

Community Shared Solar Models in Massachusetts

Solar Webinar III

September 11, 2015

2 – 3pm EST



MAPC Solar Webinar Series

- Webinar I: Solar Permitting & Bylaws
 - March 30, 2015; [video recording](#) (40 minutes).
- Webinar II: Solar Outreach Program Models
 - June 2015; [presentation slides](#).
- Webinar III: Community Shared Solar (CSS)
 - Today; webinar will be recorded
- Webinar IV: Managing Solar Arrays
 - September 30; details TBD.

Agenda

1. Brief Introduction to MAPC

- Ani Krishnan

2. Regulatory and Policy Context for CSS in Massachusetts

- Emma Krause, Department of Energy Resources (DOER)

3. Commercial CSS Models

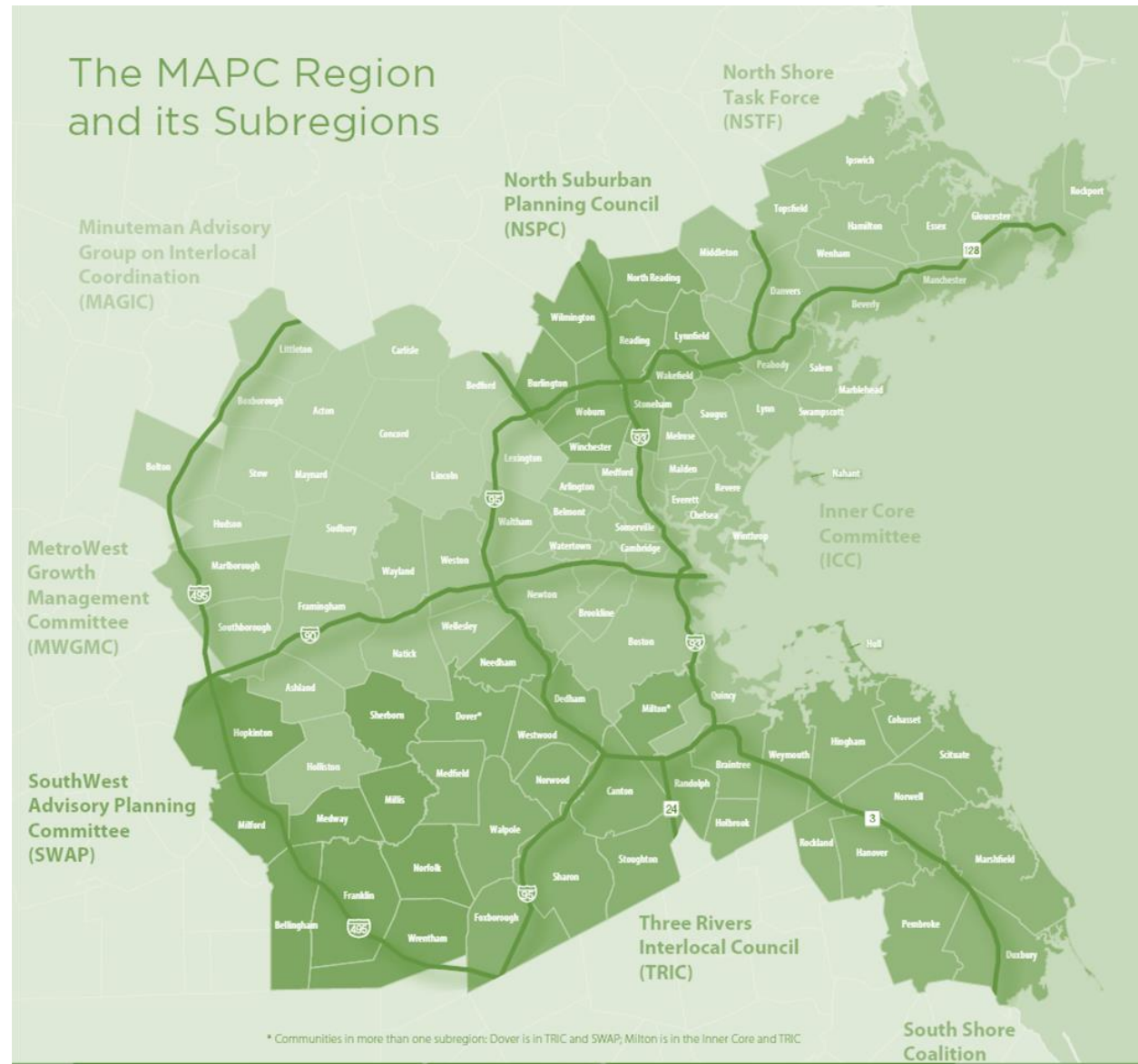
- a. Hannah Masterjohn, Clean Energy Collective (CEC)
- b. Lynn Benander, Co-op Power

