

The Clean Energy Economy Alabama

Alabama has a small but growing piece of America's clean energy economy. The state's number of jobs in the clean energy economy in 2007 was less than the national average of more than 15,000 jobs, but it increased slightly between 1998 and 2007 despite a lack of venture capital investments and few clean technology patents, and it exceeded the growth rate for overall jobs in Alabama during the same period. Automotive industry jobs in the state have declined, according to the U.S. Bureau of Labor Statistics,¹ but Alabama is hoping to revive the industry by investing in alternative fuel production and infrastructure through its regional Center for Alternative Fuels and the Alabama Alternative Fuels and Research Development Fund.²

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **7,849** Businesses (2007): **799** Venture Capital Funds (2006-2008)*: **\$0** Patents (1999-2008): **26**

EXAMPLES OF COMPANIES:**

CFD Research Corporation, *Huntsville* (Clean Energy): designs and tests fuel cells

Sun Plans, *Citronelle* (Environmentally Friendly Production): designs energy-efficient and passive solar homes



JOB CATEGORIES***



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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. [1] Bureau of Labor Statistics, "Automotive Industry: Employment, Earnings, and Hours, http://www.bls.gov/iag/tgs/iagauto.htm#emp_state (accessed May 11, 2009). [2] National Governors Association, Securing a Clean Energy Future—Clean and Secure State Energy Actions, 2008, p. 16.

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy

Alaska has a small but growing piece of America's clean energy economy. It is one of only a few states where total job growth outpaced job growth in the clean energy economy between 1998 and 2007. More than three fourths of Alaska's jobs in the clean energy economy in 2007 were in the Conservation and Pollution Mitigation category, with less than 1 percent in the Clean Energy sector. The state attracted an increasing number of clean energy economy jobs despite a lack of venture capital investments and few clean technology patents between 1998 and 2007. Governor Sarah Palin in May announced her intention to reject approximately \$29 million in federal stimulus funds allocated to the state's energy office because accepting them would have required the state to implement a statewide energy code.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **2,140** Businesses (2007): **350** Venture Capital Funds (2006-2008)*: **\$0** Patents (1999-2008): **1**

EXAMPLES OF COMPANIES:**

ABS Alaskan, *Fairbanks* (Clean Energy): distributes solar, wind and other clean energy products

Susitna Energy Systems, Anchorage (Clean Energy): sells a range of clean energy products such as solar panels and small wind turbines



JOB CATEGORIES***

Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Arizona

Arizona has a small but fast-growing piece of America's clean energy economy. The

state ranks ninth in the country in jobs in the Clean Energy category; its jobs in that sector grew 43 percent from 1998 to 2007. Arizona also has attracted more than \$31 million in venture capital in the last three years, more than half of which has been invested in the Clean Energy category. More than 300 days of sunshine each year and the state's renewable portfolio standard make it a prime location for solar energy systems, and utility companies such as Arizona Public Service are signing purchasing agreements with solar energy developers, bringing jobs and foreign investment to the state.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **11,578** Businesses (2007): **1,123** Venture Capital Funds (2006-2008)*: **\$31,105,879** Patents (1999-2008): **178**

EXAMPLES OF COMPANIES:**

First Solar, *Tempe* (Clean Energy): designs and manufactures solar panels for residential and commercial use

Stirling Energy Systems, *Phoenix* (Clean Energy): designs and manufactures solar energy generating equipment for utility-scale power plants



JOB CATEGORIES***

Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Arkansas

Arkansas has a small but growing piece of America's clean energy economy. Its jobs in the clean energy economy grew at more than twice the rate of total jobs in the state between 1998 and 2007. The Arkansas Alternative Fuels Development Program, for which the legislature has approved funding through fiscal year 2011, attracts companies by offering millions of dollars in grant funding for production, storage and distribution of alternative fuels. In addition, the state has attracted nearly \$23 million in venture capital in the past three years.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **4,597** Businesses (2007): **448** Venture Capital Funds (2006-2008)*: **\$22,844,701** Patents (1999-2008): **8**



EXAMPLES OF COMPANIES:**

Rocky Grove Sun Company, *Kingston* (Clean Energy): sells and installs solar and wind energy systems and energy-efficient appliances

CLEAResult Consulting, *Little Rock* (Training and Support): designs, implements and evaluates energy efficiency programs for energy utilities





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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy California

California has the largest clean energy economy of the 50 states. Jobs in this sector grew at a faster rate than total jobs in the Golden State between 1998 and 2007. California's clean energy economy has been driven by significant investment, attracting more than \$6.5 billion in venture capital in the past three years. It also has been driven by public policies, from financial incentives for clean energy development and energy efficiency to renewable portfolio and energy efficiency standards. California's Green Building Action Plan—a goal for public buildings to be 20 percent more energy efficient by 2015—could save the state \$100 million annually.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **125,390** Businesses (2007): **10,209** Venture Capital Funds (2006-2008)*: **\$6,580,426,908** Patents (1999-2008): **1,401**



EXAMPLES OF COMPANIES:**

Bridgelux, *Sunnyvale* (Energy Efficiency): designs and manufactures LED lighting

Zpower, *Camarillo* (Clean Energy): designs and manufactures silver zinc batteries for next generation cell phones and computers (formerly known as Zinc Matrix Power)





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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Colorado

Colorado has a large and fast-growing piece of America's clean energy economy. The

state had more than 17,000 jobs in the clean energy economy in 2007. Colorado has also attracted more than \$620 million in venture capital in the past three years—the fifth-largest amount in the nation—three quarters of which has been invested in clean energy generation. Jobs in the state's Clean Energy category grew 50 percent between 1998 and 2007; the Energy Efficiency sector grew 56 percent in the same time. Colorado's "Greening Government" goals could bring greater efficiency gains yet, as state offices aim to reduce energy consumption by 20 percent, paper use by 20 percent, water consumption by 10 percent and state vehicle petroleum consumption by 25 percent by 2012.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **17,008** Businesses (2007): **1,778** Venture Capital Funds (2006-2008)*: **\$622,400,734** Patents (1999-2008): **161**

EXAMPLES OF COMPANIES:**

Abound Solar, *Loveland* (Clean Energy): designs and manufactures solar panels (formerly known as AVA Solar)

Fiberforge, *Glenwood Springs* (Environmentally Friendly Production): designs and produces advanced composite materials used in lightweight and energy-efficient vehicles (formerly known as Hypercar)

STATUS OF CLEAN ENERGY ECONOMY AVERAGE ANNUAL RATE OF GROWTH FAST GROWING SHRINKING

Average yearly rate of growth between 1998 and 2007



JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | |



The Clean Energy Economy Connecticut

Connecticut has a small but growing piece of America's clean energy economy. It is

one of seven states and the District of Columbia where total jobs declined but jobs in the clean energy economy increased between 1998 and 2007. Connecticut ranks among the top five states in clean technology patents and has attracted more than \$30 million in venture capital over the past three years, more than 40 percent of which has been invested in clean energy generation. Connecticut Innovations (CI), a quasi-public authority, has earned the state more than \$510 million since 1989 by investing in emerging companies. In November 2008, CI announced it will administer a new \$9 million Connecticut Clean Tech fund, which will be invested in early-stage technology companies that focus on conserving energy and resources, protecting the environment or eliminating harmful waste.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **10,147** Businesses (2007): **857** Venture Capital Funds (2006-2008)*: **\$30,050,286** Patents (1999-2008): **404**

