

SOLAR OWNERSHIP MATTERS BUT IT CAN BE COMPLICATED

Becket Energy Committee
Informational Session
Becket Town Hall

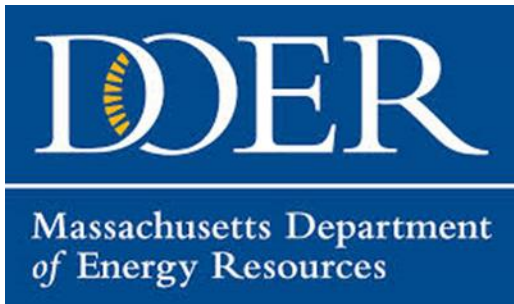
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UMass Clean Energy Extension



Established in 2015, with support from MA Department of Energy Resources, to help meet the state's energy and climate goals.

Expanded UMass extension services under the Center for Agriculture, Food and the Environment (CAFE).



What we do:

- Applied Research
- Outreach and Technical Support
- Education/Mentoring/Workforce Development

We are a small staff, but leverage collaboration with University resources.



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Activities with Becket

Provided recommendations in 2018 to Town Administrator on replacing oil fired boiler in Town Hall

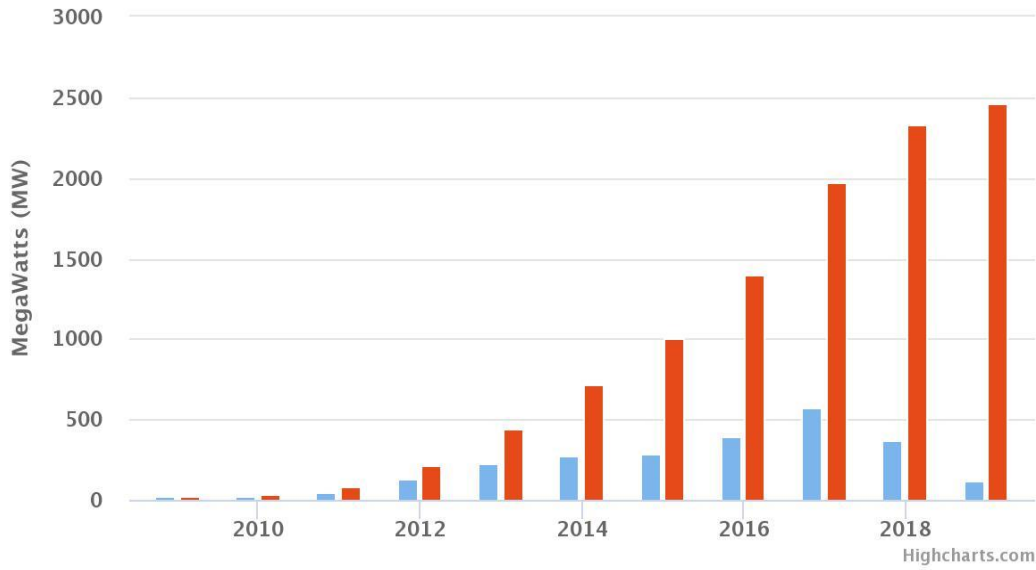
Participating with CEE/DOER request to monitor municipal vehicles with Telematics system to identify opportunities for fuel reductions

Solar Growth in Massachusetts

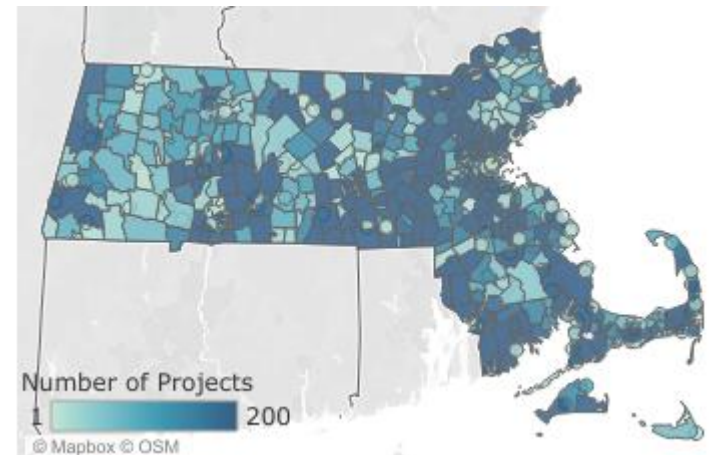
Installed Solar Capacity in Massachusetts