4. Q&A

MAPC: About Us

MAPC is the regional planning agency serving the 101 cities and towns in the Greater Boston Region.

www.mapc.org



Clean Energy Division

1. Regional Energy Projects

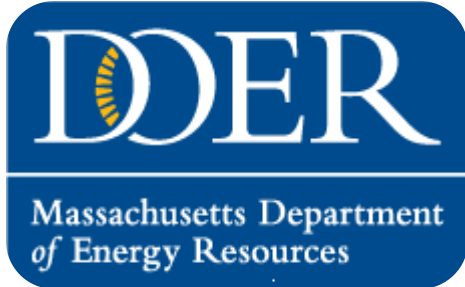
- ESCO Procurements
- Regional Solar Initiative
- LED Streetlight Purchasing & Retrofit Program

2. Local Energy Action Program

- Community energy baselining
- Outreach, visioning, and program implementation
- Connection to utilities and incentives

3. Energy Resources & Technical Assistance

- Community Electricity Aggregation (CEA)
- Resiliency and preparedness
- Green Communities designation support
- Grant writing & reporting
- Clean Energy Toolkit



Community Shared Solar Opportunities in Massachusetts

**Emma Krause, Rooftop Solar
Challenge Coordinator, DOER**

MA CSS Policy – SREC's

Market Sector		SREC Factor
A	<ol style="list-style-type: none">1. Generation Units with a capacity ≤ 25 kW2. Solar Canopies3. Emergency Power Generation Units4. Community Shared Solar Generation Units5. Low or moderate income housing units	1.0

- 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.



Massachusetts Department
of Energy Resources

MA CSS Policy – 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 last summer
- Current net metering caps are set at 5% for public projects and 4% for private projects
- 17 member task force established by the legislature in 2014
- Final report delivered to the legislature on May 1st
- The legislature currently has the net metering taskforce report and several bills before it to address the net metering cap issue

DOER Resources and Programs

- Green communities META grants for municipalities
- Mass Solar Loan program
- Roof top Solar Challenge
 - RSC I - Portion of grant funding used to hire consultants to develop a review and recommendations as well as an implementation guide for CSS
 - <http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/community-shared-solar.html>
 - RSC II – 3 different municipal projects
- Green Communities CSS webinar
 - <http://www.mass.gov/eea/energy-utilities-clean-tech/webinar-future-and-archive.html>

Thank You

Emma Krause

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Community Shared Solar: Opportunities for MA Local Gov'ts