EXAMPLES OF COMPANIES:**

Harmonics Limited, *Brookfield* (Energy Efficiency): designs and manufactures energy-efficient systems

Mercury Solar Systems, *Greenwich* (Clean Energy): installs and maintains commercial and residential solar energy systems



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CLEAN ENERGY POLICIES

Conservation and

Clean Energy

Pollution Mitigation

Environmentally

Energy Efficiency

Training and Support

Friendly Production

| Financial Incentives**** | |
|--------------------------------------|--|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



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JOB CATEGORIES***

Share of jobs in the clean energy economy by category

8.6%

12.3%

21.1%

6.7%

51.3%



The Clean Energy Economy **Delaware**

Delaware has a small but growing piece of America's clean energy economy. In 2004, DuPont's environmental research facilities in Wilmington cut jobs; partially as a result, although on average, Delaware's clean energy economy grew, its relative growth in these jobs declined slightly between 1998 and 2007. However, jobs in the clean energy economy began to rebound between 2004 and 2007—a trend that should continue thanks to the state's doubling of its renewable energy requirement for electric utilities from 10 percent to 20 percent by 2019.¹ Delaware also attracted more than \$3.3 million in venture capital in the past three years.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **2,368** Businesses (2007): **211** Venture Capital Funds (2006-2008)*: **\$3,342,057** Patents (1999-2008): **43**

STATUS OF CLEAN ENERGY ECONOMY AVERAGE ANNUAL RATE OF GROWTH FAST GROWING SHRINKING UT TO THE OF GROWTH Average yearly rate of growth between 1998 and 2007 10-YEAR GROWTH -2.3%

EXAMPLES OF COMPANIES:**

Ion Power, *New Castle* (Clean Energy): designs and manufactures fuel cell components

O2 Diesel, *Newark* (Environmentally Friendly Production): designs and produces cleaner-burning ethanol-diesel fuel blends to reduce greenhouse gas emissions



Relative rate of growth between 1998 and 2007

■−8.9%



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CLEAN ENERGY POLICIES

All jobs

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy District of Columbia

The nation's capital has a small but fast-growing piece of America's clean energy

economy. In fact, the District of Columbia joins seven states that experienced a drop in total job growth but an increase in job growth in the clean energy economy between 1998 and 2007. The city has experienced growth in all categories of the clean energy economy and attracted nearly \$90 million in venture capital in the past three years, all in the clean energy generation sector. Through Mayor Adrian Fenty's Green Collar Jobs Initiative, the District is working with partner organizations to train residents for opportunities in environmental construction and development. The 2006 Green Building Act increased demand in these fields through a requirement that all new commercial buildings be LEED certified.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **5,325** Businesses (2007): **280** Venture Capital Funds (2006-2008)*: **\$89,877,117** Patents (1999-2008): **9**

EXAMPLES OF COMPANIES:**

Solena Group, *Washington*, *D.C.* (Environmentally Friendly Production): designs and manufactures biofuel energy production technologies

U.S. Green Building Council, *Washington*, *D.C.* (Training and Support): member-based organization that supports and certifies green buildings across the United States



JOB CATEGORIES***

Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Florida

The Sunshine State has a large and growing piece of America's clean energy economy.

Florida ranks in the top 10 states for jobs in the clean energy economy in 2007, with more than 30,000, and it attracted nearly \$117 million in venture capital in the past three years, half of which has supported clean energy generation. The state created an Energy Systems Consortium among state universities to leverage the expertise of its research community to boost its clean technology industry.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **31,122** Businesses (2007): **3,831** Venture Capital Funds (2006-2008)*: **\$116,980,006** Patents (1999-2008): **236**



EXAMPLES OF COMPANIES:**

AFC Electric, *Bonita Springs* (Clean Energy): installs commercial and residential solar power systems

Climatic-Solar, *Vero Beach* (Clean Energy): supplies and installs solar energy and heating equipment





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CLEAN ENERGY POLICIES

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|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Georgia

Georgia has a large and growing piece of America's clean energy economy. With more than 16,000 jobs in the clean energy economy in 2007, the state beat the national average of 15,106 jobs. Georgia attracted nearly \$180 million in venture capital in the past three years, most of which has supported clean energy generation, and ranks ninth among states in the number of clean technology patents. The Georgia Public Service Commission recently approved a request from Georgia Power Company to convert one of its large, coal-fired power plants to biomass. The plant, located near Albany, Georgia, is expected to produce 96 megawatts of capacity, making it one of the largest biomass power plants in the country.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **16,222** Businesses (2007): **1,827** Venture Capital Funds (2006-2008)*: **\$179,685,738** Patents (1999-2008): **256**

EXAMPLES OF COMPANIES:**

Automated Logic, *Kennesaw* (Energy Efficiency): designs and manufactures commercial energy management systems to improve heating, air conditioning and lighting

Enertech Environmental, *Atlanta* (Environmentally Friendly Production): develops and manufactures waste-to-energy technology that converts sewage into biofuel

STATUS OF CLEAN ENERGY ECONOMY AVERAGE ANNUAL RATE OF GROWTH FAST GROWING SHRINKING DUP OV Average yearly rate of growth between 1998 and 2007 Average yearly rate of growth between 1998 and 2007

JOB CATEGORIES***

Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
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| Regional Cap and Trade Program | |



The Clean Energy Economy Hawaii

The Aloha State has a small but fast-growing piece of America's clean energy economy.

Hawaii's jobs in the clean energy economy grew from about 1,900 in 1998 to more than 2,700 in 2007—a much faster growth rate than that of total jobs. The state attracted more than \$12 million in clean technology venture capital in the past three years, all of which has supported clean energy generation. In 2008, Hawaii reached an agreement with Hawaiian Electric Company to double the company's voluntary goal of providing 20 percent of electric power from renewable resources by 2030.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **2,732** Businesses (2007): **356** Venture Capital Funds (2006-2008)*: **\$12,303,914** Patents (1999-2008): **16**



EXAMPLES OF COMPANIES:**

Hoku Scientific, Honolulu (Clean Energy): designs and develops fuel cells and solar systems

Sopogy, *Honolulu* (Clean Energy): designs and manufactures solar technologies for electricity generation and cooling

JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
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| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | |



