



State Clean Energy Fund Support for Renewable Energy Projects

Key Findings from the 2008 CESA National Database

Project Deployment Results from State Renewable Energy Program Activities:
2008 Annual and 1998–2008 Cumulative Results

JUNE 2010



Prepared by Clean Energy States Alliance
and Peregrine Energy Group



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Introduction

Clean Energy States Alliance (CESA) is a national nonprofit organization of public clean energy funds and programs that have banded together to invest in and promote clean energy and low-carbon technologies in their states and, collectively, across the country.

The effect of state clean energy funds continues to grow dramatically. Recent years have seen more projects deployed than ever due to the financial support of state funding—projects that have leveraged more than \$10 billion in additional funding from outside sources.

This second annual report summarizes key findings from CESA national database of state-fund-supported renewable energy projects. The database reports on more than 50,000 projects that have been installed and commenced operation with state fund support. The findings span state program efforts across the country and cover the full range of renewable energy technologies, including wind, solar, biomass, and hydroelectric.¹

Methodology

CESA and its contractor, Peregrine Energy Group, collected data for over 50,000 clean energy projects from the following 13 states, members of CESA and representing the most significant clean energy program investment activity:

- **AZ:** AZ Commerce Commission; Arizona Public Service
- **CA:** CA Energy Commission; CA Public Utilities Commission
- **CT:** CT Clean Energy Fund
- **IL:** IL Department of Commerce
- **MA:** MA Renewable Energy Trust
- **MD:** MD Energy Administration
- **MN:** MN Office of Energy Security
- **NJ:** NJ Clean Energy Program
- **NM:** NM Energy, Minerals, and Natural Resources Department

- **NY:** NYSERDA
- **OH:** OH Energy Office
- **OR:** Energy Trust of Oregon
- **WI:** WI Energy Conservation Corp.

The data collected include:

- Technology type
- Installation date
- Capacity
- Annual energy production
- Location
- Incentive amount
- Total cost

Once collected, the data was standardized and incorporated into a single database to enable analysis and reporting.

Key Findings

1. 2008 was the most successful year to date for state clean energy funds.

In 2008, state clean energy funds supported the installation of more than 12,500 new renewable generation projects—a 13% increase over the projects installed in 2007 and 24% of the total number of projects installed to date (projects tracked since 1998). As they operate, each year the projects installed in 2008 will generate 1.2 million megawatt-hours of electricity.

This brings the total number of new renewable energy projects supported by CESA member states since 1998 to