9/11/15



► **Nation's leading community solar provider**

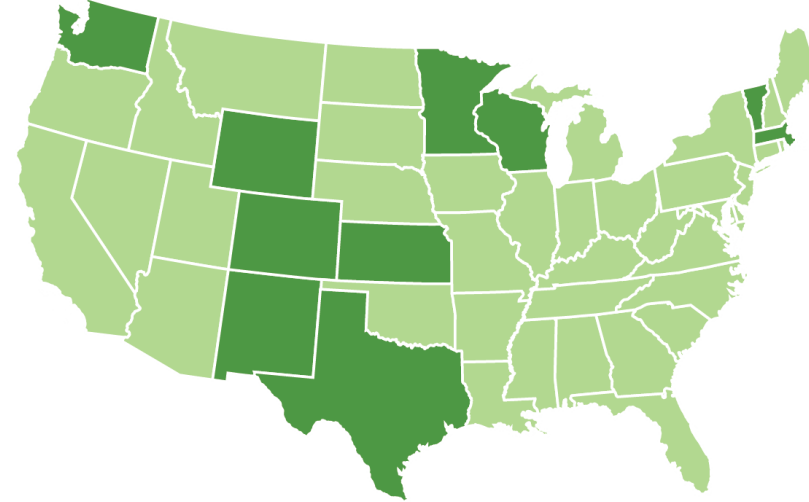
- Projects in 11 states with 25 utilities
- Built, own & operate 50+ community solar facilities
- Community Solar Platform - Software as a Service to support utilities' and developers' programs

► **Focused solely on community-owned solar**

- Built the nation's first and largest community-owned solar facilities
- More community solar built than all other vendors combined (60%+ of all systems)
- Worldwide recognition for having the best program available

► **Partners in local communities to provide utility and consumer value**

- Worked with utilities from small rural cooperatives to nationwide IOUs
- CEC can fully fund, build, and administer projects – or provide tools
- Provide significant investment in the community and long-term local savings





The 996.6 kW Rehoboth, MA - Community Solar Array

Local Gov'ts as Customers



► Purchase rights to bill credits

- Long term contract

► Cash flow positive from Day 1

- No upfront cost
- Monthly payments
- Monthly utility bill savings exceed monthly payments (think \$100k's+ of savings)

► Developer assumes risk

- Responsible for maintaining project, ensuring production, you only pay for bill credits you already received

► Get it while the getting's good



▶ Host project on local gov't land

- Lease revenue
- Positive use for marginal/brownfield sites

▶ Landfills

▶ Water treatment plants

▶ Airports

- Experience in working through FAA certification to build near small airports

▶ Always looking for similar sites

- Cheap land is key to community solar, and it provides a good way of flipping the narrative for a site that formerly caused negative impacts



► Help market program

- Lend local gov't credibility & channels to help market community solar program
- Maximize participation in Solarize programs
- Direct interested customers who can't do rooftop do community solar
- Value in lead acquisition can = discount

► Innovative planning/siting permitting

- Upfront coordination can result in lower cost, better integrated projects
- Example: Fort Collins project on infill site – former pickle factory. Municipal utility allowed extensive coordination with planning and zoning committees



Benefits to Local Governments



► Revenue

- Significant property tax revenue – often through PILOTs
- Permitting fees

► Jobs

- We partner with local contractors to build and maintain all our facilities

► Community Pride

- Affordable clean power is being generated right in your community
- Participating customers, community members, school groups can all view project

► Sustainability & Environment

- Lower greenhouse gas emissions
- Cleaner air
- Far less water consumption than other energy sources



► Need to raise Net Metering caps for community solar projects to go forward

- Community shared solar is dependent on the mechanism of net metering to provide bill credits to participating customers
- Net metering caps have been hit in National Grid territory. Close to full in Nstar / Eversource territory.
- Senate has passed legislation to raise net metering caps
- Governor has introduced legislation to raise net metering caps – H.3724
- House needs to pass legislation before Thanksgiving in order to prevent significant disruption in state solar market





Thank you!