The Clean Energy Economy

Idaho has a small but fast-growing piece of America's clean energy economy. The

state's number of jobs in the clean energy economy more than doubled between 1998 and 2007, growing at a much faster rate than total jobs. The state has more wind power potential than Oregon and Washington combined, according to the U.S. Department of Energy, and the state university is considering a wind technologies degree program to support that potential industry.¹ Additionally, Idaho attracted nearly \$28 million in clean technology venture capital in the past three years, all of which has been invested in the Clean Energy category.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **4,517** Businesses (2007): **428** Venture Capital Funds (2006-2008)*: **\$27,890,265** Patents (1999-2008): **73**



EXAMPLES OF COMPANIES:**

Telemetric, *Boise* (Energy Efficiency): designs and distributes wireless monitoring and control devices to electric utilities

U.S. Geothermal, *Boise* (Clean Energy): designs and manages geothermal power generation facilities

JOB CATEGORIES***

Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial | Incentives**** | • |
|-----------|-----------------------------|---|
| Renewab | le Portfolio Standards | |
| Energy Ef | ficiency Resource Standards | |
| Regional | Cap and Trade Program | |



The Clean Energy Economy

Illinois has one of the nation's largest clean energy economies, with more than 28,000

jobs in 2007. The state lost jobs in the clean energy economic sector and in total jobs between 1998 and 2007. But Illinois ranks eighth nationally in clean technology patents, and the state attracted nearly \$109 million in clean technology venture capital in the past three years, much of it in the Clean Energy category. Illinois' renewable energy and energy efficiency standards position the state for growth in the clean energy economy.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **28,395** Businesses (2007): **2,176** Venture Capital Funds (2006-2008)*: **\$108,519,023** Patents (1999-2008): **297**



EXAMPLES OF COMPANIES:**

Firefly Energy, *Peoria* (Clean Energy): develops and manufactures battery technologies with transportation applications

Midwest Wind Energy, *Chicago* (Clean Energy): designs and installs utility-scale wind farms

JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Indiana

Indiana has a large and growing piece of America's clean energy economy, with more

than 17,000 jobs in 2007. In fact, it is one of seven states and the District of Columbia where total jobs fell but jobs in the clean energy economy increased between 1998 and 2007. The state's jobs in the Clean Energy category grew by 78 percent in that time—not a surprise, considering Indiana's recent leaps forward in the wind power industry. The American Wind Energy Association found that Indiana had the nation's fastest growth in wind power generation in 2008.¹ Additionally, the Hoosier State attracted \$26 million in venture capital in the past three years.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **17,298** Businesses (2007): **1,268** Venture Capital Funds (2006-2008)*: **\$26,000,000** Patents (1999-2008): **174**



EXAMPLES OF COMPANIES:**

Energy Systems Group, *Newburg* (Energy Efficiency): provides energy efficiency consulting to customers in education, healthcare and government

IPower Energy Systems, Anderson (Clean Energy): designs and manufactures energy generation and management equipment



Relative rate of growth between 1998 and 2007

-1.0%



MORE ABOUT THESE FACTSHEETS

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CLEAN ENERGY POLICIES

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|--------------------------------------|---|
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| Regional Cap and Trade Program | |



The Clean Energy Economy

lowa has a small but fast-growing piece of America's clean energy economy. The

Hawkeye State's jobs in the clean energy economy grew from just more than 6,000 in 1998 to more than 7,700 in 2007, a much faster growth rate than that of the state's total jobs. According to the American Wind Energy Association, wind power now provides 5.5 percent of the electricity generated in Iowa, the highest percentage of any state.¹ In the past three years, Iowa ranked 11th in venture capital funding, attracting more than \$149 million, primarily in clean energy generation.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **7,702** Businesses (2007): **729** Venture Capital Funds (2006-2008)*: **\$149,237,274** Patents (1999-2008): **46**



EXAMPLES OF COMPANIES:**

Acterra Group, Inc., *Marion* (Clean Energy): provides project, construction and financial management services for renewable energy projects (formerly known as Advanced Services Corporation)

PowerFilm, *Ames* (Clean Energy): designs and manufactures flexible solar panels with a variety of applications, from charging personal electronics to powering mobile military units

JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Kansas

While Kansas has a small piece of America's clean energy economy, its jobs in this sector are growing at one of the fastest rates in the country—and much faster than its total

jobs. Legislation enacted in Kansas in April 2009 may help further this growth, particularly in the Clean Energy category. The law directs up to \$5 million to proposed wind and solar projects that will employ a minimum of 200 full-time employees within five years, at an average salary of at least \$32,500.¹ Kansas also attracted more than \$13 million in clean technology venture capital in the past three years, all of which has been invested in clean energy generation.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **8,017** Businesses (2007): **591** Venture Capital Funds (2006-2008)*: **\$13,274,882** Patents (1999-2008): **15**



EXAMPLES OF COMPANIES:**

Tradewind Energy, Lenexa (Clean Energy): develops and manages wind energy facilities

TVN Systems, Lawrence (Clean Energy): researches and develops fuel cell technologies





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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Kentucky

Kentucky has a small but growing piece of America's clean energy economy. The

state's jobs in its clean energy economic sector have grown much faster than its total jobs in the past decade. In 2007, a sizable share of Kentucky's jobs in the clean energy economy were in the Conservation and Pollution Mitigation and Clean Energy categories. Kentucky has had a difficult time attracting clean technology venture capital, a key ingredient in spurring new or expanding businesses. But the state is trying to rectify that with a variety of incentives for biofuels and renewable energy worth up to half the capital investment in projects that create alternative fuel.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **9,308** Businesses (2007): **778** Venture Capital Funds (2006-2008)*: **\$0** Patents (1999-2008): **17**

EXAMPLES OF COMPANIES:**

Genscape, *Louisville* (Energy Efficiency): designs and manages power monitoring technology and software that provides real time information to power generating, trading and marketing companies

Solar Energy Solutions, *Georgetown* (Clean Energy): supplies and installs solar energy and heating equipment

STATUS OF CLEAN ENERGY ECONOMY



JOB CATEGORIES***

Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Louisiana

Louisiana has a small but fast-growing piece of America's clean energy economy. The

state's jobs in the clean energy economy have grown much faster than total jobs in the state despite a lack of venture capital investments and limited research activity in clean technologies. While the majority of Louisiana's jobs in the clean energy economy in 2007 were in the Conservation and Pollution Mitigation category, jobs in the Energy Efficiency category grew the fastest across the state between 1998 and 2007. Louisiana has an aggressive clean energy incentive program: The state provides a tax credit for the purchase and installation of residential solar and wind energy systems worth 50 percent of the first \$25,000 of the system's cost, including installation.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **10,641** Businesses (2007): **995** Venture Capital Funds (2006-2008)*: **\$0** Patents (1999-2008): **22**

EXAMPLES OF COMPANIES:**

Computrols, *New Orleans* (Energy Efficiency): develops building automation systems to monitor energy usage

Aquaterra Engineering, *Baton Rouge* (Conservation and Pollution Mitigation): provides earth science and environmental engineering services