FIGURE 1 **Projects and Capacity Installed by Year**

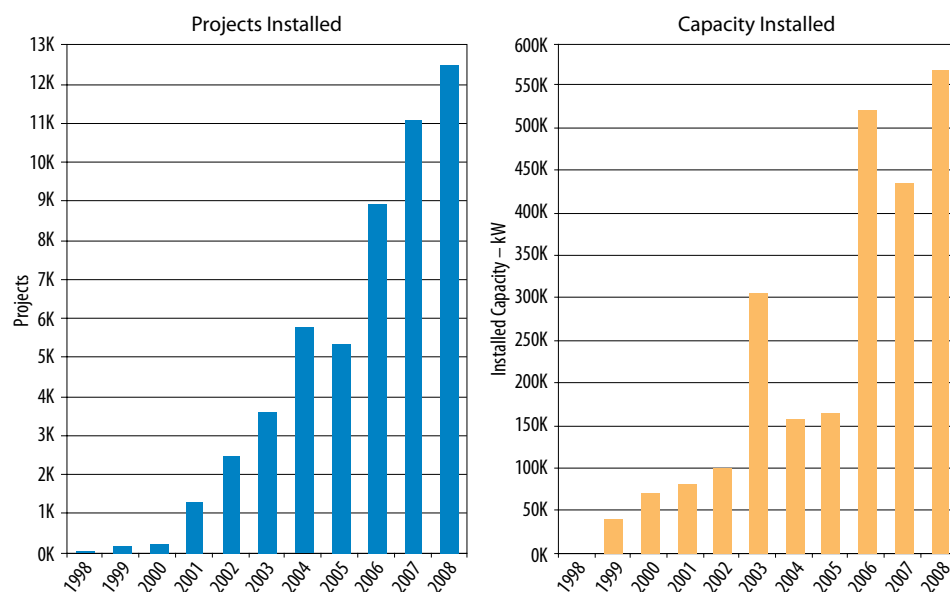


TABLE 1 **Projects, Capacity, and Investments by Technology in 2008**

Technology	# of Projects	Capacity (kW)	State Incentive Amount
Biomass	28	33,629	\$25,096,023
Fuel Cell	8	5,580	\$13,681,298
Hydro	14	11,764	\$5,007,805
Landfill Gas	1	3,000	\$1,005,210
PV	12,368	137,962	\$302,799,065
Wind	135	377,810	\$122,811,752
Grand Total	12,554	569,745	\$470,401,153

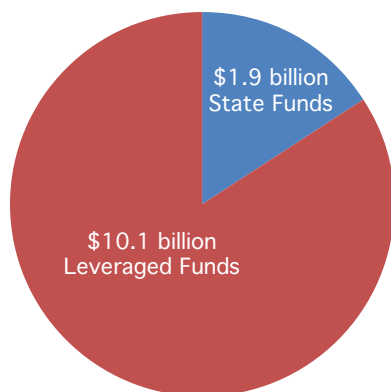
¹ Most state-run clean energy funds are funded through a system benefit charge mechanism. While the database focuses on new, electricity-generating projects that have been completed and are operational, it does not capture all of the funds' activities. First, it does not include thermal generation projects or projects that are still in development. Those projects will not be added to the database until they come online. Second, it includes only new projects, and thus does not reflect the funds' substantial support for existing renewable energy projects. The support for older projects has been essential to keeping several gigawatts of pre-1998 renewable energy generating capacity operating. Finally, it does not capture the many other activities of the funds, including education, training, clean energy business development, and research and development.

nearly 52,000, with a total capacity of 2.5 gigawatts. Figure 1 shows the number and capacity of projects completed from 1998 through 2008.

2. The state funds invested \$1.9 billion in renewable energy projects between 1998 and 2008, and leveraged an additional \$10.1 billion.

State clean energy funds have injected substantial financial resources into renewable energy projects, both with their own funds and through leveraging outside resources. Typically funded through a small surcharge on electric bills, state funds invested \$1.9 billion in renewable energy projects from 1998 to 2008. However, these funds covered only a portion of the total cost of each project. On average, outside sources provided more than \$5 of additional capital for every \$1 provided by a state fund. As a result, the funds' \$1.9 billion investment in clean energy projects leveraged approximately \$10.1 billion, bringing

FIGURE 2 Program Funds and Leveraged Funds from 1998–2008



the total investment to \$12 billion. Figure 2 illustrates the proportional investments of program funds and leveraged funds from 1998–2008.