Pre-2009-2019

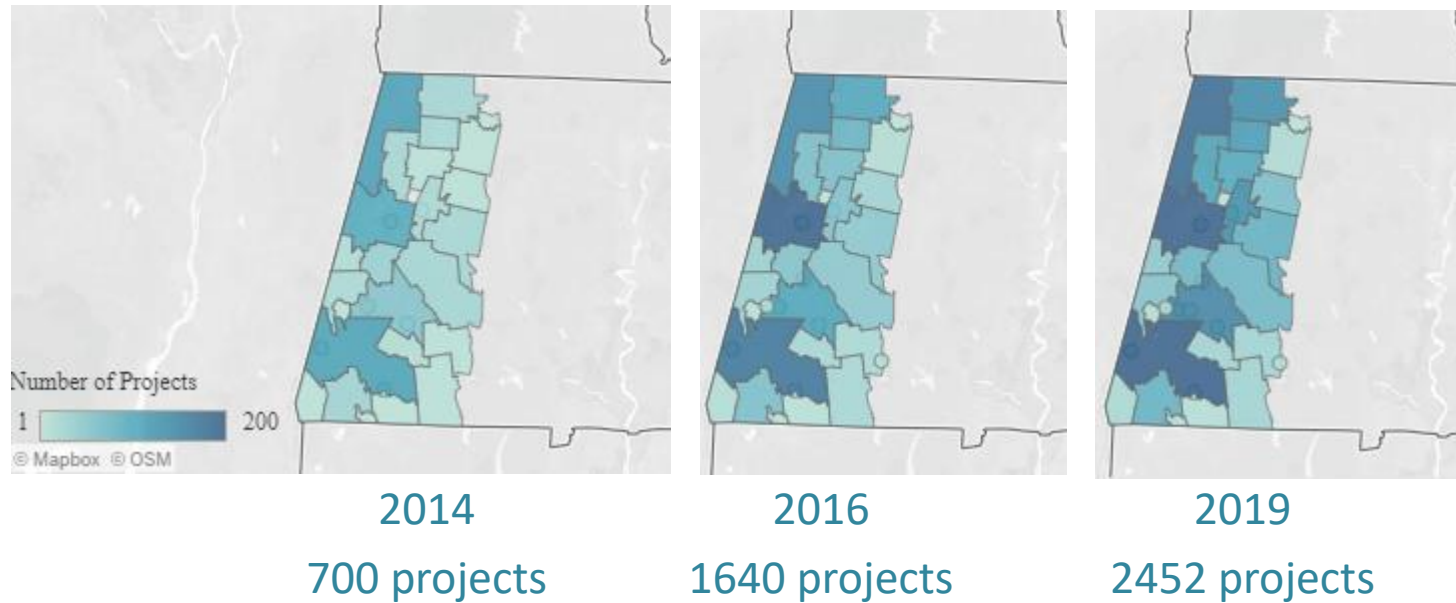
● Annual Capacity Installed ● Cumulative Capacity



90,000 solar installations distributed across MA (2019)



Solar Growth the Berkshires



Installer Snapshot:

Installer	Median \$/watt	Median Size (kW)	Number of Projec..
Grand Total	\$4.28	7.1	2,452
SolarCity Corporat..	\$5.15	6.8	562
Real Goods Solar (..	\$4.08	6.6	352
Trinity Solar	\$3.67	7.3	251
Direct Energy Sola..	\$3.90	8.0	131
Berkshire Photovol..	\$6.83	4.2	131
Vivint Solar Devel..	\$4.36	6.5	98
RoofDiagnostics	\$3.44	6.7	94
Greenergy Solar St..	\$3.90	7.7	71
New England Solar..	\$3.99	7.7	61

Top 5 installers account for 60% of market, with local BPVS competing amongst national installers

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Solar Ownership/Financing Models

Third Party Ownership

Homeowner sees no “out-of-pocket” cost for system installation or maintenance.

Solar company installs and maintains project (often financed/owned by national equity investment partners). Solar owner reaps benefits of energy and SRECs/RECs sales, and federal tax credits.

Homeowner benefits through negotiated lease or discount on energy costs through power purchase agreement (PPA).