All jobs 3.0% Relative rate of growth between 1998 and 2007

JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Maine

Maine has a small but fast-growing piece of America's clean energy economy. While

the state did not attract clean technology venture capital investments in the last three years, its job growth in the clean energy economy outpaced its total job growth between 1998 and 2007. In 2007, more than 40 percent of the state's jobs in the clean energy economy were in the Energy Efficiency sector. The state's renewable portfolio standard required that 30 percent of its power come from renewable sources by 2000. In June 2006, the state adopted an additional goal to increase new renewable energy capacity by 10 percent by 2017.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **6,000** Businesses (2007): **725** Venture Capital Funds (2006-2008)*: **\$0** Patents (1999-2008): **8**



EXAMPLES OF COMPANIES:**

Talmage Solar Engineering, *Kennebunkport* (Clean Energy): designs and installs solar power systems

Terralink Software Systems, *Portland* (Conservation and Pollution Mitigation): develops software tools for managing hazardous waste disposal



Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Maryland

Maryland has a small piece of America's clean energy economy, and total job growth outpaced job growth in the clean energy economy between 1998 and 2007. While

jobs in the clean energy economy overall declined slightly during that period, the state saw them grow in three specific categories: Clean Energy; Environmentally Friendly Production and Energy Efficiency. The Maryland Transit Authority is committed to operating an entirely hybrid-electric bus fleet by 2014 and more recently decided to purchase 40 percent of state vehicles with alternative or hybrid fuel systems by 2010.¹ Additionally, the state is ranked sixth among states in clean technology venture capital investment, having attracted more than \$320 million in the past three years, all of which has been invested in clean energy generation.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **12,908** Businesses (2007): **1,145** Venture Capital Funds (2006-2008)*: **\$323,995,916** Patents (1999-2008): **134**

EXAMPLES OF COMPANIES:**

Soil Safe, *Columbia* (Conservation and Pollution Mitigation): provides comprehensive services to recycle contaminated soil

Sun Edison, *Beltsville* (Clean Energy): designs, installs and manages solar energy systems for commercial, government and utility customers

STATUS OF CLEAN ENERGY ECONOMY AVERAGE ANNUAL RATE OF GROWTH FAST GROWING SHRINKING OUT THE AST OF CONTRACT OF CON



JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
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| Regional Cap and Trade Program | • |



The Clean Energy Economy Massachusetts

Massachusetts has a large and growing piece of America's clean energy economy. The

state had nearly 27,000 jobs in its clean energy economy in 2007. It is one of seven states, along with the District of Columbia, where total jobs fell but jobs in the clean energy economy increased between 1998 and 2007. Massachusetts' job growth in the Clean Energy category was particularly strong, growing 30 percent between 1998 and 2007. That sector received an additional boost last year when the state launched Commonwealth Solar, a \$68 million rebate program to help lower the cost of purchasing and installing solar electric power.¹ Massachusetts remains a hub for innovation, ranking sixth among states in clean technology patents in the past 10 years; it trails only California in clean technology venture capital funding, attracting nearly \$1.3 billion in private investment in the past three years.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **26,678** Businesses (2007): **1,912** Venture Capital Funds (2006-2008)*: **\$1,278,461,918** Patents (1999-2008): **384**

EXAMPLES OF COMPANIES:**

A123, *Watertown* (Clean Energy): develops and manufactures a range of batteries for electric utilities, transportation and portable electronics

Luminus Devices, Woburn (Energy Efficiency): designs and manufactures LED lighting



JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Michigan

Michigan has a large and growing piece of America's clean energy economy. By the end of 2009, Michigan will have lost more than a half million jobs, according to the state's projections, and more than one in 10 workers is currently unemployed.¹ But increases in jobs in the clean energy economy have helped buttress Michigan's overall job losses. The state is one of only seven states and the District of Columbia where total jobs fell but jobs in the clean energy economy increased between 1998 and 2007. The renewable portfolio standard enacted by Michigan lawmakers last fall will encourage more growth in the Clean Energy jobs category in particular. Additionally, the state ranks third in clean technology patents over the past 10 years and attracted \$55 million in clean tech venture capital in the past three years.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **22,674** Businesses (2007): **1,932** Venture Capital Funds (2006-2008)*: **\$55,099,376** Patents (1999-2008): **749**

EXAMPLES OF COMPANIES:**

Microposite, *Auburn Hills* (Environmentally Friendly Production): designs and manufactures energy-efficient siding

Quantum Technologies, *Sterling Heights* (Clean Energy): develops and produces fuel cell technology for alternative fuel vehicles



JOB CATEGORIES

Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
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| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Minnesota

Minnesota has a large and growing piece of America's clean energy economy. Growth

of jobs in the clean energy economic sector significantly outpaced that of total jobs between 1998 and 2007. Much of this growth has been in the categories of Clean Energy and Environmentally Friendly Production. The state attracted nearly \$50 million in clean technology venture capital in the past three years, of which more than a third has been invested in the Energy Efficiency category. Minnesota ranks fourth among states in wind energy production, driven in part by a renewable portfolio standard that requires the largest energy provider in the state to generate 25 percent of its energy from wind power by 2020.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **19,994** Businesses (2007): **1,206** Venture Capital Funds (2006-2008)*: **\$49,937,944** Patents (1999-2008): **218**

EXAMPLES OF COMPANIES:**

Lumificient Technologies, *Osseo* (Energy Efficiency): uses LED technology to design commercial lighting and displays

WindLogics Inc., *Saint Paul* (Training and Support): provides feasibility and financial consulting services for wind farm development



JOB CATEGORIES***

Relative rate of growth between 1998 and 2007



Share of jobs in the clean energy economy by category

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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
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| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Mississippi

Mississippi has a small but fast-growing piece of America's clean energy economy. The

state's jobs in the clean energy economy grew much more quickly than total jobs between 1998 and 2007. Mississippi attracted more than \$30 million in clean technology venture capital in the past three years, all of which has been invested in clean energy generation. It also attracted Toyota, which is working with the Mississippi Development Authority to build a manufacturing plant for its Prius hybrid model in Blue Springs. Production at the site is on hold due to the steep declines in auto sales,¹ but the plant is expected eventually to employ 2,000 people.²

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **3,200** Businesses (2007): **454** Venture Capital Funds (2006-2008)*: **\$30,383,955** Patents (1999-2008): **3**





EXAMPLES OF COMPANIES:**

Earth Consulting Group, Madison (Training and Support): provides environmental consulting services to public- and private-sector clients

SmartSynch, *Jackson* (Clean Energy): designs and manufactures wireless energy metering technology

JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Missouri

Missouri has a small but growing piece of America's clean energy economy. Jobs in its clean energy economy grew more quickly than total jobs in the state between 1998 and 2007. The Show Me State attracted more than \$24 million in clean technology venture capital in the past three years, with the majority of investments in the category of Clean Energy. Although Missouri is not commonly considered to be a state with high wind-power potential, advances in wind turbine technology have enabled the state to develop a burgeoning wind industry. In 2008, Rock Port, Missouri, became the first community in the United States to be powered exclusively by wind.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **11,714** Businesses (2007): **1,062** Venture Capital Funds (2006-2008)*: **\$24,479,634** Patents (1999-2008): **25**

