

State Clean Energy Funds – An Overview of State Programs

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Clean Energy States Alliance (CESA)

- 🌱 CESA is a multi-state coalition of 20+ clean energy programs
- 🌱 Objective: develop & promote clean energy projects & markets through:
 - Peer-to-peer information exchange
 - Analysis
 - Partnership Development
 - Joint Projects

U.S. Revolution: Transition in Clean Energy Led by States



State-Led Revolution in Energy in U.S. – 1998-2010

- Federal Inaction
- States as right locus for renewable energy markets development
- Clean energy is development: emphasize local energy resources and tailor to state economy
- Linkage of state energy & economic development policies
- Rapid bottom-up learning
- New financing models: PACE, loan guarantees

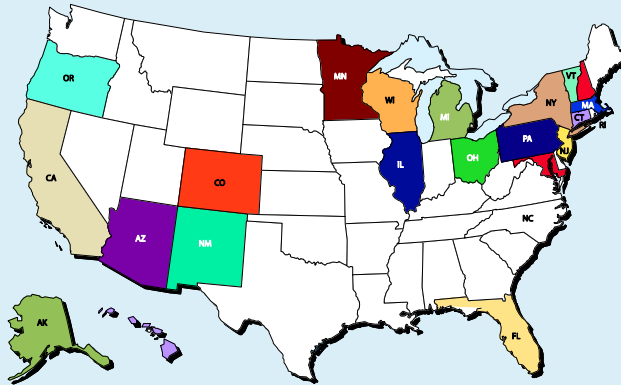
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Clean Energy States Alliance

- 🌐 CESA = 20+ states cooperating and learning from each other, leveraging federal resources
- 🌐 Nearly \$6 billion to invest in next 10 years
- 🌐 Nonpartisan, experimental, collaborative network
 - Information exchange & analysis
 - Partnership development
 - Joint projects: solar, wind, RPS, fuel cells, program evaluation, national database
- 🌐 Assisting interested states to design effective new clean energy programs

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Clean Energy States Alliance – Voice of State Clean Energy Programs



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Public Benefit Funds

What:

- Fund collected typically through surcharge on electric rates
- Used to support energy efficiency and renewable energy
- Increasingly popular for states:
 - 46 EE programs (mostly utility administered)
 - 25 RE programs (mostly state or independently administered)
- 2009: \$4.4 billion spend on EE; \$600 million on RE

Why:

- RE & EE advance public interest
- Electricity markets often do not place value on RE/EE
- Serious market barriers
- Utilities lack incentives to promote RE/EE

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State Funds: Comprehensive Support for Clean Energy Technologies

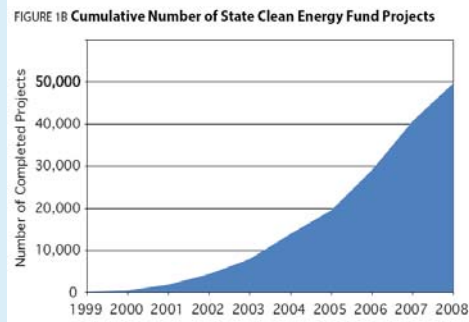
- ☼ Solar
- ☼ Wind
- ☼ Fuel Cells
- ☼ Biomass
- ☼ Distributed Generation
- ☼ Energy Efficiency
- ☼ Green Buildings
- ☼ Hydropower
- ☼ Ocean Energy



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Results that Matter: ESA RE Database

- ☼ States with dedicated funds to finance clean energy projects
 - Invested \$1.9 billion in last 10 years
 - Investment leverage: more than \$10.1 billion in other investment
 - Over 52,000 RE projects
 - 2.5 GW clean energy capacity installed
 - Primary driver for grid-connected PV; in 2007, more than 75% of installed systems were installed in states with clean energy funds
 - \$6 billion state funding for next 10 years plus new federal stimulus funding (\$3 billion for State Energy Programs)



Source: CESA

Strategic Value of RE Funds

- Accelerate development of clean energy
- Cohesive strategy “under one roof”
- Viable economic development strategy
- Flexibility & portfolio of program tools: incentives, market barriers, education, etc.
- Tailored to a state's needs
- Longer-term perspective to complement renewable portfolio standards and tax policies

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Advantages of Funds

- Established through fair, non-discriminatory funding mechanism (e.g. \$/MWh)
- Multiple sources of funding (surcharges on electric rates, pollution tax)
- Maximum flexibility in use of funds to target unique opportunities
- Cost can be fixed and known in advance
- BUT does **not** eliminate need for other complementary energy policies (tax credits, RPS, interconnection policies, etc.)