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CO-OP

POWER

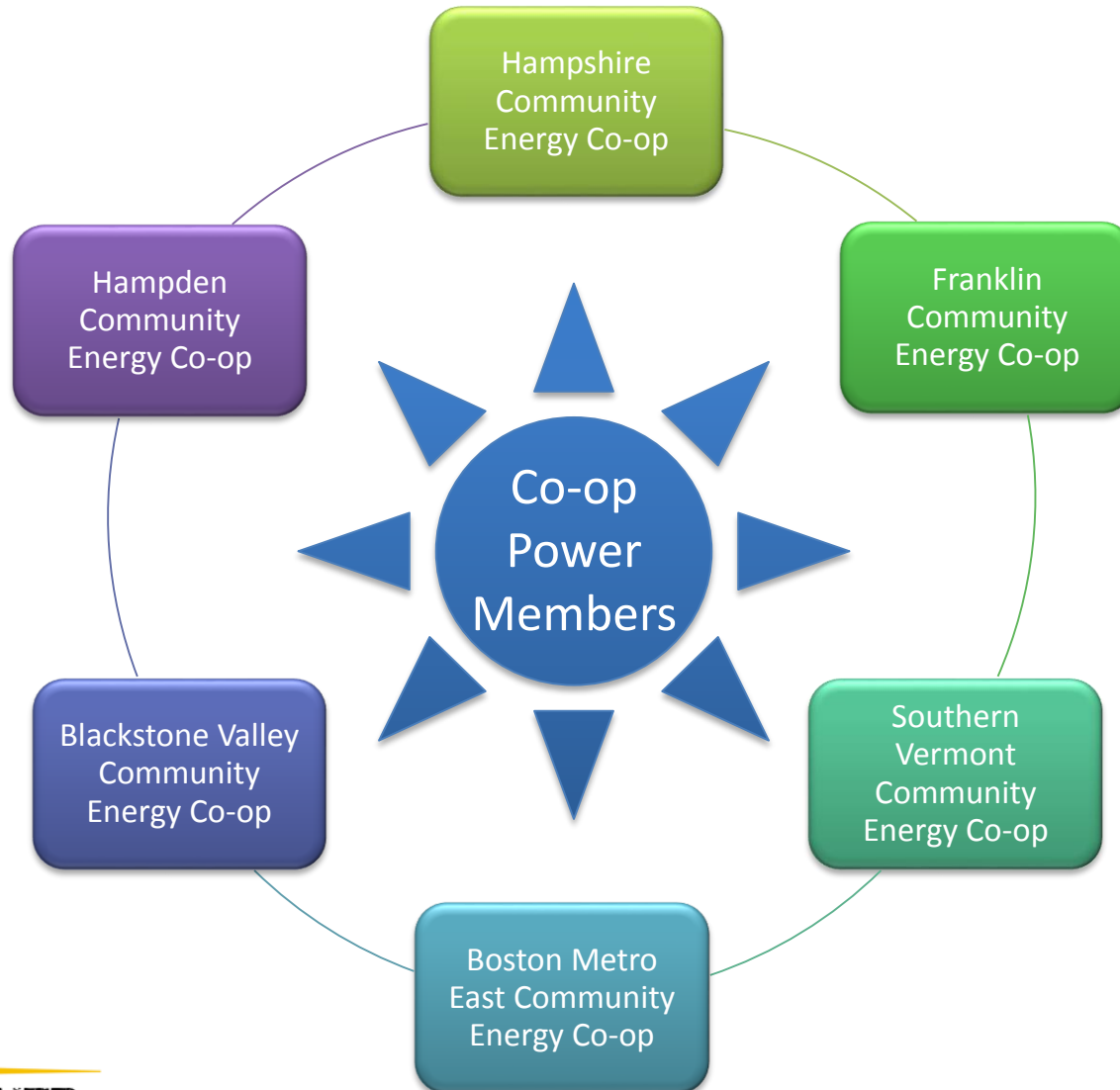
building community-owned sustainable energy

Community Shared Solar

9.11.2015



Co-op Power is a network of local communities





ACCOMPLISHMENTS

**22 Green Enterprises,
200 Good Green Jobs and
a growing multi-class,
multi-race network
of 7,000 people across
Massachusetts and
Vermont**

- 2004: Co-op Power Community Based Business Development Initiative launched
- 2005 to 2015: Six Solar Installation businesses started
- 2008: Co-op Power Solar Vendor Network established (marketing for 15 installers)
- 2008: Co-op Power Solar Hot Water System Installation Program launched (>100 systems installed)
- 2009: Green Job Training Program launched
- 2009: Co-op Power Member Loan Program launched (\$2 million)
- 2009: Co-op Power Residential Energy Efficiency Business launched (\$1 million/year)
- 2009: Energía launched (\$3 million/year energy efficiency business in Holyoke)



