
- ✓ Creative financing to bridge the valleys of death
- ✓ Emphasize the deployment of commercial products into the marketplace
- ✓ Reverse auctions for emerging technologies
- ✓ Efficacy Insurance (CalCEF)



# Move economic development and industry-building to the center

✓ States should redirect more of existing funds from direct project support to economic development programs and activities:

- Cluster development
- Supply chain infrastructure
- Incubators
- Workforce training
- Manufacturing and export promotion

✓ States should address barriers to economic growth and transformative technology development by filling supply chain, finance, infrastructure, and information gaps



# Support ground-up cleantech cluster initiatives

- ✓ Use data and analysis to understand the local advanced energy economy
- ✓ Firmly support regionally crafted cluster strategies
- ✓ Identify clusters' binding constraints and formulate strong, "bottom up" action to address them
- ✓ Link, leverage, and align existing programs and offerings in service of advanced energy-driven economic development

# Collaborate with other tiers of government in partnerships and for policy innovation

- ✓ Advocate for federal clean energy performance block grants, a clean energy “race to the top,” or greater federal funding partnerships generally
- ✓ Align federal R&D at labs and universities with state resources for financing and deployment
- ✓ Study and tailor conventional infrastructure and related financing mechanisms to clean energy
- ✓ Leverage development finance agencies and pool resources across jurisdictions for scale
- ✓ Help shape federal clean energy economic development policy post-ARRA

# Bond and Clean Energy Case Studies

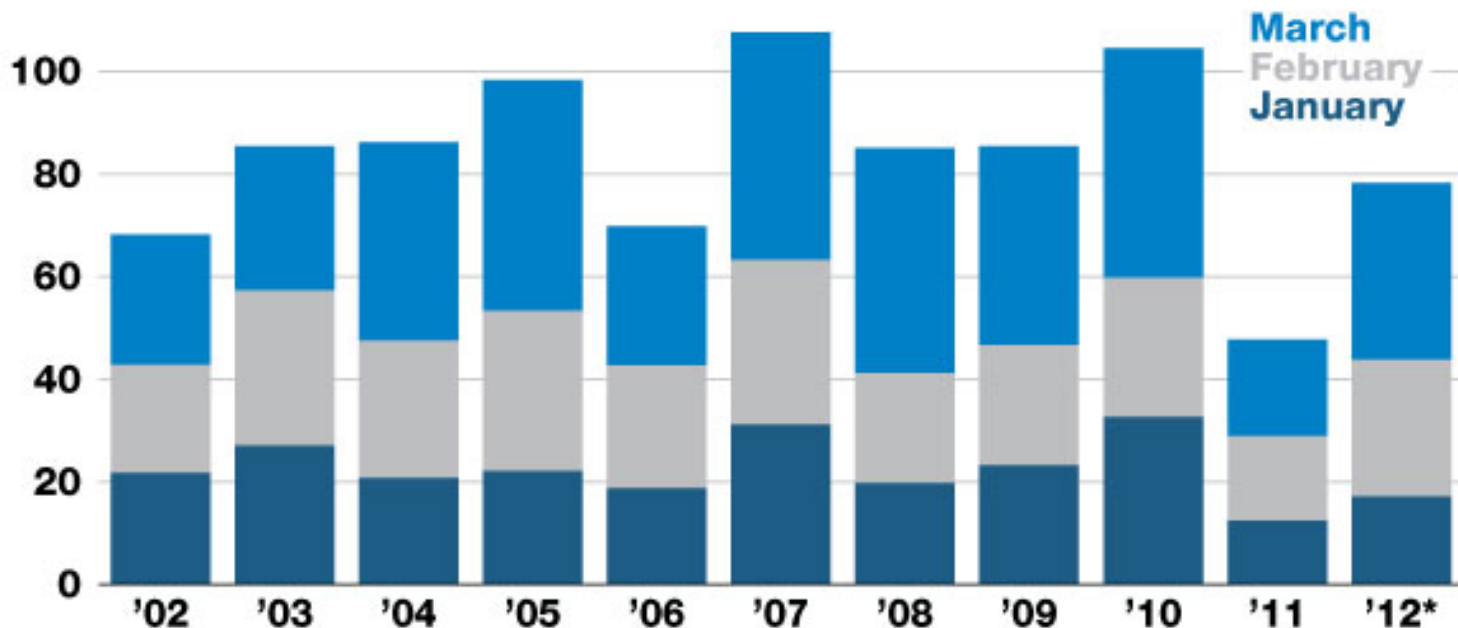
- The Morris Model for Solar Bond Financing: Ready for Scale
- Chicago Infrastructure Investment in Energy Efficiency
- Washington Bonds for Energy Efficiency and Renewables in Nonprofit/Multifamily Housing
- Bond Financing for Clean Energy Economic Development in New Jersey
- Illinois Finance Authority Using Moral Obligation Bonds for Wind Project
- Ohio Third Frontier Bond Program Invests in New Energy Technologies

# Capital Raised Through Municipal Bonds

## Bouncing Back

Long-Term bond sales

\$120B



\*As of March 29

Source: Thomson Reuters

# For more information

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Slides prepared for joint project by Clean Energy Group, Brookings Institute and ITIF