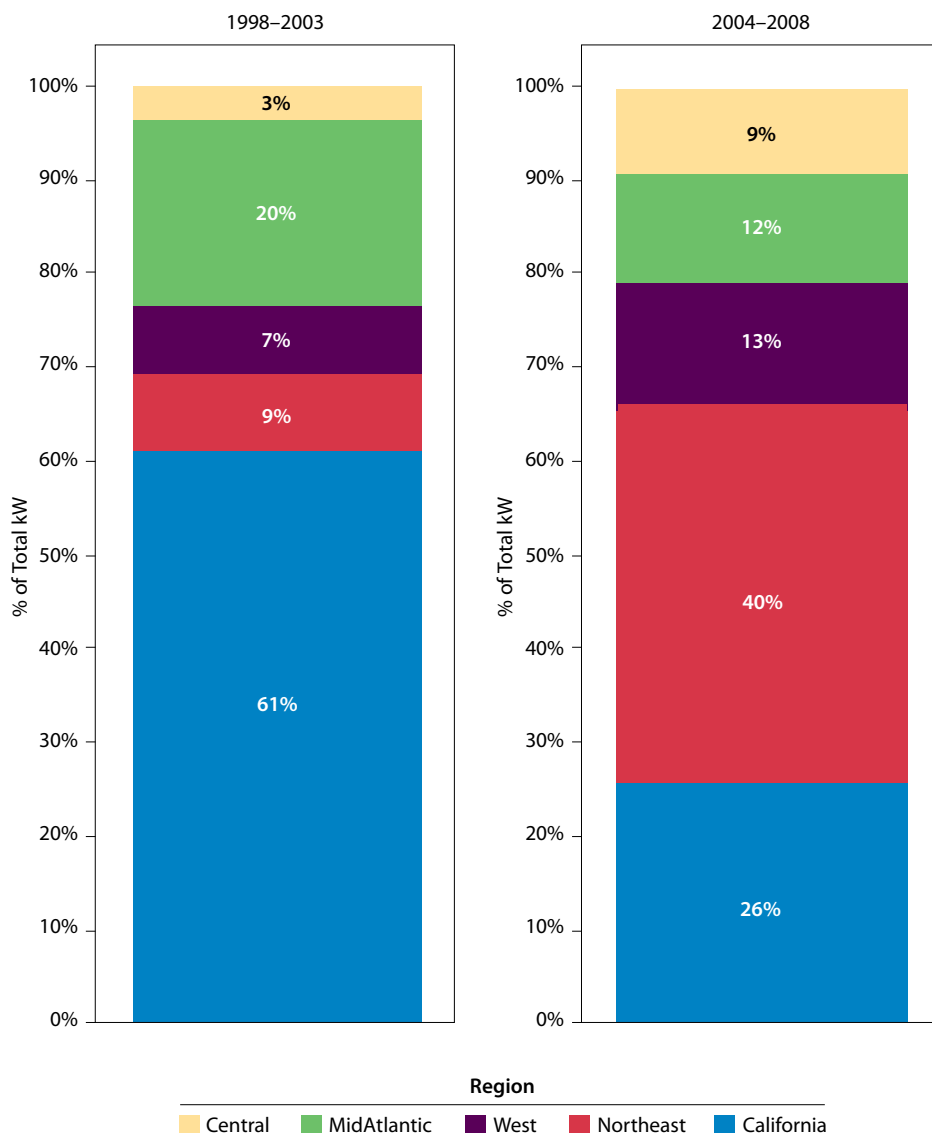
3. The projects supported by the state funds are avoiding CO₂ emissions and creating significant new jobs.

The state funds' efforts are helping both the environment and the economy. As they operate going forward, the projects installed in 2008 will avoid over 765 million tons of CO₂ emissions each year - the equivalent of taking 66,000 cars off the road. The states' efforts are also creating jobs. Using the Department of Energy's figures for calculating the number of jobs created, the state funds' investments in 2008 created over 5,000 jobs. The funds are helping to build a cleaner and a stronger economy.

4. State fund support for renewable energy is truly a national effort, with states across the country making significant contributions.

While California was the first state to make substantial investments in renewable energy, each year brings an increase in the number of states that are establishing new and expanding existing clean energy programs. Since 2004, other states have scaled up their programs significantly, creating a truly nationwide effort. Figure 3 shows the percentage, by region, of new generating capacity supported by clean energy funds.

FIGURE 3 Generating Capacity of Installed Projects, by Region



The data in right and left columns illustrates that California's relative contribution has shrunk dramatically from 61% of the total to 25% as other regions have increased their contributions in the period 2004-2008.

5. State funds support encompasses a broad range of renewable technologies with a focus on wind and solar.

The state funds have supported the full range of renewable technologies, including wind, solar, landfill gas, fuel cells, hydro, and biomass. The vast majority of the projects (98%) have been solar; the bulk of the capacity (66%) has come from wind. Figure 4 illustrates the percentage that each technology contributed in 2008 to the total number of projects, the state incentive dollars invested, and the capacity generated.

6. State funding levels vary significantly by technology.

The level of state funding that was provided to clean energy projects in 2008 varied significantly by technology. Some technologies, such as wind and landfill gas, are near commercial in their ability to generate revenue and so require relatively little support from the state funds. Other technologies, such as PV and fuel cells, are further from being commercial, meaning a significant gap exists between the cost of the projects and the value that will be captured by the system owner. Accordingly, these other technologies require greater levels of support from the state funds. Figure 5 illustrates, for the sum of all state fund activity in 2008, the weighted average state incentive funding levels by technology.

