

Helping Massachusetts Municipalities Create a Cleaner Energy Future



COMMONWEALTH OF MASSACHUSETTS  
 Charles D. Baker, Governor  
 Matthew Beaton, Secretary  
 Dan Burgess, Acting Commissioner

## Massachusetts' Role in Supporting Community Shared Solar

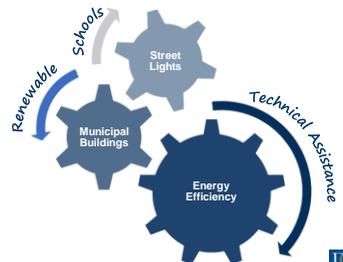
Michael Judge, Associate Manager RPS Program, Renewable Energy Division  
 Emma Krause, Rooftop Solar Challenge Coordinator, Green Communities Division

Webinar  
 February 23, 2015  
 11:00 AM

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## Green Communities Division

The energy hub for *all* Massachusetts cities and towns, not just designated "Green Communities."



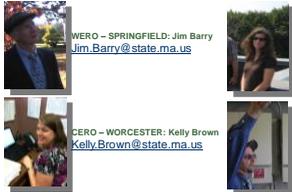

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## Outreach - Regional Coordinators

- Regional Coordinators act as direct liaisons with cities and towns on energy efficiency and renewable energy activities
- Located at each of the DEP Regional Offices:



WERO - SPRINGFIELD: Jim Barry  
[Jim.Barry@state.ma.us](mailto:Jim.Barry@state.ma.us)

NERO - WILMINGTON: Joanne Bissetta  
[Joanne.Bissetta@state.ma.us](mailto:Joanne.Bissetta@state.ma.us)

CERO - WORCESTER: Kelly Brown  
[Kelly.Brown@state.ma.us](mailto:Kelly.Brown@state.ma.us)

SERO - LAKEVILLE: Seth Pickering  
[Seth.Pickering@state.ma.us](mailto:Seth.Pickering@state.ma.us)



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## Green Communities Division - Programs & Resources for Municipalities

- Green Communities Designation and Grant Program
- MassEnergyInsight energy tracking and analysis tool
- Municipal Energy Efficiency Program
- Energy Management Services Technical Assistance
- Clean Energy Results Program (CERP)
- Mass Municipal Energy Group (MMEG)
- Website filled with tools & resources:  
[www.mass.gov/energy/greencommunities](http://www.mass.gov/energy/greencommunities)

Email updates via e-blasts – Sign up by sending an email to:  
[join-ene-greencommunities@listserv.state.ma.us](mailto:join-ene-greencommunities@listserv.state.ma.us)



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## Recording & Presentation

- The webinar is being recorded and will be available on our website in approximately 48 hours at:  
<http://www.mass.gov/eea/energy-utilities-clean-tech/webinars.html>
- Click on the camera icon top right of your screen to save any slides for future reference
- Use the Q & A icon on your screen to type in questions
- The slide presentation will also be posted at:  
<http://www.mass.gov/eea/energy-utilities-clean-tech/webinars.html>
- Websites are also listed at end of presentation



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## Poll Question 1

- Who is in the audience today?
  - Municipalities and other public entities
  - Solar developers
  - Non-profits
  - Homeowners interested in solar



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## Solar Market in MA

- Installed solar capacity grew from 3 MW to over 750 MW since 2007
- Market has been supported by the RPS Solar Carve-Out program
  - Phase I (SREC I) ended system qualifications in April 2014
  - Phase II (SREC II) program was launched in April 2014 to meet the Commonwealth's new goal of 1600 MW by 2020
- SREC II program will sustain market growth
- Focused policy effort to direct market to residential, commercial rooftops, canopies, projects on landfills/brownfields, low-income, community shared solar
- Interest in residential direct ownership and CSS has significantly grown in regions of the Commonwealth

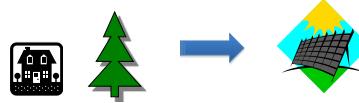


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## What is CSS



- Homeowner want to install solar on his/her roof, but cannot due to site constraints
- CSS allows homeowner to participate in solar at another location and still receive the energy benefits



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## What is CSS: Basic Roles

- **Site Owner** is the owner of the CSS project site
- **CSS Vendor** develops and administers a CSS project
- **Participants** purchase energy or net metering credits generated by PV system or an ownership stake in the project
- **System Owner** owns the PV system



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## Opportunities in MA

- Solar Renewable Energy Credits (SRECs)
- Virtual net metering
- DOER resources
- DOER support



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## Regulatory Definition of Community Shared Solar

- RPS Solar Carve-Out Phase II program defines CSS projects as follows:
  - Community Shared Solar Generation Unit. A solar photovoltaic Generation Unit that provides net metering credits to three or more utility accounts, whose participants have an interest in the production of the Generation Unit or the entity that owns the Generation Unit, in the form of formal ownership, a lease agreement, or a net metering contract. No more than two participants may receive net metering credits in excess of those produced annually by 25 kW of nameplate DC capacity, and the combined share of said participants' capacity shall not exceed 50% of the total capacity of the Generation Unit.
- Provides substantial flexibility on "ownership" role of participants.
- Allows for "anchor" off-takers, but requires many small off-takers as well.



