



Sustainable Energy Finance Initiative



Innovative Government Clean Energy Funding Resources

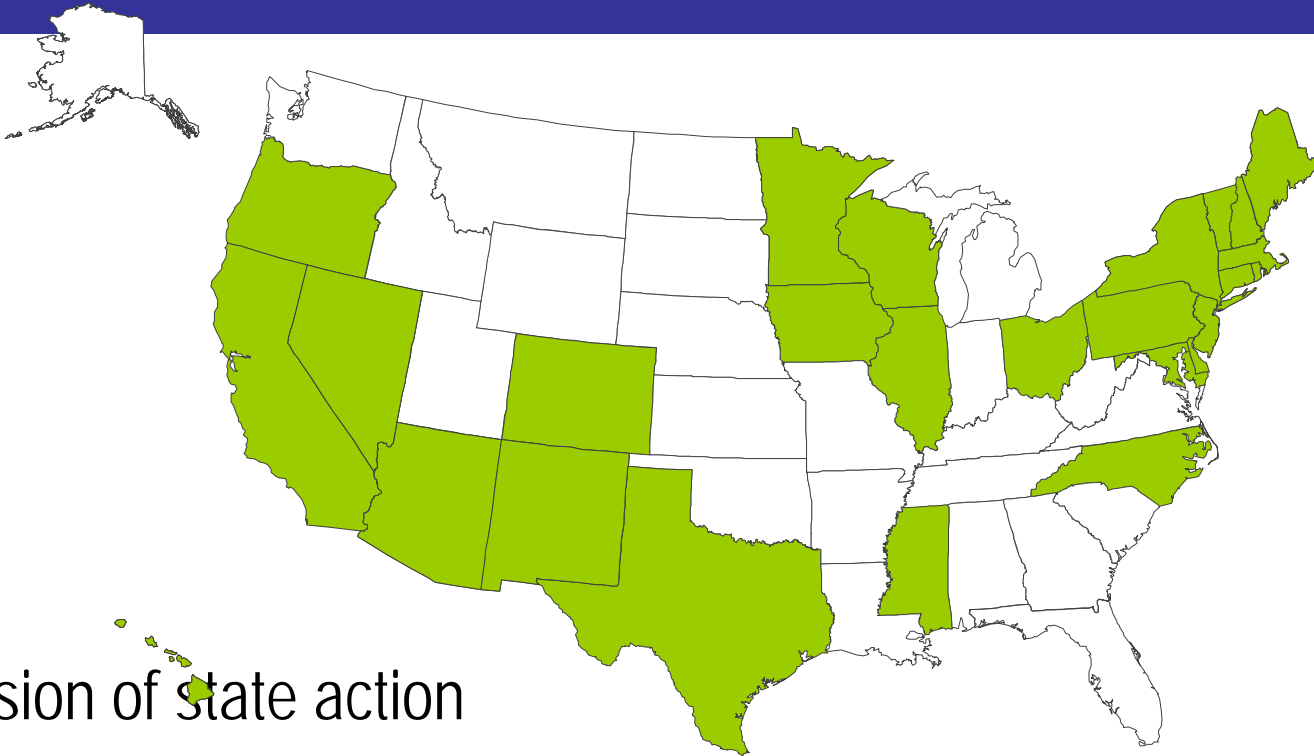
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Ken Locklin

Clean Energy Group

Combined State CE Support Activities

Over 188 Million People in 26 States
(64% of the US Population)

