

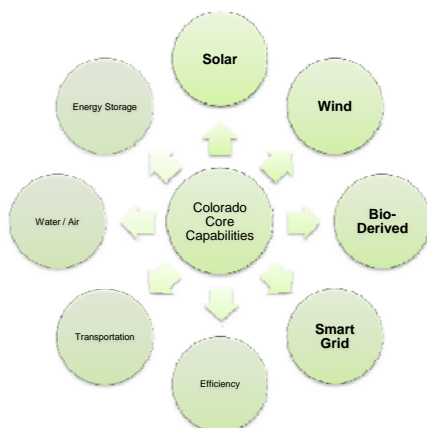


# Colorado's Cleantech Industry: *An Economic Development Driver*

Friday, December 10, 2010  
Energizing Tomorrow



## The Cleantech Industry Defined



Renewable energy generation and technologies that allow for the cleaner and more efficient use of traditional energy and natural resources



## Clean Technologies

- Microbes that optimize natural gas production – Luca, Golden
- Drive trains for wind turbines – Boulder Wind Power, Boulder
- Inverters that change solar DC to AC power – Advanced Energy, Fort Collins and SMA Solar, Denver
- Smart windows – Ravenbrick, Denver
- Biodiesel made from algae – Solix Biofuels, Fort Collins
- Lighter electric vehicle batteries – Prieto Batteries, Fort Collins
- Plant-based chemicals – OPX Biotechnologies, Boulder
- Electron tags that allow utilities to see energy loss – Power Tagging, Boulder
- Coatings for more efficient fuel cells – Coorstek, Golden
- Portable, flexible solar modules – Ascent Solar, Thornton
- Systems that allow for safe re-use of in-home gray water – Water Legacy, Boulder



3

## Cleantech Economic Impact

<b>Jobs</b>	<ul style="list-style-type: none"> <li>• 20,000 jobs created (Pew Charitable Trust)</li> <li>• Adding 5,000 to 10,000 per year</li> </ul>
<b>Companies</b>	<ul style="list-style-type: none"> <li>• 1,700 cleantech companies</li> <li>• 300+ technology-based product companies</li> <li>• Numerous corporate expansions (Conoco, Siemens, Vestas)</li> </ul>
<b>Investment</b>	<ul style="list-style-type: none"> <li>• \$330 million in out-of-state investment into Colorado companies over last 2 years (NVCA / PWC Moneytree)</li> <li>• More than \$1 billion in federal government funds announced for Colorado companies this year</li> </ul>
<b>Research Funds</b>	<ul style="list-style-type: none"> <li>• More than \$600 million per year of federally-backed research funding into our major research universities, NREL, and private laboratories</li> </ul>
<b>Economic Growth</b>	<ul style="list-style-type: none"> <li>• Cleantech sector is growing more than twice as fast as the next closest sector</li> </ul>



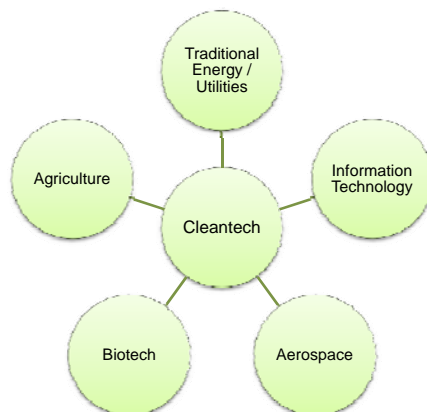
4

## Cleantech Industry Significance



5

## Colorado Industry Synergies



- Colorado's cleantech industry is built on many of the state's other thriving technology sectors
- The Colorado Front Range is the only geographic center in the US that shares a traditional technology development sector with a technology development sector



6

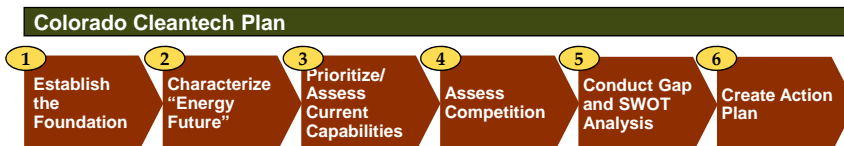
## Cleantech is a Global Opportunity

- China, by some estimates, could end up spending \$440 billion to \$660 billion toward its clean-energy build out over the next ten years.
- Combined global revenue in 2019 for solar, photovoltaics (PV), wind power, and biofuels is estimated at \$325.9 billion – *CleanEdge March 2010*
- Clean energy investments are forecast to grow by 25% to \$200 billion in 2010 – *Pew March 2010*
- Total investments in new clean energy generation capacity outpacing those for conventional fossil fuels for the past two years



7

## Colorado's First Cleantech Action Plan



- Commissioned by the Colorado Cleantech Industry Association
- Funded by the Colorado Economic Development Commission, Colorado Governor's Energy Office, Colorado School of Mines, Colorado State University, Colorado Workforce Development Council, Metro Denver EDC, US Department of Commerce Economic Development Administration, University of Colorado
- Executed by Navigant Consulting, Inc.