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## Market Sectors and SREC Factors

Market Sector	SREC Factor
A	1.0
B	0.9
C	0.8
Managed Growth	0.7



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## Net Metering

- Net metering is an incentive program designed to encourage customers to install distributed generation
  - Customers offset own electricity usage
  - Customers are compensated for electricity they generate and don't use
- If consumption exceeds generation, customer pays for net kWh consumed
- If generation exceeds consumption, customer receives credit on bill for net excess generation
- Many non-residential and most municipal solar projects depend on the net metering credit incentive, along with SREC revenue
- MA market is non-uniform in the availability and value of net metering credits by utility territory
- Legislature raised net metering caps this summer
- Current net metering caps are set at 5% for public projects and 4% for private projects



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## Eligibility Criteria & Facility Class

- To be eligible for net metering in MA, facilities must:
  - Use some on-site load (can be parasitic)
  - Be located in investor owned utility (IOU) service territory
  - Have a capacity of less than 2 MW AC (10 MW for public facilities)
  - Be a PV, wind, anaerobic digestion, or agricultural generation unit
- There are three classes of net metering facilities in MA
  - Class I ( $\leq 60$  kW)
  - Class II (60 kW – 1 MW)
  - Class III (1 MW – 2 MW)



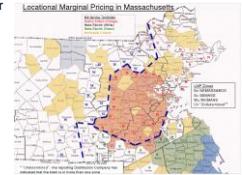
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## Net Metering Credits

- Generation is tracked on a meter in kWh, but credits are expressed as a monetary value
  - Excess generation (kWh) results in net metering credits
  - Net metering credit = \$ credit
- Credits offset charges on electricity bills
- Credits never expire
- Credits can be "cashed-out" at the discretion of the distribution company, but rarely are



Map of ISO-NE Load Zones



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## Net Metering Credits (cont.)

Credit Calculation	Units	Class I	Class II	Class III	Neighborhood Net Metering
Customer Charge	\$/month				
Delivery					
Distribution Charge	c/kWh	✓	✓	✓	✓
Transmission Charge	c/kWh	✓	✓	✓	✓
Transition Charge	c/kWh	✓	✓	✓	✓
System Benefit Charge					
Efficiency Charge	c/kWh				
Renewables Charge	c/kWh				
Supply					
Basic Service	c/kWh	✓	✓	✓	✓
Generation					
Average Monthly Clearing Price at the ISO-NE	c/kWh	✓			

\* Only applies to class III municipalities and governmental entities



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## Credit Allocation

- Credits may be allocated to accounts located in same utility service territory and ISO-NE load zone
- Credits are allocated on a percentage basis
- Can be allocated to as many accounts as the customer wishes
- Allocation is done via Schedule Z form
- Can be changed twice annually
- Payment for the credits is negotiated between the credit owner and credit off taker via a Net Metering Credit Purchase Agreement



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## Credit Allocation (cont.)



Allocation only in same:  
 (1) Distribution company service territory, and  
 (2) ISO-NE load zone



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## Public Lease Model

- Public entity leases property to a private entity for the installation of the CSS project
- Report recommends private entity as system owner over public entity
- Private entity owns and operates the system
- Municipality (public entity) drives the process
- Participants benefit from net metering credits generated by the system



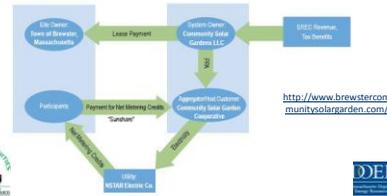
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## Brewster Community Solar Garden Cooperative Inc.

- My Generation Energy (MGE), organized, built, and now leases the Brewster Community Solar Garden Cooperative, Inc. to members
- The cooperative serves as aggregator of 346 kW system
- 20-year lease agreement with Brewster Community Solar Garden LLC (the system owner entity)
- Cooperative members receive the benefits of net metering credits



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## Poll Question 2

- If you are considering participating in or putting together a CSS project, which model is of more interest?
  - Participant ownership model
  - Public lease model
  - External entity/developer
  - A combination of both
  - Not sure – need more information



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## Solar Loan Program

- The Solar Loan program will establish a loan product that
  - is readily accessible for installers, customers and lenders
  - is competitive with alternatives (e.g. PPA/lease, cash, etc.) from customer perspective
  - creates an affordable solution and lender support to serve homeowners, moderate income homeowners, and small owner participants in community shared solar projects

<http://www.masscec.com/programs/mass-solar-loan>

<http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/residential-solar-loan-program.html>



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## Borrower Eligibility – Community Shared Solar

- Net metering participant in CSS, as defined in SREC-II
- Net metering participant of 25 kW or less, with ownership position in the solar project

### Key Criteria:

- Limited to participants with direct ownership stake in the project or ownership through an LLC, cooperative, condo association, or other collaboration
- CSS participant need not be a homeowner, but must meet lender underwriting criteria



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## Credit Enhancement Provisions