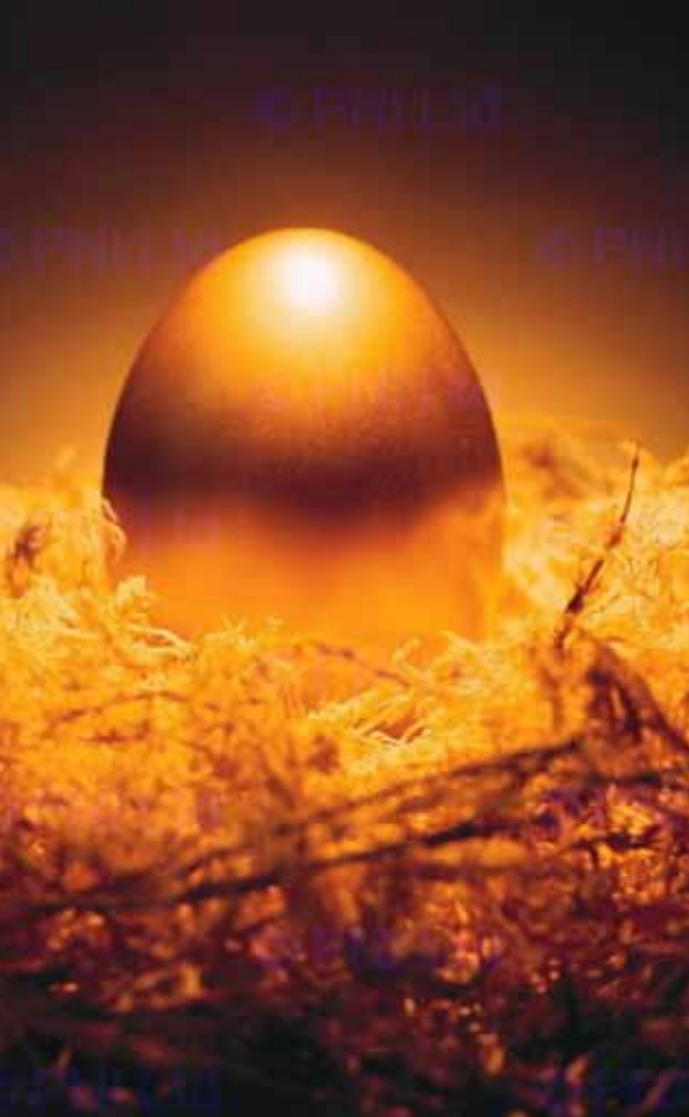


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State Funds, Fuel Cells and Hydrogen, RPS ,
and Carbon Trading

- Explosion of state action
- SBCs, RPS, FCs, GHG initiatives
- Nonpartisan, experimental, collaborative
- Economic development role re-asserted
- Aberration? or *trend?*

A billion here, a billion there...



- Over \$4 billion worth of state incentives in place, but...
- “Real money” brings new investment risks
 - Immature markets
 - RPS vulnerabilities
 - Lack of co-investment commitments

Massachusetts -- the "Silicon Valley" of clean energy

■ Corporate & academic RD&D

- MIT, Harvard, UMass, WPI, Northeastern, BU, BC, Tufts
- Over 20 major RD&D firms: Foster Miller, Physical Sciences, SAIC, MITRE

■ VC presence: 20+ major firms have invested in Mass clean energy companies

- Aretê Corporation
- Ardesta
- Altira Group
- Atlas Ventures
- Chevron Texaco Ventures
- Chrysalix Energy LP

- Conduit Ventures
- Draper Fisher Jurvetson
- Eastman Chemical
- EDF Capital Investment
- New Enterprise Associates
- Rho Ventures

■ Emerging Clean Energy industry subsectors

Hydrogen

Solar PV

Fuel Cells

Biomass

■ Strong investment returns from Mass. companies

- IPO: Evergreen Solar, Beacon Energy, Spire
- Acquisition: Solectria, Giner, ASE to RWE Schott

State Leadership:

Massachusetts Renewable Energy Trust

- Trust funded by system benefits charge as part of 1998 electricity restructuring
- The Trust's mission:
 - Increase the supply of and demand for energy from clean sources
 - Promote the development of a vibrant Massachusetts renewable energy industry
 - Maximize benefit to Massachusetts ratepayer
- Receives approx. \$25 million annually for renewable initiatives and projects
- Tackling range of issues, including early stage VC needs, and project finance support

Massachusetts Green Energy Fund: Overview

- Target \$25mm VC fund investing in MA clean energy companies
- Standard VC structure
 - Delaware LP
 - 10-year life, 5-year investment period
- Primary focus: competitive financial returns
 - Top quartile (>25% IRR)
- Secondary benefit: development of MA clean energy industry
 - Solar, wind, biomass, fuel cells, controls
 - Capital leverage, industry growth, jobs
 - Global warming mitigation
- Objective
 - Diversified portfolio; 10-15 high-growth firms
 - strong VC syndicates
 - 3-5 year exits