EXAMPLES OF COMPANIES:**

Kingston Environmental, *Kansas City* (Conservation and Pollution Mitigation): provides environmental management services including hazardous waste analysis and remediation

Modular Process Control, *Chesterfield* (Energy Efficiency): provides energy management services to help companies reduce energy consumption



JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Montana

Montana has a small but growing piece of America's clean energy economy. Montana is one of just a few states where total job growth outpaced job growth in the clean energy economy between 1998 and 2007. But the state has attracted an increasing number of jobs in the clean energy economy, despite a lack of venture capital investments and little research activity in clean technologies. The state has introduced one incentive to boost these jobs—a property tax exemption for buildings using renewable energy. The exemption covers up to \$20,000 for single-family residences and up to \$100,000 for multifamily dwellings or nonresidential structures.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **2,155** Businesses (2007): **408** Venture Capital Funds (2006-2008)*: **\$0** Patents (1999-2008): **5**

EXAMPLES OF COMPANIES:**

Eco-Asset Management, *Helena* (Training and Support): provides strategic land-use and conservation consulting services



Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Nebraska

Nebraska has a small but fast-growing piece of the clean energy economy. It is one of seven states and the District of Columbia where total jobs declined but jobs in the clean energy economy increased between 1998 and 2007. The state's jobs in the clean energy economy more than doubled during that time, to more than 5,200, despite a lack of clean venture capital investments. Although the state has not enacted standards for renewable energy use, it does offers commercial and residential incentives such as a sales and use tax exemption for community wind projects and low-interest loans for energy efficiency improvements.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **5,292** Businesses (2007): **368** Venture Capital Funds (2006-2008)*: **\$0** Patents (1999-2008): **15**



EXAMPLES OF COMPANIES:**

Solar Heat and Electric, *Omaha* (Clean Energy): installs, repairs and services solar energy and heating systems



Relative rate of growth between 1998 and 2007



MORE ABOUT THESE FACTSHEETS

Download the full report by visiting www.pewtrusts.org/cleanenergyeconomy

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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics.

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Nevada

Nevada has a small but fast-growing piece of the clean energy economy. Between

1998 and 2007, the rate of job growth in the state's clean energy economy surpassed that of the state's total job growth. Nevada has attracted nearly \$20 million in venture capital in the past three years, two thirds of which has been invested in the Energy Efficiency sector. In 2003, the Nevada Legislature established a Solar Demonstration Project to provide rebates and incentives for the development of solar energy systems for residences, businesses, schools and public buildings. The program, now called RenewableGenerations, was expanded in 2008.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **3,641** Businesses (2007): **511** Venture Capital Funds (2006-2008)*: **\$19,804,386** Patents (1999-2008): **71**

EXAMPLES OF COMPANIES:**

Ormat Nevada, *Reno* (Clean Energy): builds, owns and operates geothermal power plants

Power Efficiency Corporation, *Las Vegas* (Energy Efficiency): develops energy-efficient electric motors



JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | |



The Clean Energy Economy New Hampshire

New Hampshire has a small but growing piece of America's clean energy economy. The

Granite State is one of just a few states where total jobs grew faster than jobs in the clean energy economy between 1998 and 2007. New Hampshire's share of the clean energy economy may increase, however, following the release of a climate action plan by the state's Climate Change Policy Task Force in March 2009; the plan aims to reduce greenhouse gas emissions to 80 percent below 1990 levels by 2050.¹ Additionally, the state attracted nearly \$67 million in clean technology investment through venture capital funding in the past three years.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **4,029** Businesses (2007): **465** Venture Capital Funds (2006-2008)*: **\$66,917,018** Patents (1999-2008): **74**



Brayton Energy, *Hampton* (Clean Energy): researches and develops advanced energy generation technologies

Segway, *Bedford* (Environmentally Friendly Production): designs and manufactures battery-powered personal transportation



JOB CATEGORIES***



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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. [1] U.S. Department of Energy, "New Hampshire Task Force Releases Climate Action Plan," March 30, 2009, http://apps1.eere.energy.gov/states/state_news_detail.cfm/news_id=12378/state=NH (accessed May 13, 2009).

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy New Jersey

New Jersey has a large piece of America's clean energy economy. It ranks among the top 10 states for jobs in the clean energy economy, clean technology venture capital funding and clean technology patents. Although the Garden State's jobs rate, including jobs in the clean energy economy, fell between 1998 and 2007, New Jersey may see an upward trend in the clean energy industry; in October 2008 Governor Jon Corzine proposed to increase the state's renewable energy goal from 22.5 percent to 30 percent by 2020.¹ Additionally, New Jersey attracted nearly \$283 million in clean technology venture capital in the past three years, most of which has been invested in clean energy generation.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **25,397** Businesses (2007): **2,031** Venture Capital Funds (2006-2008)*: **\$282,567,651** Patents (1999-2008): **248**

EXAMPLES OF COMPANIES:**

EPV Solar, *Robbinsville* (Clean Energy): designs and manufactures solar energy technologies (formerly known as Energy Photovoltaics)

Lighting Science Group Corporation, *Westhampton* (Energy Efficiency): designs and manufactures LED lighting (formerly known as Lamina Ceramics)



JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy New Mexico

New Mexico has a small but fast-growing piece of America's clean energy economy.

Relative growth for jobs in the state's clean energy economy was 25 times greater than for total jobs between 1998 and 2007. Additionally, New Mexico attracted nearly \$148 million in venture capital in the past three years, more than half of which has been invested in clean energy generation. The state has set an ambitious goal of purchasing 100 percent of state agencies' power from renewable sources by 2011.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **4,815** Businesses (2007): **577** Venture Capital Funds (2006-2008)*: **\$147,912,504** Patents (1999-2008): **95**



EXAMPLES OF COMPANIES:**

Valverde Energy, *Taos* (Clean Energy): designs and installs commercial and residential solar heating systems

MIOX Corporation, *Albuquerque* (Conservation and Pollution Mitigation): develops and manufactures water purification systems and equipment

JOB CATEGORIES***



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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. [1] National Governors Association, Securing a Clean Energy Future—Clean and Secure State Energy Actions—2008, p. 68.