Eligible Loan Terms	Interest Rate Buy-Down (IRB)	Loan Loss Reserve (LLR)	Moderate Income Loan Support (MILS)
<p>Lender must offer term of 10 years, other terms may also be offered. All terms get same credit enhancement.</p> <p>Maximum Interest Rate 6% (pegged to WSJ Prime + 2.75%).</p>	<p><b>For All Borrowers</b></p> <p>3% IRB available until \$5M of IRB expended</p> <p>DOER intends to reduce IRB for subsequent funding blocks based on program performance</p> <p>DOER will provide transparency as to IRB spending and availability</p>	<p><b>680 &lt; FICO &lt; 720</b></p> <p>10% LLR for 80% remaining principal</p> <p><b>FICO ≤ 680</b></p> <p>20% LLR for 90% remaining principal</p> <p>Separate LLR accounting established for each lender. Each lender will be pre-funded with \$50,000</p>	<p><b>For Borrowers with:</b></p> <p>≤ 120% and &gt; 100% of MA median household income \$0.80/watt, up to 10 kW</p> <p>≤ 100% of MA median household income \$1.20/watt, up to 10 kW</p> <p>Loan support down-payment to lender at time of IRB payment</p> <p>IRB based on full loan principal not MILS reduced loan amount</p> <p>subject to change due to loan volume and allocated funds</p>



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## Model Allocation of Program Funds

- DOER has allocated \$30 million to support the credit enhancement
- Modeling, with conservative assumptions, demonstrates that the DOER funds may support over 5,000 loans

IRB Assumption	Loan Volume	TOTAL SUBSIDY	TOTAL LOANS
IRB Block 1 - 3%	1855	\$10,680,343	\$41,733,131
*IRB Block 2 - 2%	1891	\$9,290,789	\$42,544,571
*IRB Block 3 - 1%	1900	\$7,628,868	\$42,739,291
<b>Totals</b>	<b>5645</b>	<b>\$27,600,000</b>	<b>\$127,016,992</b>
<b>Leverage</b>			<b>4.6</b>

\*only Block 1 IRB of 3% is confirmed



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## Role of the MA Clean Energy Center

DOER has partnered with Massachusetts Clean Energy Center (MassCEC). As the Central Administrator for the solar loan program, MassCEC will:

- Qualify and enroll lenders
- Establish and maintain loan program website with public information, program forms/documents, and listing of eligible installers, lenders and loan offerings
- Establish and maintain program database
- Provide income verification for moderate income homeowners
- Provide quarterly DOER and public reports on loan program activity and recommendations for improvement
- Contract a Fiscal Agent who will:
  - Register each loan
  - Distribute interest rate buy-down
  - Distribute moderate income loan support



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## Next Steps and Anticipated Timeframe

- DOER and MassCEC to provide lender agreement to lending community for two-week review period before finalizing (spring 2015)
- MassCEC to contract for web platform developer, fiscal agent, and other program services (spring 2015)
- MassCEC to stage construction of program website (spring 2015)
- Solicit lenders to program (spring 2015 and ongoing)
- Outreach program to installers and establish eligible installer list (spring 2015 and ongoing)
- Program to start providing loans (by late spring/early summer 2015)



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## Rooftop Solar Challenge Round II

- Under the second round of Rooftop Solar Challenge (RSC), DOER is working to continue to reduce soft costs as well as coordinate with other New England states to learn and disseminate best practices
- In Round II, DOER activities include:
  - Creating outreach materials for CSS guidelines and recommendations developed in RSC I
  - Municipal partners Boston and Winchester are using their grant funding to explore community shared solar opportunities
  - Municipal partner Cambridge is using its grant funding to develop a guide to put solar arrays on condominiums



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## Independent CSS Activities across MA

- CSS project development in towns of Harvard, Brewster, Rehoboth, etc.
- Additional development underway across the Commonwealth
- Center for EcoTechnology grant from the John Merck Fund to demonstrate, evaluate and replicate CSS as viable option to help meet the state's ambitious renewable energy goals.
  - "In Our Backyard" grant targets north Berkshire County residents and small businesses as a companion/follow-up to Solarize MA



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## Green Communities Resources

- The Green Communities Division at DOER offers Owners Agent Technical Assistance grants for assessment and development of public or private community shared solar systems
- GC regional coordinators
- Harvard Solar Garden : [info@harvardsolar.org](mailto:info@harvardsolar.org)



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## Contact Information

Massachusetts Department of Energy Resources

[www.mass.gov/doer](http://www.mass.gov/doer)

### RPS and Solar Carve-Out programs

<http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/rps-aps/>

### Green Communities Division

<http://www.mass.gov/eea/energy-utilities-clean-tech/green-communities/>

### DOE SunShot Rooftop Solar Challenge - MA Coordinator

Emma Krause [emma.krause@state.ma.us](mailto:emma.krause@state.ma.us)

### RPS Solar Carve-Out Program Manager

Michael Judge [michael.judge@state.ma.us](mailto:michael.judge@state.ma.us)

### Renewable Energy Division Director

Dwayne Breger [dwayne.breger@state.ma.us](mailto:dwayne.breger@state.ma.us)



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