RET Role

- *First Limited Partner: \$15M*
- *Leverages Fund activities & portfolio companies*
 - *Clean energy deal flow*
 - *Seed and supplementary funds for pre- and co-investment*

MGEF Status

■ Experienced team

- Management
 - William Osborn (Commons Capital, Arete, VIMAC, BMW, Arthur D. Little)
 - Eric Emmons (Mercer Mgmt, Enmed, Commons Capital, LEK, HBS)
- Investment Review Committee
 - Rob Pratt, Alain Hanover, Mark Farber, Jim LoGerfo

■ Strong deal flow

- Significant deal flow – over 120 companies reviewed; half dozen in active due diligence
- High level of national and regional VC activity; exceptional deal flow from local universities, labs
- MGEF is local lead for national VCs seeking view into MA universities, companies

■ Currently investing

- First 3 high-potential investments completed; additional investments by year end.

Initial MGEF Investments



Lilliputian

- Successful hi-tech entrepreneur as CEO
 - Top technical team – 2 Nobel Laureates
 - Low cost PV power < \$1/w
 - High speed, low cost reel/reel manufacturing
 - Flexible form factors
 - Truly “disruptive technology”
- Fuel cell stacks and systems for the sub-500W portable power market
 - 3-5x stack cost advantage
 - Portable power system prototypes to be delivered to military customer by mid- 2005
- Micro, chip-mounted Solid Oxide Fuel Cell (SOFC) based on MIT technology targeting battery replacement market
 - MEMS technology produces extremely high energy densities.
 - 5-10x energy density of the best Lithium Ion batteries expected

MGEF:

Strong financial return with significant social benefit

■ **Strong financial return potential**

- Clean energy industry is growing
- Massachusetts has academic, commercial innovation
- Experienced General Partner team
- RET provides competitive advantage

■ **Significant social benefit**

- Reduced rate of climate change
- Reduction in toxic emissions
- New employment at all levels

Challenge:

Renewable Project Financing is Difficult to Secure

- Projects need predictable energy and REC revenues
 - REC revenue is subject to regulatory/political risk
- Most projects in New England are small (<40 MW) and of limited interest to financial market
- Investors unwilling to take risk on merchant renewable plants – require 10-15 years of contracts
- Long-term energy and REC contracts with creditworthy buyers are needed, but...
 - Retail suppliers serving load in restructured utility territories cannot count on having load in 10 years.
 - Few creditworthy entities have emerged in the REC market.
 - Few entities willing to make even 5 year commitments for energy or RECs.

One Solution:

Mass. Green Power Partnership (MGPP)

- Goal: Get renewable projects financed by providing developers long-term REC contracts (RET takes risk)
 - Up to 10 yrs of first 15 yrs of operation (RECs only)
 - REC prices bid for Purchase or Options (put or collar)
 - For new construction/incremental generation
 - MA RPS eligible, or hydro (no new dams)
 - Commercial operation within two years (advanced stage)
 - Substantial due diligence required
- MTC escrows required funds, since Trust not rated "investment grade" institution

MGPP Operations

- Developer bids Product, Price and Term
(Term does not need to start in year 1 of operation)
- Trust / Seller enter into contract
- Trust escrows funds to cover its obligation
- Facility gets financed and built and Trust purchases RECs per Contract
- Trust may resell RECs for RPS compliance, replenishing funding
- Trust might sell REC contracts to third party
- If project not built or option not exercised, escrowed funds are released

MGPP – “It works!” ... lessons learned

	<i>Number of Projects</i>	<i>MW supported (approx.)</i>	<i>Total RECs Supported</i>	<i>Escrow Funds (par)</i>
MGPP Round 1	5	100	1,450,390	\$28,550,000
MGPP Round 2	7	107	1,696,028	\$38,200,000
Total	12	207	3,146,418	\$65,750,000

- Confirmed that developers are interested in long-term contracts that offer price security
- Later year price support is of greater concern for most applicants (i.e. years 5-15)
- Trust funds insufficient to support large projects, much less total MA renewable demand; exploring new leverage approaches

Contact Information

Thank you!

Ken Locklin

Clean Energy Group

www.cleanegroup.org

(703) 476-1561



CLEAN ENERGY. LET'S MAKE MORE.