ACCOMPLISHMENTS

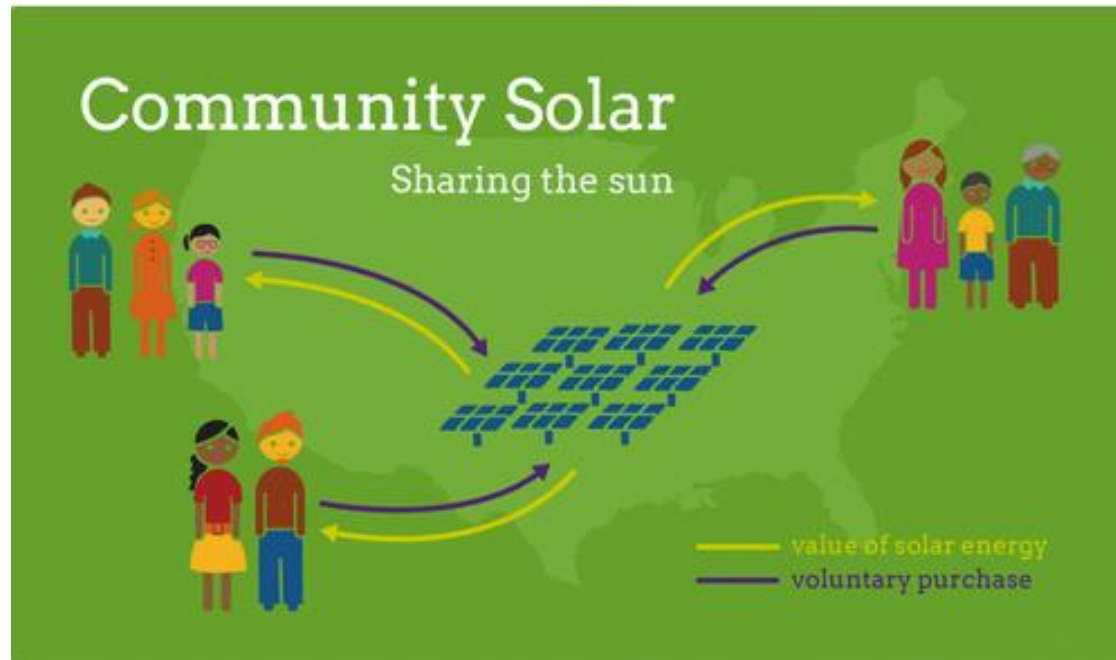
**22 Green Enterprises,
200 Good Green Jobs and
a growing multi-class,
multi-year network
of 7,000 people across
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Vermont**

- 2010: Thermal window insert fabrication business supported
- 2011: Two green electricians expansion supported
- 2012: Co-op Power Boston Residential Energy Efficiency Services launched (\$700,000/year)
- 2012: Brattleboro Food Co-op Solar System Installed (\$30,000/year)
- 2013: Recycled Vegetable Oil Collection (250 restaurants)
- 2015: Northeast Biodiesel (\$5.2 million/year biodiesel plant in Greenfield)
- 2015: Biodiesel Fuel Pump Station Network launched
- 2015: Community Shared Solar LLCs launching now

Sharing the Sun

What is Community Shared Solar?

A solar-electric system that provides electricity (or virtual net metering credits) to electric meters on more than one building.



Community Shared Solar

Why is it useful for everybody?