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Mechanisms for Collecting Funds

1. Electricity surcharge (wires charge)
2. Pollution charge (e.g. generators, utilities)
3. Bonds
4. Tax revenue
5. Lottery
6. RPS compliance payments
7. Regional carbon allowances

Lessons Learned:

- Wires charge is fair as it internalizes environmental consequences of electricity purchases
- All energy consumers benefit
- Stability and permanence of Fund is greater if dedicated fund

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State Funds Funding Levels (RE)

State	Approximate 2010 Funding (\$ million)	Per Capita Funding	Funding Duration
CA	\$250	\$6.84	Ten years
CT	\$27	\$7.71	2000 – Indefinite
MA	\$25	\$3.88	1998 – Indefinite
NJ	\$60	\$7	Indefinite
NY	\$60	\$4.25	2010– 2015
OR	\$12	\$3.36	March 2002 – Dec. 2025
VT	\$6.5	\$10.62	2002 – 2012
WI	\$7.9	\$1.41	1999 - Indefinite

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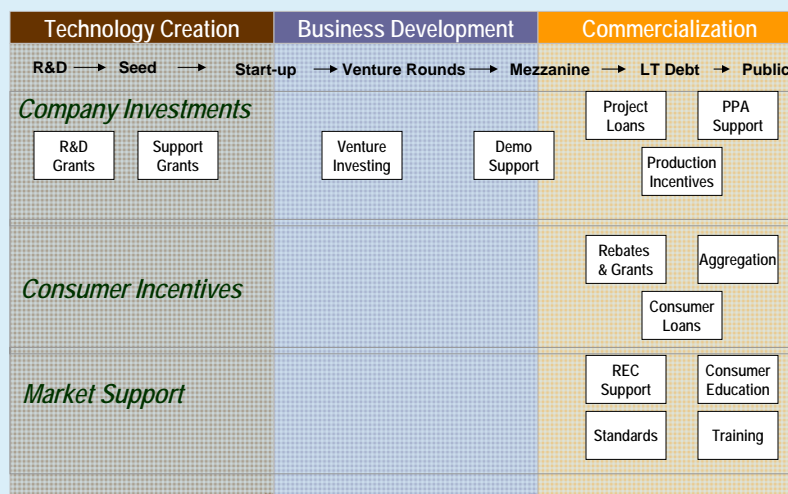
State Fund Strategic Models



-  **Project Development Model:**
 - Incentives & grants to directly subsidize project installation (California, New Jersey)
-  **Investment Model:**
 - Loans & equity investment in companies & projects (Connecticut, Pennsylvania)
-  **Industry Development Model:**
 - Business development grants, marketing support, technical assistance & education to build industry infrastructure (Wisconsin, New York)
-  **Research & Development Model:**
 - California & New York, in part; Minnesota
-  **Combination of approaches** (Massachusetts)

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Individual State Fund Investing Activities



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Program Types

- Up-front capital grants and rebates
- Information & education
- Production incentives
- Low-interest loans
- Venture capital investments
- Infrastructure building grants (training programs, installer certification, resource assessment studies)
- Research & development

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Disbursement Options

- Competitive solicitations
 - Focus fund activities
 - Encourage competition
 - Open, less politically sensitive selection process
 - Reduce administrative burden
- First-come
 - Useful for large number of smaller awards (solar PV program)

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Effective Administration



Fundamentals:

- Program design guided by clear public policy goals
- Comprehensive knowledge of RE markets
- Minimize transaction costs
- Able to adapt quickly and flexibly to opportunities
- Consensus of key stakeholders on goals, structure, program design



Three options:

1. Utility administration
2. Government administration
3. Independent, non-governmental organization

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Utility Administration



Pros:

- Name recognition with customers, clout with industry, technical expertise on energy generation in general



Cons:

- Lack of interest in RE
- Lack of experience with RE programs
- RE does not meet utility cost effectiveness test
- Financial interests not aligned with RE deployment
- Risk averse to invest in emerging or expensive RE technologies



Only six utility run RE funds in U.S.

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Government Agency Administration

- Existing, expanded, or new government agency (PSC, energy office, economic development agency, public benefit corporation)

- Pros:**

- No conflict of interest
- Well-developed processes for public input and accountability of public funding

- Cons:**

- Limited experience in RE programs
- Funds may be diverted to other programs
- Lack of entrepreneurial climate

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New Independent Institution

- Pros:**

- Single purpose, with focus, no conflicting goals
- Mission compatible with RE policy goals
- Flexible planning and competitive procurement processes can be used
- Attract highly motivated, skilled staff

- Cons:**

- Creating new institution or expanding existing NGO requires political will and resources
- Need good oversight of funds and governance