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | • |



The Clean Energy Economy New York

New York has a large piece of America's clean energy economy. Although all jobs in the state, including those in the clean energy economy, dropped between 1998 and 2007, New York ranks fifth in the number of jobs in the clean energy economy nationwide in 2007 and second in clean technology patents. Additionally, the Empire State attracted nearly \$210 million in clean technology venture capital in the past three years. More than half of those funds have been invested in the category of Clean Energy. More clean energy generation will soon come from wind: In October 2008, the New York Public Service Commission approved a deal that will double the state's wind energy capacity.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **34,363** Businesses (2007): **3,323** Venture Capital Funds (2006-2008)*: **\$209,590,500** Patents (1999-2008): **909**

EXAMPLES OF COMPANIES:**

Plug Power, *Latham* (Clean Energy): develops and manufactures fuel cell technologies

Verdant Power, *New York* (Clean Energy): designs and manufactures underwater turbines to generate energy from water currents



JOB CATEGORIES



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | • |



The Clean Energy Economy North Carolina

North Carolina has a large and growing piece of America's clean energy economy. On

average, jobs in the state's clean energy economy grew twice as fast as total jobs between 1998 and 2007, with particularly strong growth in the category of Energy Efficiency. North Carolina's renewable portfolio standard allows investor-owned utilities to meet 25 percent of their renewable energy requirement through more efficient sources; in 2021, this share will increase to 40 percent.¹ The state also attracted more than \$82 million in venture capital in the past three years, half of which has been invested in the category of Clean Energy.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **16,997** Businesses (2007): **1,783** Venture Capital Funds (2006-2008)*: **\$82,570,734** Patents (1999-2008): **179**



EXAMPLES OF COMPANIES:**

Microcell, Raleigh (Clean Energy): designs and manufactures fuel cells

Sencera International, *Charlotte* (Clean Energy): designs and produces solar energy technologies



Share of jobs in the clean energy economy by category

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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. [1] U.S. Department of Energy, "North Carolina Sets a Requirement for 12.5% Renewable Power by 2021," August 29, 2007, http://apps1.eere.energy.gov/states/state_news_detail.cfm/news_id=11233/state=NC (accessed May 13, 2009).

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | |



The Clean Energy Economy North Dakota

North Dakota has a small but fast-growing piece of America's clean energy economy.

While the state has yet to attract venture capital for clean technologies and has seen little activity in researching and developing them, relative growth for jobs in North Dakota's clean energy economy was three times as fast as that of total jobs between 1998 and 2007. Job growth has been particularly strong in the categories of Clean Energy and Energy Efficiency.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **2,112** Businesses (2007): **137** Venture Capital Funds (2006-2008)*: **\$0** Patents (1999-2008): **5**



EXAMPLES OF COMPANIES:**

Crownbutte Wind Power, *Mandan* (Clean Energy): develops, owns and operates wind parks

Climate Control Inc., *Fargo* (Energy Efficiency): designs and installs energy management and automation systems for customers in health care, education, government and business





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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |
| | |



The Clean Energy Economy Ohio

Ohio has a large and growing piece of America's clean energy economy. It is one of seven states, along with the District of Columbia, where the number of total jobs fell but jobs in the clean energy economy increased between 1998 and 2007. The Buckeye State ranks fourth nationally in number of jobs in the clean energy economy in 2007 and seventh in number of patents over the past 10 years. In 2008, Ohio enacted a renewable portfolio standard requiring that 25 percent of its electricity be produced by renewable or advanced sources by 2025. Additionally, the state attracted more than \$74 million in clean technology venture capital in the past three years, the majority of which has been invested in the category of Clean Energy.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **35,267** Businesses (2007): **2,513** Venture Capital Funds (2006-2008)*: **\$74,224,203** Patents (1999-2008): **309**

EXAMPLES OF COMPANIES:**

Axentis, *Cleveland* (Conservation and Pollution Mitigation): produces greenhouse gas emissions monitoring software and provides related consulting services

Grace Geothermal, *Chardon* (Clean Energy): installs geothermal heating and cooling systems for home and office use



JOB CATEGORIES***



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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics.

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | |



The Clean Energy Economy Oklahoma

Oklahoma has a small but growing piece of America's clean energy economy. Jobs in

the state's clean energy economy grew three times as fast as total jobs between 1998 and 2007, and Oklahoma attracted more than \$5 million in clean technology venture capital in the past three years, all of which has been invested in the category of Clean Energy. According to the American Wind Energy Association, Oklahoma's potential wind power capacity is nearly 82,000 megawatts more than its actual projects currently use. Oklahoma State University is preparing the state workforce to harness that potential through a new wind turbine technology degree program.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **5,465** Businesses (2007): **693** Venture Capital Funds (2006-2008)*: **\$5,191,978** Patents (1999-2008): **36**



EXAMPLES OF COMPANIES:**

Bergey Windpower, *Norman* (Clean Energy): designs and manufactures small-scale wind turbines for commercial and residential use

Fieldstone Energy, Cleveland (Clean Energy): develops hydroelectric technologies

JOB CATEGORIES***



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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. [1] Kyle Milton, "Degree Program to Blow Students Away," *The Daily O'Collegian*, October 29, 2008, http://ocolly.com/2008/10/29/degree-program-to-blow-students-away/ (accessed May 5, 2009).

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Oregon

Oregon has a large and fast-growing piece of America's clean energy economy. With

more than 19,000 jobs, the state's clean energy economy comprised more than 1 percent of Oregon's total jobs in 2007—the greatest share nationwide. Jobs in the state's clean energy economy grew nearly seven times faster than total jobs between 1998 and 2007. They are likely to grow further: Oregon's renewable portfolio standard includes incremental requirements of 5 percent by 2011, 15 percent by 2015, 20 percent by 2020 and ultimately 25 percent by 2025 for the largest utilities.¹ Additionally, the state attracted \$70 million in venture capital in the past three years, most of which has been invested in the category of Clean Energy.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **19,340** Businesses (2007): **1,613** Venture Capital Funds (2006-2008)*: **\$70,001,922** Patents (1999-2008): **163**

EXAMPLES OF COMPANIES:**

Abundant Renewable Energy, *Newberg* (Clean Energy): designs and constructs small scale wind turbine systems

Vulcan Power Company, *Bend* (Clean Energy): designs constructs and manages geothermal energy facilities



JOB CATEGORIES***

Relative rate of growth between 1998 and 2007

7.5%



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Pennsylvania

Pennsylvania has a large piece of America's clean energy economy. Although the state lost jobs between 1998 and 2007—including in the clean energy economy—it still ranks third overall in the number of clean energy economy jobs as of 2007. In 2008, Pennsylvania passed an energy efficiency law that requires utilities to install smart meters in every home and business.¹ The Keystone State ranks eighth among states in clean technology venture capital funding, attracting more than \$230 million in the past three years.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **38,763** Businesses (2007): **2,934** Venture Capital Funds (2006-2008)*: **\$232,897,084** Patents (1999-2008): **241**



EXAMPLES OF COMPANIES:**

Grid Sentinel Inc., *Bethlehem* (Energy Efficiency): produces energy monitoring and diagnostics software

North Coast Energy Systems, Erie (Clean Energy): distributes and installs clean energy systems, such as solar and wind power, for commercial and residential use

JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | |



The Clean Energy Economy Rhode Island

Rhode Island has a small but growing piece of America's clean energy economy. The

total number of jobs in the state grew slowly between 1998 and 2007, but those in the clean energy economy increased slightly faster, especially in the categories of Energy Efficiency and Training and Support. Given its small size, the state has been particularly successful in attracting clean technology venture capital funding in the past three years—securing more than \$22 million in private investments. Going forward, Rhode Island aims to achieve the dual goals of 16 percent renewable energy and decreased unemployment with help from an offshore wind energy deal that will provide Rhode Islanders with jobs at a turbine manufacturing plant.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **2,328** Businesses (2007): **237** Venture Capital Funds (2006-2008)*: **\$22,844,701** Patents (1999-2008): **51**

EXAMPLES OF COMPANIES:**

Save the Bay, *Providence* (Training and Support): a research and advocacy organization dedicated to protecting Narragansett Bay

TPI Composites, *Warren* (Environmentally Friendly Production): manufactures composite materials used to build wind turbines and mass transit systems



JOB CATEGORIES***

Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy South Carolina

South Carolina has a small but fast-growing piece of America's clean energy economy.