- 1) Reduces electricity costs
- 2) Easier access to solar
- 3) Smaller investment
- 4) Environmental peace of mind
- 5) Available to everyone even if you don't own a home, don't have a strong new roof, don't have enough sun, don't have enough money, or can't use the tax credits



Opportunities

Tremendous Market Interest

Attractive Government Incentives

- 1) Solar Loan Program
- 2) Solar Renewable Energy Credits (SRECs)
- 3) Virtual Net Metering Credits (VNMCs)
- 4) Power Purchase Agreement (PPA)
- 5) Investment Tax Credit (ITC: 30%)
- 6) 5-Year MACRS Depreciation

National Solar Installation Costs Decrease

Rising Electric Rates Making Solar More Competitive



Development Plan

- Plan: 10 projects before Dec. 31, 2016 when ITC legislation expires
- 4 Site Visits & Technical Reviews Completed
- 17 projects under development across Massachusetts and Vermont with interest from other communities in New England

Pipeline of Community Shared Solar Projects



Community Shared Solar Overview

# of Projects	10	
MW's	6	
Cost	\$20 million	
ITC Investor Equity	\$8.6 million	42.5%
ITC IRR	10%	
Loans (SRECs)	\$4.4 million	22.1%
Loans (VNMCs)	\$7 million	35.0%
Sponsor Equity	\$86,123	0.4%



What We Need To Get There

1. Community Partners



2. Design/Build Contractors



3. Financing



4. Tax Equity Investors



Single Project Benefits

Eliminate



**425 tons of
carbon
each year**

Enable



**200-400
families to
go solar**

Produce



**771,000
KWh of
clean
electricity**

Benefits to Consumers

Consumers pay \$2,000 for the Net Metering Credits generated by 1 kilowatt of the array's production for 25 years

Co-op Power Model	Owning Your Own PV System
\$2.00 per watt	\$3.75 to \$4.25 per watt
Includes payment for inverter replacement Year 12	Plus payment for inverter Replacement in Year 12
Tax Credit and SREC's are used to pay other investors and lenders	30% tax credit and SREC's go to the Homeowner
For Renters and Homeowners	For Homeowners
Local Control and Local Ownership after 5-7 years	Local Ownership and Control

Both are likely eligible for the MA Solar Loan Program (3% or less interest; 10 years; 20-30% reduction in cost for people who are 100% to 120% of the state's median income.