- Successful track record:**

- Energy Trust of Oregon, Wisconsin Focus on Energy, Efficiency Vermont

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Administrative Costs & Staffing

- Dedicated staff required for success (planning, program development, contract management, etc.)
- Costs increase in relation to number and complexity of programs
- Costs decrease with clear funding guidelines, application procedures, and evaluation mechanisms upfront
- Minimum of 5-10% of funds may be needed to cover administrative costs
- Example: Oregon: \$12 million/year fund, 4 FTE, 10% on administration

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Program Evaluation

- Essential element for successful program
 - *In a competitive funding environment, if you cannot prove what you have done, then you have done nothing*
- Timely to allow for program design changes
- Results need to be linked to program goals and measurable (not necessarily quantitative): kWh produced, CO₂ reductions
- Results unbiased, relevant, easy to use

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Program Findings

- 🌀 **No Single Program is Optimal:** Use multiple program designs and be willing to experiment
- 🌀 **Goals Should Drive Program Design:** Link program design & fund allocation to strategic plan goals (MA, PA, and OR Funds guided by strategic & business plans)
- 🌀 **Discretion & Flexibility Can Enhance Success:** Capitalize on rapid learning about how best to support clean energy markets
- 🌀 **Markets for Smaller, Distributed Projects are More Difficult to Build**

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Technology-Specific Support: Wind



- 🌀 **Common Programs for Wind Projects**
 - No funding for commercial scale projects as grid parity
 - Grants and loans for community wind projects
 - Technical and permitting assistance (MA, OR, NY)
 - Rebates for small residential wind (CA, MA, WI, NY, OR)
 - Wind R&D – offshore wind studies; wind integration studies (MA, NJ, MN)

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Technology-Specific Support: Solar

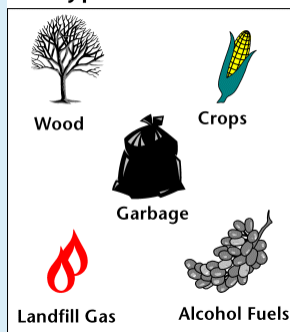


- ☼ Rebate programs (most states)
- ☼ Low interest loans (NJ, OR)
- ☼ Technical support (WI, NY)
- ☼ Installer training & certification (NY)
- ☼ High-value PV installations (schools, public buildings)
- ☼ Low income housing (MA, CA, NJ)
- ☼ Funding of PV manufacturers (MA, MI)
- ☼ Marketing (CA, AZ, CT, OR)

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Technology-Specific Support: Biomass

Types of Biomass



☼ Programs for Biomass

- Incentives & buy-down grants for biogas projects on dairies (OR, WI, CA)
- Outreach, technical assistance & feasibility studies (WI)
- Business & marketing grants (WI)
- Overcoming regulatory barriers such as streamlining interconnection process (OR)

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Some Recommendations for Virginia

- 🌀 Launch Initiative to Establish a Clean Energy Fund
 - Stakeholder Process
 - CESA Advisory Group
 - Develop Strategic Plan
 - Evaluate Funding Mechanisms
- 🌀 Establish State Treasurer Fund for Clean Energy Investments
- 🌀 Ensure State Budget & Agency Programs, Policies, and Plans are Clean Energy Friendly
- 🌀 Borrow from Best State RE Programs & Policies

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APPENDIX

A Sampling of Various State RE Program Approaches

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Vermont Clean Energy Development Fund

- 🌱 Legislature created independent state program with assistance from state energy office
- 🌱 Funding based on nuclear waste storage fee
- 🌱 Guiding Principles:
 - Support diversified portfolio of clean energy technologies
 - Allow for sufficient risk taking by investing funds through grants, loans, and equity investments
 - Pursue geographic distribution of projects throughout states
 - Participate in projects in which public funds will make meaningful difference; projects not likely to go forward without Fund support
 - Support community efforts to develop small-scale renewable energy projects

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Vermont Clean Energy Development Fund

- 🌱 Program Offerings:
 - Pre-Project Financial Assistance: grants or loans for feasibility activities
 - Small Renewables Incentives: rebates for installation of small RE systems, 15kW cap
 - Large-Scale Renewables Incentives: competitive solicitations for grants or loans > 15 kW
 - Business Development Incentives: loans to RE-related manufacturers and companies at below market interest rate
 - Special Demonstration Projects: develop innovative energy projects or applications
 - Equity/Subordinated Debt Investment: underwriting by state economic development agency

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Vermont Clean Energy Development Fund

Loan & Equity Criteria:

- Commercially viable project
- Quality company management team
- Public financing based on standard underwriting & investment criteria
- State funding is leveraged by attracting investors & lenders with risk reduced by state investment
- State funding diversified among industry sectors and types of project to reduce risk
- Specific selection criteria: amount of private funding leveraged, appropriateness of technology to State, potential to create viable industry


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Connecticut Clean Energy Fund

 Administered by CT Innovations: for-profit venture capital firm, supported by system benefit charge

Wide portfolio of program offerings:

- Pre-development loans for RE projects
- Grants for on-site distributed generation projects
- Rebates for small systems
- Grants to municipalities & state buildings for RE projects
- Grants for operational demonstration projects
- Equity investments in clean energy projects and companies

 Results: energy value of investments exceeds total project costs by ratio of 1.36:1.