Jobs in the state's clean energy economy grew 16 times faster annually than total jobs between 1998 and 2007. Although South Carolina did not attract clean technology venture capital investments in the last three years, the state has experienced significant job growth in the category of Clean Energy. South Carolina's Renewable Energy Grants and Loans Program could spur more growth with low-interest loans for building renewable energy generation facilities, including those powered by wind, solar and biomass resources.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **11,255** Businesses (2007): **884** Venture Capital Funds (2006-2008)*: **\$0** Patents (1999-2008): **49**



EXAMPLES OF COMPANIES:**

Ometric Corporation, *Columbia* (Conservation and Pollution Mitigation): designs and manufactures optical-sensor technologies that monitor a spectrum of industrial processes and provide real-time feedback

Sky Energy, *Greenville* (Clean Energy): sells wind energy certificates and helps finance wind farm development

JOB CATEGORIES***

Relative rate of growth between 1998 and 2007

2.2%



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy South Dakota

South Dakota has a small but fast-growing piece of America's clean energy economy.

Jobs in the state's clean energy economic sector grew 19 times faster annually than total jobs between 1998 and 2007. The state has attracted an increasing number of clean energy economy jobs despite a lack of venture capital investments and little research activity in clean technologies. South Dakota has the potential to power 50 percent of the nation's electricity demands through its wind.¹ Though the state's current wind production falls far short of that potential, South Dakota could accelerate that growth as it recently allowed wind producers to begin selling their wind power and renewable energy credits.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **1,636** Businesses (2007): **169** Venture Capital Funds (2006-2008)*: **\$0** Patents (1999-2008): **4**

EXAMPLES OF COMPANIES:**

Energy Maintenance Service, *Gary* (Clean Energy): builds, operates and maintains large wind farms

Knight & Carver Wind Group, *Howard* (Clean Energy): provides wind turbine blade inspection, repair and maintenance services





JOB CATEGORIES***



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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. [1] National Wind, "South Dakota Wind Facts," December 31, 2008, http://www.nationalwind.com/south_dakota_wind_facts (accessed May 13, 2009).

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Tennessee

Tennessee has a large and fast-growing piece of America's clean energy economy. Jobs

in the state's clean energy economy grew seven times faster than total jobs between 1998 and 2007. Tennessee's biggest increases in its clean energy economy jobs have been in the categories of Energy Efficiency and Conservation and Pollution Mitigation. The state is partnering with Nissan, which is now headquartered in Tennessee and plans to launch its line of zero emission electric vehicles in 2010, to develop a charging network for plug-in electric vehicles.¹ Additionally, Tennessee attracted more than \$16 million in clean technology venture capital funding in the past three years.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **15,507** Businesses (2007): **1,090** Venture Capital Funds (2006-2008)*: **\$16,328,927** Patents (1999-2008): **47**





EXAMPLES OF COMPANIES:**

Aldis, *Oak Ridge* (Energy Efficiency): designs energy-efficient traffic monitoring software and LED traffic signals to reduce energy consumption and carbon emissions

Safety and Ecology Corporation, *Knoxville* (Conservation and Pollution Mitigation): provides hazardous waste remediation services to clients including the U.S. Department of Energy and the U.S. Department of Defense

JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Texas

Texas has a large and growing piece of America's clean energy economy. Job growth in the state's clean energy economy outpaced total job growth between 1998 and 2007. Texas is a strong national performer, ranking second in number of clean energy economy jobs in 2007 and fourth in patents over the past 10 years. The state's wind industry has grown exponentially: If Texas were a country, it would now rank sixth in the world for annual wind energy production, behind Germany, the United States, Spain, China and India.¹ The state ranks third among states in clean energy venture capital in the past three years, attracting more than \$716 million, the bulk of which has been invested in the category of Clean Energy.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **55,646** Businesses (2007): **4,802** Venture Capital Funds (2006-2008)*: **\$716,894,200** Patents (1999-2008): **414**

EXAMPLES OF COMPANIES:**

Horizon Wind Energy, *Houston* (Clean Energy): develops, builds and operates large wind farms

Valence Technology, *Austin* (Clean Energy): designs and manufactures advanced batteries with automotive, electric utility and industrial applications



JOB CATEGORIES***



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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. [1] American Wind Energy Association, *Annual Wind Industry Report*, 2008, http://www.awea.org/publications/reports/AWEA-Annual-Wind-Report-2009.pdf (accessed May 13, 2009).

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | |



The Clean Energy Economy Utah

Utah has a small piece of America's clean energy economy. It is one of the states where jobs in the clean energy economy declined between 1998 and 2007 while total jobs grew. But Utah has considerable native alternative energy resources in the form of natural gas, which it aims to develop. Governor Jon Huntsman, Jr., has designated Highway 15, an interstate cutting through Utah, as a natural gas corridor and is pushing to expand the clean energy infrastructure with additional concentrated natural gas fueling stations.¹ Despite the job losses in its clean energy economy, Utah attracted more than \$26 million in clean technology venture capital during the past three years, most of which has been invested in the category of Energy Efficiency.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **5,199** Businesses (2007): **579** Venture Capital Funds (2006-2008)*: **\$26,957,250** Patents (1999-2008): **47**

EXAMPLES OF COMPANIES:**

Control4, *Salt Lake City* (Energy Efficiency): designs and produces home temperature and lighting controls

Futura Industries, *Clearfield* (Clean Energy): designs and manufactures aluminum solar panel components



JOB CATEGORIES***



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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. [1] Cathy McKitrick, "Riding the CNG Wave in Utah," *The Salt Lake Tribune*, April 22, 2009, http://www.sltrib.com/News/ci_12184773 (accessed May 5, 2009).