Direct Ownership

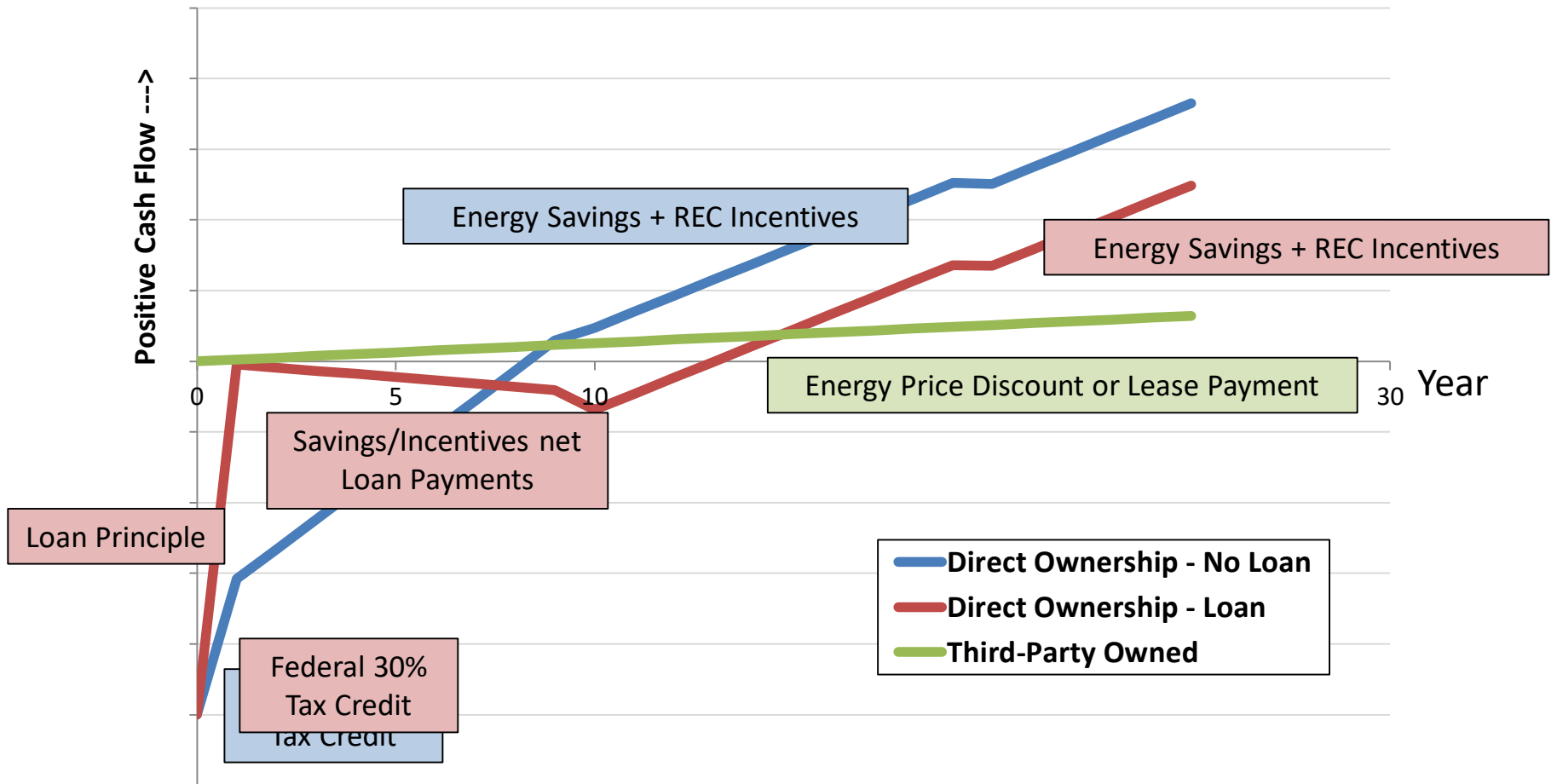
Homeowner pays for project installation, either with available cash or through a loan. Loan can partially or fully eliminate “out-of-pocket” cost to homeowner.

Homeowner reaps all benefits of full energy cost savings, SRECs/RECs, tax credits, net metering; and re-pays loan.

Homeowner responsible for maintenance, inverter replacement, and performance/price risk.

