

Massachusetts Renewable Energy Trust Solar Energy Initiatives

Draft for discussion only 9/8/2004

Background / Context

The Renewable Energy Trust was created by the Massachusetts Legislature in 1998 as an essential component of electric utility industry restructuring to promote renewable energy development in the Commonwealth. The legislative goal is to “generate the maximum economic and environmental benefits over time from renewable energy to the rate-payers of the Commonwealth through a series of initiatives which exploit the advantage of renewable energy in a more competitive marketplace”.

To achieve the legislative goal, the Trust creates initiatives targeted at reaching specific end goals. These initiatives seek to:

- Increase the supply of -- and demand for -- renewable energy;
- Achieve the economic and environmental goals of the legislation;
- Strengthen the ability of Massachusetts companies to compete in the marketplace, helping to establish the infrastructure needed to support a growing, sustainable and competitive market for renewable energy;
- Leverage the resources and expertise of others in both the public and private sectors wherever possible, maximizing the impact of the Trust’s investments; and
- Build upon consumer choice.

The Trust’s Solar Energy Initiatives address all of these target areas. Solar photovoltaic technology has multiple values and benefits to the citizens and ratepayers of Massachusetts including:

- PV is a distributed generation (DG) asset that can be easily sited throughout the Commonwealth. Thus PV can **supply** clean energy to every building type, market segment, and geographic region in the state. PV is not restricted to areas with high terrain, oceanfront, or flowing water. PV does not require zoning variances, public hearings, wildlife impact studies, or special permits.
- As demonstrated by the large numbers of PV applicants to the SMI and C13 solicitations, and as confirmed by the high prices paid for solar RECs, solar energy is the renewable source most in **demand** by Massachusetts consumers and businesses.
- PV creates more **jobs** per megawatt of capacity than any other renewable energy source (Renewable Energy Policy Project report November 2001). PV creates 35.5 person-years of employment per MW vs. 4.8 person-years / MW for wind. Most (41%) of these 35.5 person-years of employment are created in the local design and installation businesses, while 7% is from inverter manufacturing and 35% from PV cell and module manufacturing. Thus use of Massachusetts based PV modules and/or inverters maximizes this **economic benefit** to the Commonwealth. Every \$1 spent on PV in Massachusetts has a \$6 multiplier effect on the local economy (IREC reference? Porter?). PV is a long life, low maintenance generation source with no fuel costs. All of these characteristics lead to energy price stability (hedging) over time.
- Solar photovoltaic systems have **outstanding environmental characteristics**. PV has no emissions during generation. PV’s peak generation is highly concurrent with utility peak demand periods and thus offsets some of the most polluting dispatchable generation sources.
- The **Massachusetts PV industry is comprised of hundreds of employees** at three PV module manufacturers, two PV production equipment manufacturers,

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two PV inverter manufacturers, and numerous PV system designers, installers and project developers. Local PV projects strengthen these local PV companies.

- PV has been most successful in certain economic market niches where significant **private investments have been leveraged to maximize the impact** of the Trust investments. Early adopters of high technology and/or environmentally conscience individuals and companies typically comprise these niches which are eager to pay up to twice the retail cost of grid power for clean PV power.
- PV has also been **successful in the public sector** where the financial resources of the Trust can leverage the expertise of the local PV system designers, installers and project developers. Although the public sector projects require a larger (per kilowatt) investment of Trust funds, this is mitigated by the high visibility and substantial educational impacts created by such public projects.
- The Trust has also used the **high demand for solar PV to leverage resources and expertise of utility energy efficiency funds**. This maximizes the impact of the Trust's investments in PV and provides increased value and benefits to the ratepayers of Massachusetts.
- As proven by the Opinion Dynamics poll funded by MTC in (year ? – we need a copy of this), solar **PV provides customer choice**.

Thus, due to the ability of solar photovoltaic technology to provide multiple values and benefits toward achieving the Trust's goals, the Trust continues to develop Solar Energy Initiatives as part of a sustained, orderly development of the renewable energy technology sector in the Commonwealth.

Proposed Next Steps:

The PV Collaborative will form three working groups to address specific solar energy planning areas. These three working groups will be focused as follows:

- **PV Rationale**
- **PV Public Benefits**
- **PV Commercialization.**

The **PV Rationale** working group will focus on answering the over arching questions "Why and how should RET support solar PV?". This group will create a clearer description for the general public, the news media, and for the MTC Board of how PV fits into the Trust's overall strategy. The group will expand upon the previous paragraphs of this document to explain the mission, vision, goals and objectives of supporting PV, as well as identifying barriers and a strategy to achieving those objectives.

The programs/strategy working groups will draft program concepts that are designed to overcome those barriers and thus achieve the goals. The final deliverable of this group will be a draft New Concept Approval document to be presented as a preview to the MTC Board of Directors in late September.

The **PV Public Benefits** working group will focus on education, public awareness, and PV activities that provide direct benefits to the citizens of the Commonwealth. PV Public Benefits will not be as focused on leveraging of private funds or PV system cost reductions. The PV Public Benefits could include PV installations on public buildings, PV education and training programs, and support for the Massachusetts PV heritage sites.

Examples of PV Public Benefits type programs could include:

Massachusetts Renewable Energy Trust Solar Energy Initiatives

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- Green Schools (new construction; PV for power),
- Solar on Schools (retrofit; PV for education),
- PV for First Responders (police, fire, etc with battery back-up),
- Solar on College Roofs,
- DCAM partnership (PV on state buildings),
- PV in Economic Target Areas,
- NABCEP certification (for PV designers & installers),
- IBEW/licensed electrician training,
- Case studies of projects,
- Support for the annual NESEA conference,
- RET Clean Energy Tour,
- Production Tracking System/Data Acquisition Systems/website,
- DOER MSR partnership, etc.

The final deliverable of this group will be 1 – 4 program recommendations to be presented to the full PV Collaborative. After discussion with, and potential modification by, the full group and these recommendations will be integrated into the New Concept Approval document.

The **PV Commercialization** working group will focus on PV system cost reductions and/or creative financing models to stimulate PV installations in Massachusetts. A primary goal of the PV Commercialization will be to maximize private investments in PV projects so as to leverage MTC resources to the fullest extent possible. All PV Commercialization installation activities will be completed in concert with energy efficiency measures, green building metrics, other distributed generation, and/or utility distribution planning to maximize financial leveraging and overall efficiency.

Additionally, the PV Commercialization Initiative provides industry support services for Massachusetts based PV companies including investments, low interest loans, loan guarantees, and/or direct product or services purchases.

Examples of PV Commercialization type programs could include:

- Commercial, Industrial, and Institutional Initiative,
- PV on Energy Star Homes/Zero Energy Homes (new construction),
- Residential PV market stimulation (retrofit program),
- SEBANE declining multi-year installation subsidy, proposal,
- PV export program,
- Technology development support,
- Utility congestion relief,
- Low interest loans/loan guarantees,
- Lines of credit/small business solar loans,
- Green mortgages,
- Support for SEBANE.

The final deliverable of the PV Commercialization group will be 1 – 4 program recommendations to be presented to the full PV Collaborative. These program concepts should include a clear articulation of how the programs will lower transaction costs, installation costs, or both over time. After discussion with, and potential modification by, the full group and these recommendations will be integrated into the New Concept Approval document.