8

## Colorado's Core Competencies

---

- Navigant Consulting's independent analysis shows that Colorado is the most competitive in the following sectors:
  - Wind power
  - Solar power
  - Bio-derived (fuels and chemicals)
  - Smart grid



9

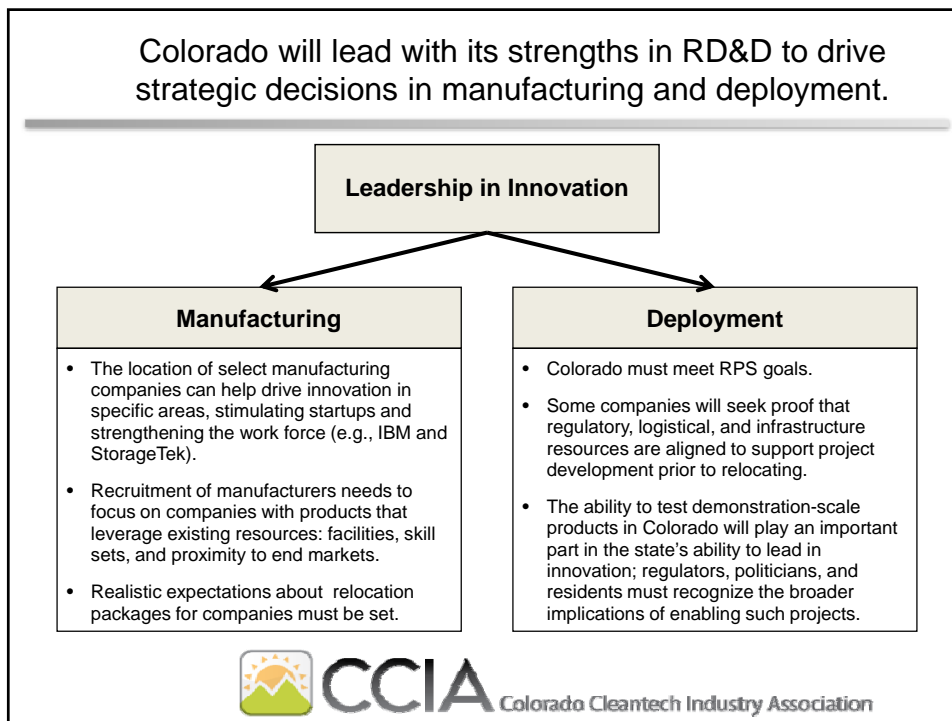
## Emerging Sectors

---

- Water
- Transportation
- Efficiency
- Storage




10



## Competitiveness in Wind Power

---

- NREL (research and alumni), CU, CSU
- Anchor tenant to attract other companies
  - Vestas
- Strong policy – 30% RES
- Market access



**CCIA** Colorado Cleantech Industry Association

12

## Competitiveness in Solar Power

---

- NREL, CU, CSU, Mines
- Companies throughout the value chain
  - R&D, manufacturing, deployment
- Test facility
  - Solar Tac
- Solar resources



13

## Competitiveness in Bio-Derived

---

- NREL (research and alumni), CU, CSU
- R&D start –ups
- Biotechnology and fermentation skill sets



14

## Competitiveness in Smart Grid

---

- Demonstrations and Pilots
  - Fort Zed and Smart Grid City
- Telecommunications and IT workforce
- Utility sector collaboration
- Brand equity



15

## Action Plan

---

- Foundational
- Sector Specific
- Supporting



16

## Foundational Actions

---

- Priorities for all sectors
  - Increase funding for seed and technology acceleration
  - Increase funding for early stage companies
  - Strengthen cleantech incubators and accelerator programs
  - Boost leadership training programs



17

## Sector Specific Actions

---

- Wind
  - Accelerate transmission
  - Establish statewide priorities for company recruitment
  - Expand and promote university cleantech curriculum



18

## Sector Specific Actions

---

- Solar
  - Accelerate transmission
  - Establish statewide priorities for company recruitment



19

## Sector Specific Actions

---

- Smart Grid
  - Connect cleantech companies with utilities
  - Strengthen incentives for utilities to invest in smart grid technologies
  - Package and promote Colorado's benefits to attract smart grid companies



20

## Sector Specific Actions

---

- Bio-derived
  - Expand and develop test and demonstration facilities
  - Connect with other states on renewable fuels and chemicals



21

## Supporting Actions

---

- Enhance cleantech commercialization within universities and federal labs
- Collaborate with Colorado's natural gas industry
- Develop a state energy plan
- Align training priorities with industry needs
- Transfer knowledge to the next generation of cleantech workforce



22

## Colorado Cleantech Industry Association

---

- Mission:**
- Creating the business climate that enables Colorado to lead the world in clean technology
- History:**
- Launched in 2009
  - Led by industry
  - Focused on industry growth and economic development
  - Not driven by consumer or activist themes
- Achievements:**
- Grown to 180 statewide and national members
  - Shifting from supporting industry-enabling policy to defining opportunities for state leadership
  - Becoming the de facto business voice for cleantech in Colorado



23

## CCIA Goals

---

- Build and attract cleantech investment capital
- Develop and expand leading cleantech workforce
- Deliver political leadership through industry voice
- Establish ties with other industries for the common good of Colorado
- Extend national and international leadership



24

## Colorado Cleantech Industry Association

---

Christine Shapard, Executive Director

[www.ColoradoCleantech.com](http://www.ColoradoCleantech.com)

1445 Market Street, Denver, CO 80202

Tel: 303-623-2690

chris@ColoradoCleantech.com