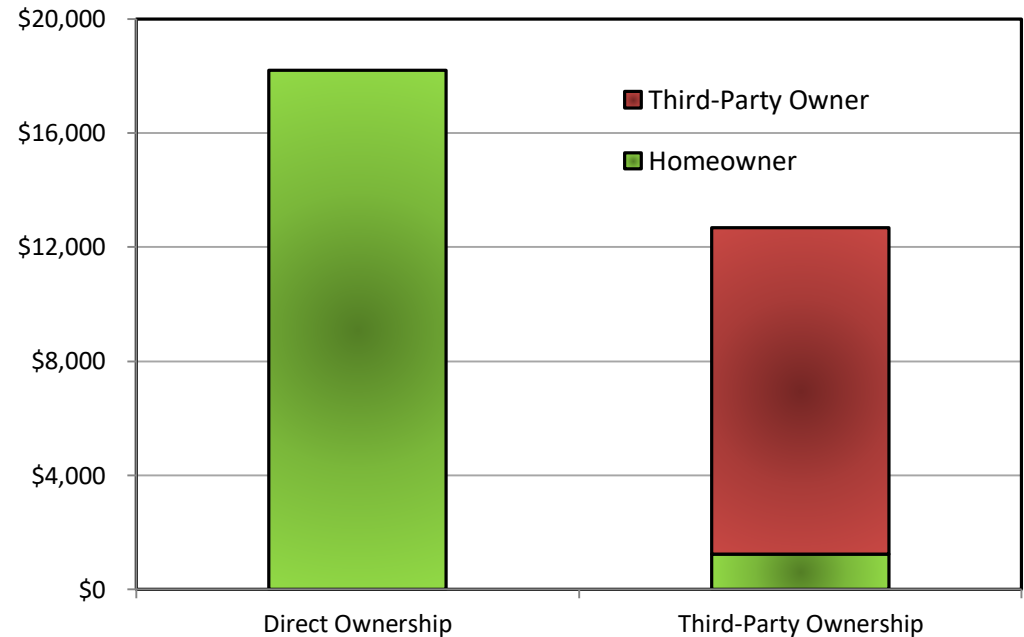


Basic Cumulative Cash Flow Comparison: Direct vs. Third-Party Ownership



Local Economic Impact

- How does ownership impact state/local economy?
- DOER commissioned an analysis* as part of SREC II program development.
- Analysis considers:
 - Local solar company providing direct-owned residential unit vs national solar company providing third-party owned system.
 - Propensity of local solar company to procure more components/labor locally.
 - Revenues/income from tax credits and SRECs
 - Indirect spending from greater revenues staying in state