7. Leverage ratios vary significantly by technology.

State clean energy funds have had great success leveraging their program funds with outside capital. As shown previously in Figure 2, the funds have invested a total of \$1.9 billion in new

FIGURE 4 Contribution of Each Technology to Number of Projects, State Incentive Dollars Invested, and Capacity Generated in 2008

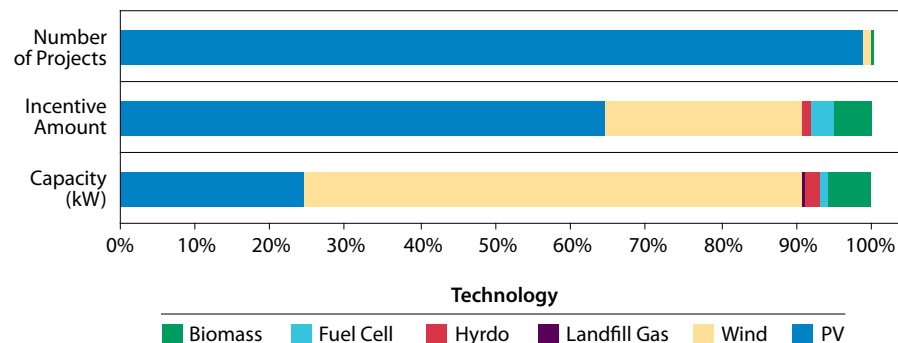


FIGURE 5 Average State Incentive Funding Levels for 2008 (\$ per kW)

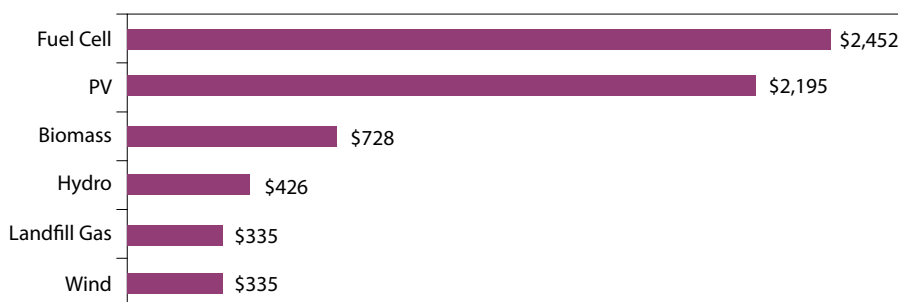


FIGURE 6 Leverage Ratio by Technology for 2008 (\$)



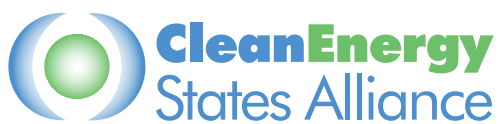
clean energy projects and leveraged an additional \$10.1 billion from external sources.

As with state incentive levels, the ratio of leveraged funds to program funds (leverage ratio) varies significantly by technology. For example, for wind projects, the states leveraged over \$27 for each \$1 of program funds invested. For PV projects, the states leveraged less than \$3 for each \$1 invested. Figure 6 illustrates the leverage ratio by technology for 2008.

Conclusions

The state clean energy funds have had a remarkable, measurable effect,

both cumulatively and individually, on project deployment. Together, the states included in CESA's database have funded more than 52,000 clean energy projects with a total generating capacity of 2.5 gigawatts. They have invested \$1.9 billion and leveraged an additional \$10.1 billion. And as we move forward, each year the projects they have supported will produce clean energy and avoid CO₂ emissions. Continuing to track state efforts to drive the development of renewable energy will hold important lessons at the national and local levels for addressing the complex energy challenges faced by all parts of the country.



About Clean Energy States Alliance

Clean Energy States Alliance (CESA) is a national nonprofit organization that works with clean energy funds and state agencies to expand the nation's clean energy infrastructure and advance markets for clean energy technologies. CESA provides information and technical services to its members and shares its knowledge with the federal government and influential policymakers. CESA's member states manage programs that will invest nearly \$6 billion in the next ten years to support clean energy. CESA is managed by Clean Energy Group.



About Peregrine Energy Group

This report was prepared for CESA and Clean Energy Group by the Peregrine Energy Group, an energy consulting firm based in Boston, Massachusetts. Founded in 1992, Peregrine provides strategic and technical services to private and public organizations on a broad range of energy supply and demand issues. Services include strategic planning and policy development; project management; market research; regulatory analysis and advocacy; energy program design and administration; and energy information management and performance benchmarking.

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