CLEAN ENERGY POLICIES

 Financial Incentives****
 •

 Renewable Portfolio Standards
 •

 Energy Efficiency Resource Standards
 •

 Regional Cap and Trade Program
 •



The Clean Energy Economy Vermont

Vermont has a small but growing piece of America's clean energy economy. The state has among the highest shares of jobs in the clean energy economy relative to total jobs nationwide. Vermont's average annual growth for jobs in its clean energy economy increased twice as fast as total jobs between 1998 and 2007. The state also attracted more than \$53 million in clean technology venture capital in the past three years, almost all of which has been invested in the category of Clean Energy. The state's Energy Efficiency and Affordability Act of 2008 invested \$4 million in efficiency and renewable fuels for homes and businesses, with the aim of mitigating a \$500 rise in residents' average annual fuel bills between 2004 and 2008.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **2,161** Businesses (2007): **311** Venture Capital Funds (2006-2008)*: **\$53,746,890** Patents (1999-2008): **12**

EXAMPLES OF COMPANIES:**

Brighter Planet, *Middlebury* (Training and Support): enables individuals to calculate their carbon emissions and manages credit cards that fund renewable energy with each purchase

Northern Power Systems, *Barre* (Clean Energy): designs and manufactures wind turbines



JOB CATEGORIES

Relative rate of growth between 1998 and 2007



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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. [1] Governor Jim Douglas press release, "Governor Signs Energy Efficiency and Affordability Act—Praises Legislature for 'Putting Progress First," March 19, 2008, http://governor.vermont.gov/tools/index.php?topic=GovPressReleases&id=2863&v=Article (accessed May 5, 2009).

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Virginia

Virginia has a large and growing piece of America's clean energy economy. While total

jobs in the state grew more quickly than jobs in its clean energy economy between 1998 and 2007, Virginia still had nearly 17,000 clean energy economy jobs as of 2007, higher than the national average. The state attracted almost \$71 million in clean technology venture capital in the past three years, with more than 80 percent of those investments aimed at the category of Energy Efficiency—a sector that experienced 38 percent job growth between 1998 and 2007. In April 2009, Virginia increased its voluntary renewable energy portfolio goal for electric utilities to 15 percent by 2025,¹ which could bolster the state's share of the clean energy economy.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **16,907** Businesses (2007): **1,446** Venture Capital Funds (2006-2008)*: **\$70,828,261** Patents (1999-2008): **68**

EXAMPLES OF COMPANIES:**

H2Gen Innovations, *Alexandria* (Clean Energy): designs and manufactures hydrogen generators and gas purification systems



JOB CATEGORIES***



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SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. [1] U.S. Department of Energy, "Virginia Bills Advance Renewable Energy," April 9, 2009, http://apps1.eere.energy.gov/states/state_news_detail.cfm/news_id=12444/state=VA (accessed May 13, 2009).

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | |



The Clean Energy Economy Washington

Washington has a large and growing piece of America's clean energy economy. The

state's number of clean energy economy jobs as of 2007 exceeded the national average. The state ranks fourth nationally in attracting clean technology venture capital—more than \$635 million in the past three years. Seventy percent of these investments have been made in the category of Clean Energy, a sector in which the state experienced 52 percent job growth between 1998 and 2007. Washington created a Sustainable Energy Trust Fund in 2009 to finance energy efficiency and renewable energy projects by property owners.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **17,013** Businesses (2007): **2,008** Venture Capital Funds (2006-2008)*: **\$635,108,739** Patents (1999-2008): **195**

EXAMPLES OF COMPANIES:**

Itron, *Liberty Lake* (Energy Efficiency): designs electric, gas and water metering technology and software

Mithun, Inc., *Seattle* (Environmentally Friendly Production): designs sustainable buildings and low carbon urban centers



JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | • |
| Regional Cap and Trade Program | • |



The Clean Energy Economy West Virginia

West Virginia has a small piece of America's clean energy economy. It is one of the few states where growth in total jobs outpaced growth in the clean energy economy between 1998 and 2007. (Total jobs grew less than 1 percent during that period, however.) Still, the state attracted nearly \$6 million in clean technology venture capital and registered 14 patents in the past three years. Given West Virginia's long history as a coal mining state, it was notable that in May 2009, the state's Department of Environmental Protection granted its first carbon dioxide sequestration permit, to Appalachian Power Company.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **3,065** Businesses (2007): **332** Venture Capital Funds (2006-2008)*: **\$5,740,751** Patents (1999-2008): **14**



EXAMPLES OF COMPANIES:**

ImageTree Corporation, *Morgantown* (Environmentally Friendly Production): provides imaging technology for advanced forestland management



Relative rate of growth between 1998 and 2007



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CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | |



The Clean Energy Economy Wisconsin

Wisconsin has a small piece of America's clean energy economy. Although the state lost jobs in its clean energy economy between 1998 and 2007 while total jobs increased during the same period, it attracted more than \$46 million in clean technology venture capital investments in the past three years. More than half of those funds have been invested in the Clean Energy sector. In 2008, Wisconsin launched a \$150 million grant program for renewable energy projects. The program, which is intended for research and development or commercialization of new clean energy technologies, requires matching funds of at least 50 percent of total project costs; it awarded \$7.5 million in grants and loans in its first year.¹

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): **15,089** Businesses (2007): **1,294** Venture Capital Funds (2006-2008)*: **\$46,742,521** Patents (1999-2008): **214**

EXAMPLES OF COMPANIES:**

Aerisyn, Marshfield (Clean Energy): manufactures wind towers

TrafficCast International, *Madison* (Environmentally Friendly Production): designs and manufactures advanced traffic monitoring technology



JOB CATEGORIES***



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http://apps1.eere.energy.gov/states/state_news_detail.cfm/news_id=11663/state=WI (accessed May 13, 2009).

CLEAN ENERGY POLICIES

| Financial Incentives**** | • |
|--------------------------------------|---|
| Renewable Portfolio Standards | • |
| Energy Efficiency Resource Standards | |
| Regional Cap and Trade Program | • |



The Clean Energy Economy Wyoming

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Wyoming has a small but fast-growing piece of America's clean energy economy. Jobs

in the state's clean energy economy grew at a far faster rate between 1998 and 2007 than total jobs during the same period. In the past three years, all of the nearly \$7 million the state attracted in clean technology venture capital has been invested in the Clean Energy sector. Duke Energy, one of the largest electric power companies in the United States, announced in April 2009 the expansion of its renewable power business in Wyoming, including the development of its third wind facility in the state.¹ Wyoming has the potential to be one of the nation's largest wind-producing states.

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

Jobs (2007): 1,419 Businesses (2007): 225 Venture Capital Funds (2006-2008)*: \$6,941,813 Patents (1999-2008): 15

STATUS OF CLEAN ENERGY ECONOMY AVERAGE ANNUAL RATE OF GROWTH GROWING SHRINKING **ARGE** Average yearly rate of growth between 1998 and 2007 **10-YEAR GROWTH** Clean energy economy jobs 56.4%



EXAMPLES OF COMPANIES:**

Terra Moya Aqua (TMA), Cheyenne (Clean Energy): designs wind energy turbines and hybrid energy systems

Trihydro Corporation, Laramie (Conservation and Pollution Mitigation): provides environmental engineering and management services

JOB CATEGORIES***



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CLEAN ENERGY POLICIES

| Fin | ancial Incentives**** | • |
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| Ene | ergy Efficiency Resource Standards | |
| Reg | gional Cap and Trade Program | |