Benefits to Municipalities

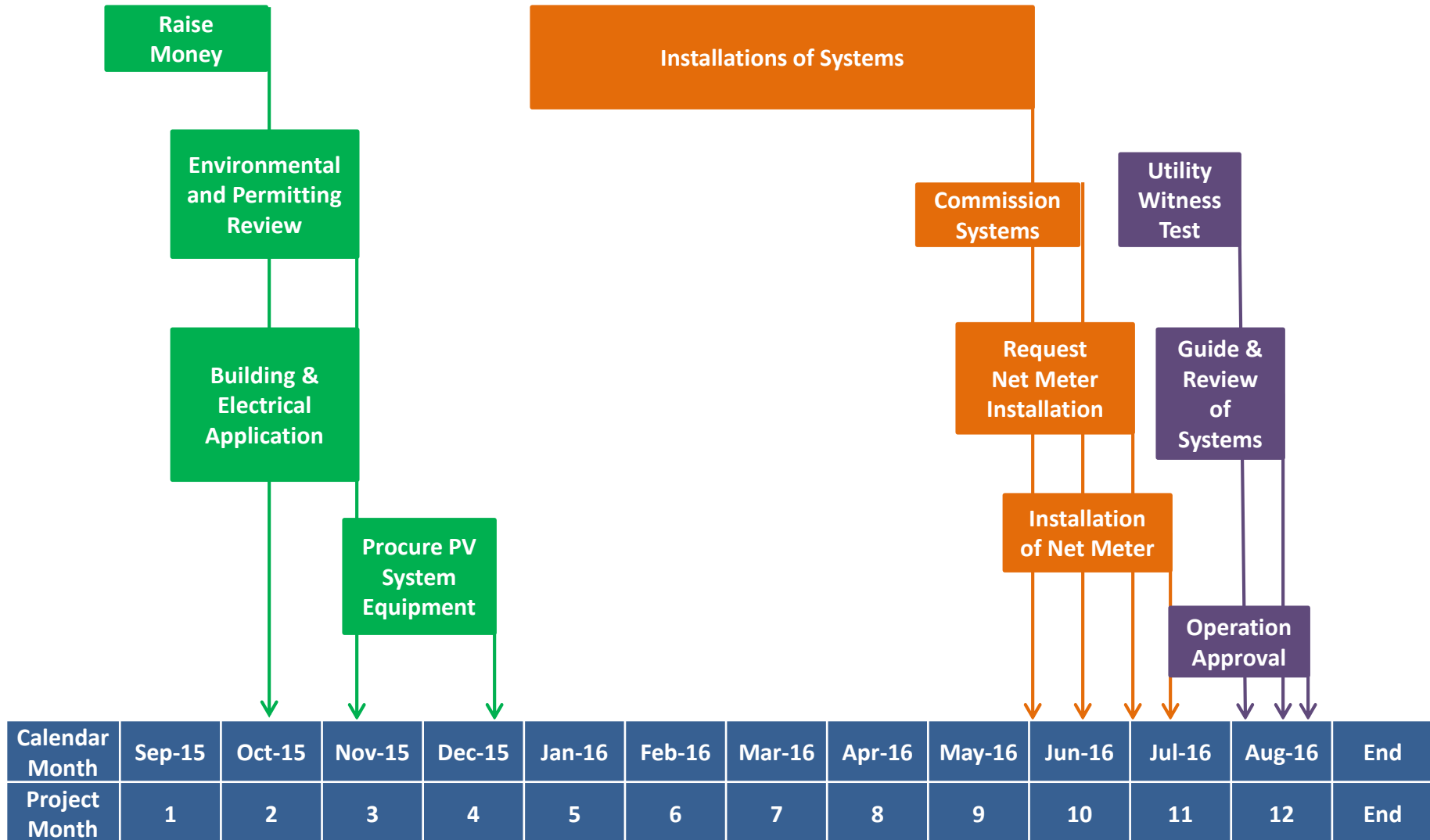
Municipalities can sign up for as many kilowatts of production as you choose for \$2,000 for the Net Metering Credits generated by each kilowatt of the array's production for 25 years.

Co-op Power Model	Owning Your Own PV System
\$2.00 per watt	\$2.75 to \$3.25 per watt
Includes payment for inverter replacement Year 12	Plus payment for inverter Replacement in Year 12
Tax Credit and SREC's are used to pay other investors and lenders	SREC's can go to the Municipality
Local Control and Local Ownership of Project after 5-7 years	Local Ownership and Control of Project
Local Economic Development	Local Economic Development

Municipalities can lease land for use as a community shared solar site or support development of a community shared solar program to benefit people in their communities.