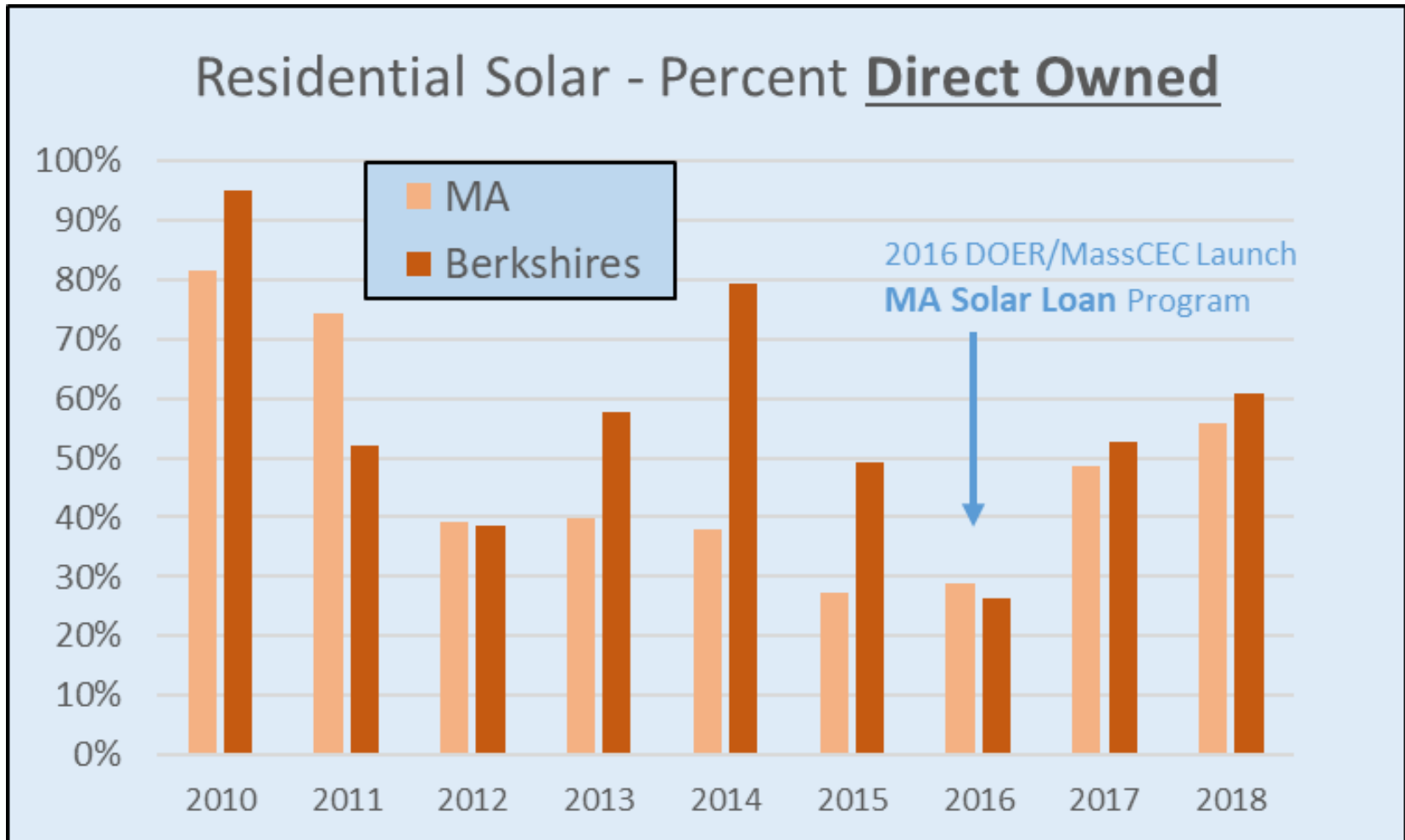


Representative Findings Project Lifetime Net Benefits

* *Comparative Regional Economic Impacts of Solar Ownership/Financing Alternatives*, September 2013, <http://www.mass.gov/eea/docs/doer/rps-aps/solar-consultants-report-final-task-4-093013.pdf>

Residential Solar Market

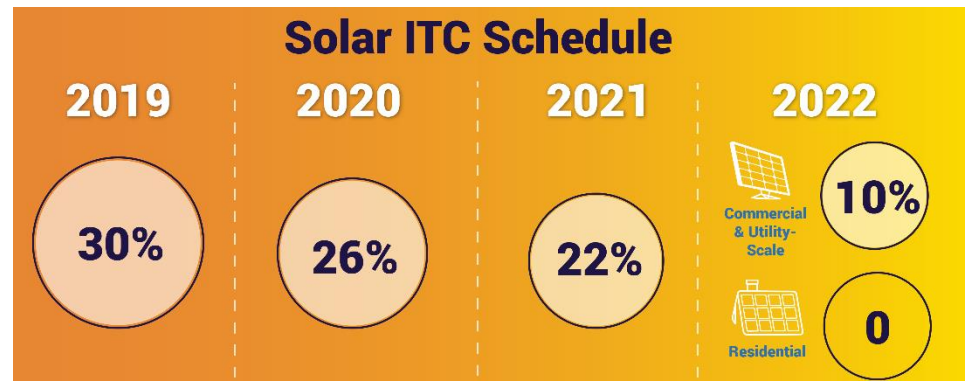
Direct vs. Third-Party Ownership



Some Challenges to Direct Ownership

Federal Investment Tax Credit (ITC)

- 30% of project cost returned from Federal Government through reduction in tax payments. Economically difficult to leave this incentive on the table.
- But, you can't utilize ITC if you don't have sufficient tax liability. Sorry ...
 - Local Government, Non-Profits, Faith-Based Organizations, Academia, Low Income ...
- ITC is scheduled to diminish to 10%/0% in 2022, so playing field will be more even, but tougher.



Gaining Ownership Benefits for Non-Taxable Entities

- Financial “Flip Model” brings in tax equity financing to take advantage of Federal ITC and other tax allowances.
- Equity partner owns project for ~7 years and provides electricity discount to non-taxed project participants.
- Equity partner then sells project to non-taxed project participants (or an agent LLC/non-profit) for “fair market value”.
- Non-taxed project partners benefit from ownership for remainder of project life (electricity savings used to pay off loan to finance fair market price, followed by greater benefits).
 - Ownership benefits are significantly delayed & diminished.
 - ... if the Federal ITC provided a tax credit (payment) to non-taxed entities, life would be a lot easier.

Local Pro-active Solar Development

- Create pro-active solar planning to identify appropriate development sites and solicit solar developers offering maximum benefits to town. *(Reverse reactive position rural towns are facing from aggressive solar developers.)*
- Pursue solar plus storage to provide resiliency for municipal and community critical facilities (first responders, heating/cooling shelters, nursing homes, water/wastewater plants, etc.).
- Support solar development that reduces lifetime and operating costs of low income and public housing.
- Integrate local renewable supply to serve loads under Community Choice Aggregations.
- Explore innovative financing to bring municipal and local small equity shares into project ownership.

Thanks, let's figure this out

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