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Energy Trust of Oregon

- Pioneer model of non-profit third party administrator
- 3% system benefit charge for funding base
- Diverse program offerings:
 - Solar PV and hot water rebate program
 - Grants to community scale wind projects based on above-market costs of energy produced
 - Open solicitation grant program primarily targeted at biomass & digesters
 - Small R&D program aimed at emerging technologies (marine)

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Oregon Program: Focus on Biopower

Biopower Program

- Financial incentives for biopower projects (3.9 MW capacity expected)
- Eligible resources: landfill gas, wood chips, manure, food wastes, dedicated energy crops, wood waste and byproducts, waste gas from sewage treatment, other biomass resources but not biofuels
- Production incentives; Fund will pay 100% of above-market costs paid over first few years based on production
- Fund may contribute up to 50% for feasibility studies if promising technology
- Rolling RFP

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New Jersey Clean Energy Program

- New Jersey public utility commission manages state Clean Energy Program based on system benefit charge
- RE programs include:
 - 2nd largest solar PV program in country, based on RPS REC financing and residential system rebates
 - Grant solicitations for CHP at commercial/industrial facilities
 - Competitive funding for green job training
 - Clean energy manufacturing fund grants
 - Support for offshore wind development studies
 - Renewable energy business venture assistance grants

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New York State Energy & Research Authority

- NYSERDA is public benefit corporation to advance innovative energy solutions
- Energy Smart Program for EE/RE support includes:
 - Grants to clean energy business incubators
 - Funding for clean energy business assistance
 - Competitive grants for companies to establish or expand clean energy related manufacturing
 - Competitive grants for early stage technology and product development
 - Competitive grants for distributed generation & CHP at industrial & commercial facilities
 - Rebate programs for solar and small wind

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New York Energy \$mart Program

Summary: Macroeconomic Impacts of the New York Energy \$mart Program through December 2006 (Constant 2006\$)

Economic Variable	Annual Average All Years (1999 to 2027)
Jobs	8,612
Labor Income	\$320 Million
Total Output	\$456 Million
Value Added	\$210 Million

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NYSERDA Program: Linking RE and Economic Development

Clean Energy Technology Manufacturing Incentive Program

- Funding for clean energy technology manufacturers to develop or expand a facility to produce innovative products
- Eligible technologies include green and renewable energy, such as wind, solar, biomass, energy efficiency.
- Maximum funding for each project is \$1 million with applicant providing at least 75% cost share
- Products must be ready for commercial production

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Comprehensive State Approach to RE: Pennsylvania

- 🌐 Leadership at the top
- 🌐 Create a state agency environment favorable to RE
- 🌐 Integrated approach to reach clean energy & economic development goals
- 🌐 Policy & regulatory environment and financial programs complement each other
- 🌐 Invest in state-based companies developing RE technology & products: Gamesa Wind Turbines
- 🌐 Modest beginning to more progressive initiatives

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PA's Clean Energy Portfolio

- 🌐 PA Energy Development Authority to finance clean, advanced energy projects
- 🌐 PA Economic Development Financing Authority provides tax exempt and bond financing for energy projects
- 🌐 Energy Harvest Grant Program funds clean energy projects through solicitations
 - Federal funds, clean air funds, watershed restoration funds
- 🌐 Keystone Green Fund
 - \$40 million private capital investment fund from Treasury assets & state clean energy fund to finance projects & companies for RE and EE.

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Massachusetts Clean Energy Center

- Established in 2008, absorbed by quasi-public Massachusetts Clean Energy Center in 2009; supported by systems benefit charge
- Diverse program offerings:
 - Commonwealth Solar (rebates and SRECs; 23 MW since 2001)
 - Commonwealth Wind (Micro Wind performance-based incentives, Community-Scale Wind feasibility and design & construction grants, Commercial-Scale Wind grants and non-recourse loans, and offshore components; five-fold increase in wind installations in MA since 2001)
 - Commonwealth Hydro (grant support)
 - Workforce & Development Training (grants, statewide network)
 - Job Creation (seed-stage and expansion-stage capital investments)

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