Project Timeline



CO-OP

POWER

Project 1: Greenfield Industrial Park



Located on 23 acres owned
by Northeast Biodiesel

600 kW generation

Northeast Biodiesel will use
200 kW

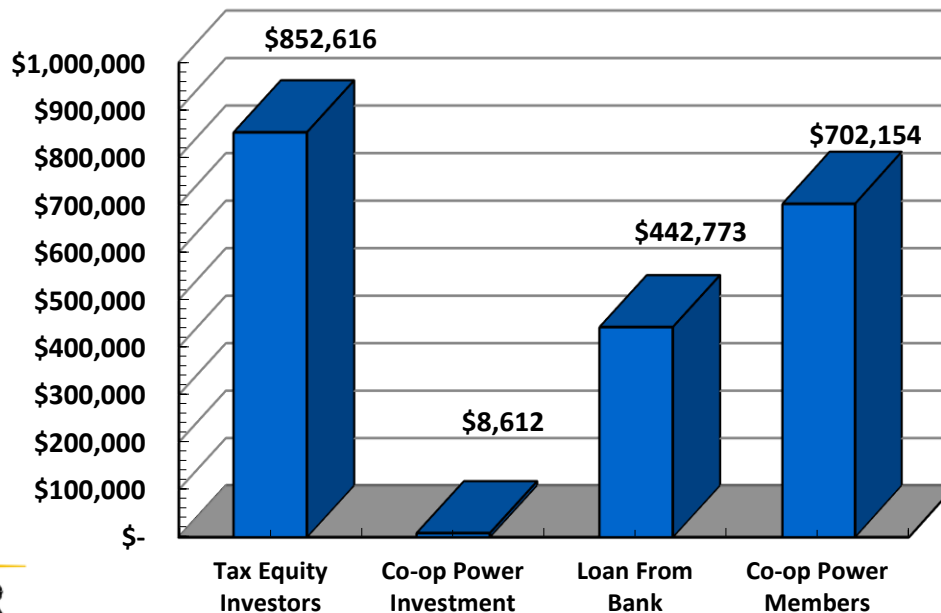


200 households will use the
other 400 kW – with 40% of
those households being
families on fuel assistance
with shares purchased with
CAP agency grant funds

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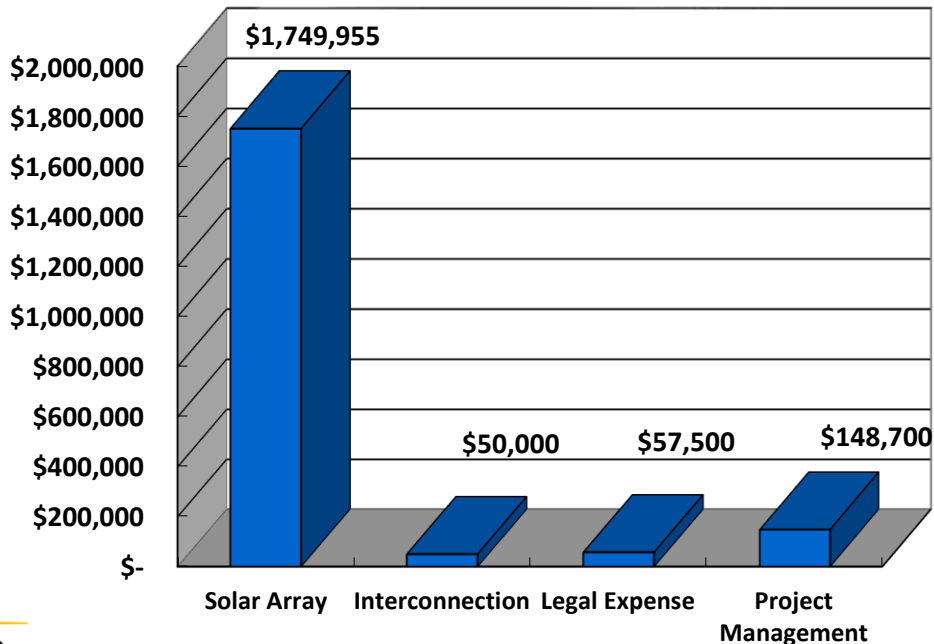
Solar LLC Funding Sources

Sources	\$	% of total Funds
Tax Equity Investor	\$852,616	42.5%
Co-op Power Loan (VNMC secured)	\$702,154	35%
Bank Loan (SREC secured)	\$442,773	22.1%
Co-op Power Investment	\$8,612	0.4%
Total	\$2,006,155	



Solar LLC Start Up Costs

	Cost
Solar Array, construction permitting etc.	\$1,749,955
Interconnection	\$50,000
Legal Expenses	\$57,500
Project Management (until Operation)	\$148,700
Total Startup Cost	\$2,006,155



Conclusion

Co-op Power's Community Shared Solar...

- Is great for Consumers, especially people with Limited Resources
- Is a Successful Enterprise
- Is Good for the Environment
- Brings valuable Economic Benefits to communities across our region

Community Shared Solar needs your support in the legislature. We need to raise Net Metering Caps and keep Virtual Net Metering.





Thank you for your time!
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Q&A

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