

# **Renewable Energy for Municipalities in Massachusetts**

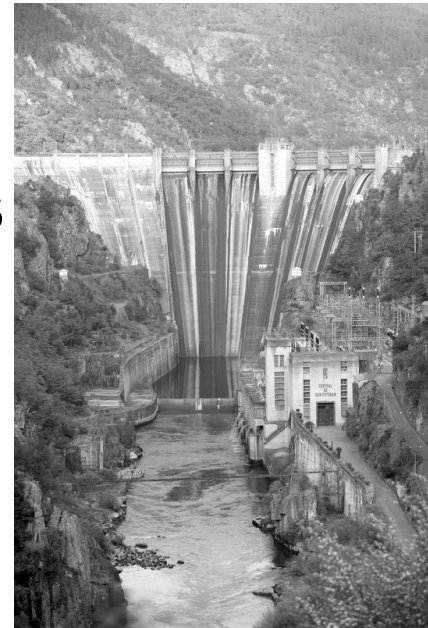
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# What is “Renewable” Energy?

- Resources that are not depleted, or
- Resources that replenish themselves
  - Sun
  - Wind
  - Water
  - Biomass



# What is a REC?

- Renewable Energy Certificate
- A REC represents the following attributes:
  - Fuel source (wind, solar, etc)
  - Environmental attributes associated with each MWH of electricity produced
  - Year that the MWH that produced the REC was generated
- Makes it easy for a buyer to purchase green power and for a seller to maintain an “inventory”

# How to buy Renewable Energy?

- Determine your motivations for purchasing renewable energy
  - Public interests
  - Regulations
  - Community's sustainability goals
- Budget

# Green Products



## ➤ Wind RECs

- National Green-e certified wind RECs



## ➤ Hydro RECs

- National Hydro RECs
- Not Green-e certified



# Municipal Solar

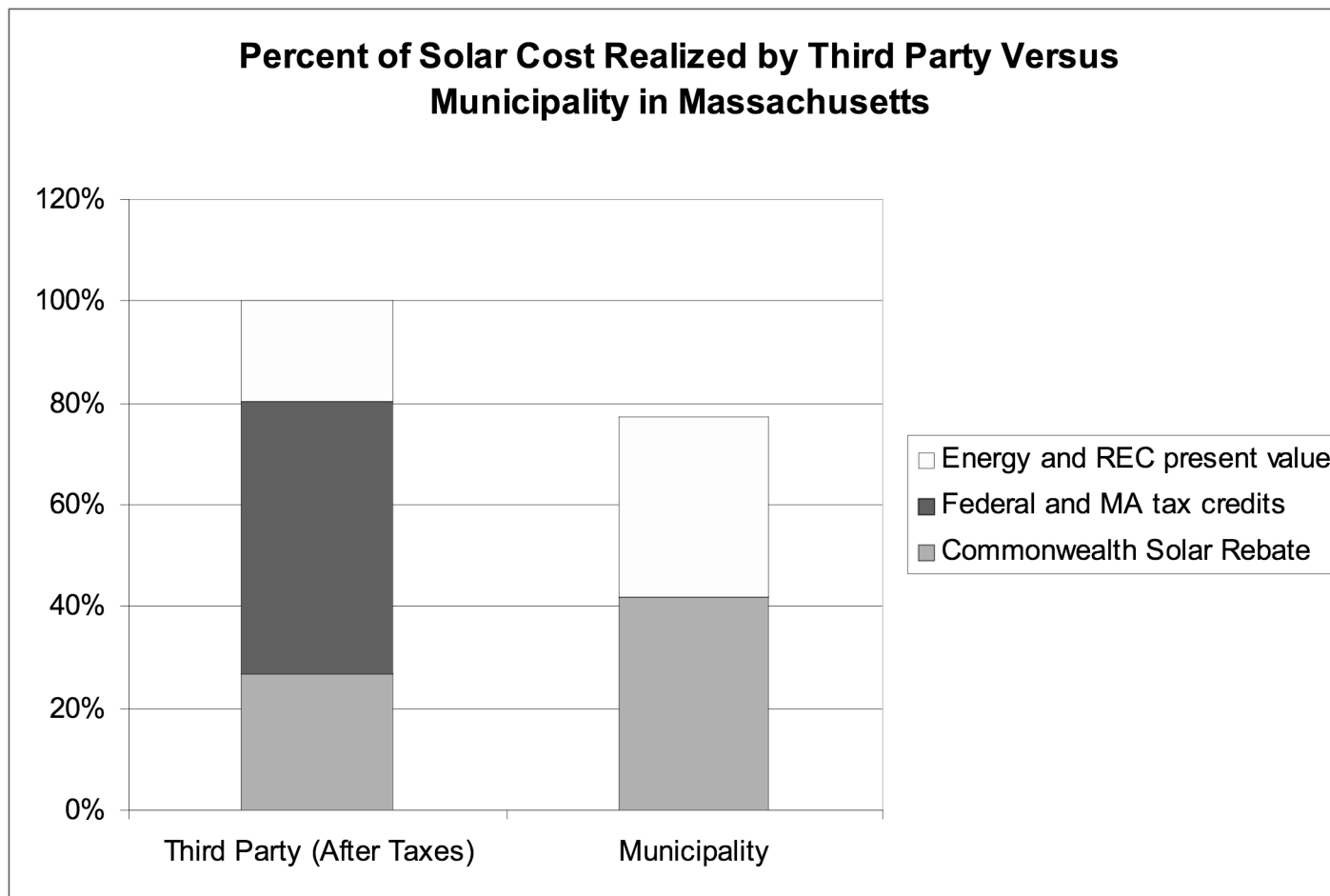
- Solar still requires steep subsidies to be an economically viable source of energy

Incentives	Tax Credits
Commonwealth Solar Grants	Federal Solar Investment Tax Credit – extended through 2016
Renewable Energy Certificates	Federal Accelerated Depreciation
	MA State Investment Tax Credit

- Municipalities are unable to take advantage of tax credits themselves

# Municipal versus Third Party Ownership

Third parties can economically develop solar because we can take advantage of tax credits



# Power Purchase Agreements from 3<sup>rd</sup> Party Owner

- The PPA generally includes:
  - 15 years of “price certain” electricity from the project at rates competitive with current electricity prices;
  - turnkey construction;
  - all interconnection, permitting, and registration requirements;
  - cleaning and maintenance;
  - data acquisition system / system quality assurance;
  - annual performance reports; and
  - 15-year system warranty.

# Solar Installations

- Installation requires:

- at least 80K sq ft of available roof space
- roof aged 5 years or less

- Constellation's recent experience:

- Industrial plant, Dracut, MA – 420 kW
- East Lyme High School, East Lyme, CT – 490 kW
- Community college, southeast MA – 86 kW

# Local and Regional Solar Experience

## ➤ East Lyme High School

- East Lyme, CT – 3300 students
- 20 year PPA
- 2,972 crystalline panels
- 490 kW peak output
- 608,000 kWh annual output
- 22% of total electrical needs
- \$4.0 M system cost
- CCEF Grant of \$1.7 M (\$3,470/kW)
- Fixed PPA price of 12.0 ¢ per kWh
- Total estimated savings: \$1.25 M



**East Lyme High School**

# Solar Project Procurement

- *Don't waste time and money on engineering studies* – developers can present qualifications and an indicative price without an in-depth engineering study
- *Don't specify too much* – developers have various choices of suppliers for high-quality solar equipment, depending on availability and costs
- *The devil is in the details* – fully understand proposed costs over the lifetime of the equipment

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