



Work in Progress: A Regulatory “Companion Planting” Guide for Community Solar

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Presentation contents

1. Defining community solar, in its primary and many related designs
2. Review of state actions enabling community solar: laws, rules, and recent dockets
3. Community solar P's and Q's... design and evaluation criteria
4. Regulatory concerns: (a) emulating competitive markets; (b) gateway to full DER; (c) utility cost recovery
5. Future research



Major Observations

- Community solar is a form of utility “green pricing” program, a specialized “green rate with benefits.” Ergo, it should be encouraging best-buys first.
- A regulator’s role vis a vis community solar is to simulate the effects of a competitive market.
- Maximizing community solar benefits means:
 - Delivering multiple values and public purpose benefits;
 - Sharing fairly with subscribers/investors all costs and benefits.



1. Defining Community Solar

- Preliminary working definition:
Community solar means virtual net energy metering (VNEM), where multiple customers participate by buying or leasing a portion of a shared solar generating facility, and then receive utility bill credits based on metered solar production during each billing period.



1.1. Not Quite or Lite Community Solar

- Non-VNEM approaches
- “feel good” green pricing programs
- Pure project-finance options
- Donation-based solar support
- Other...



2. Review of State Actions

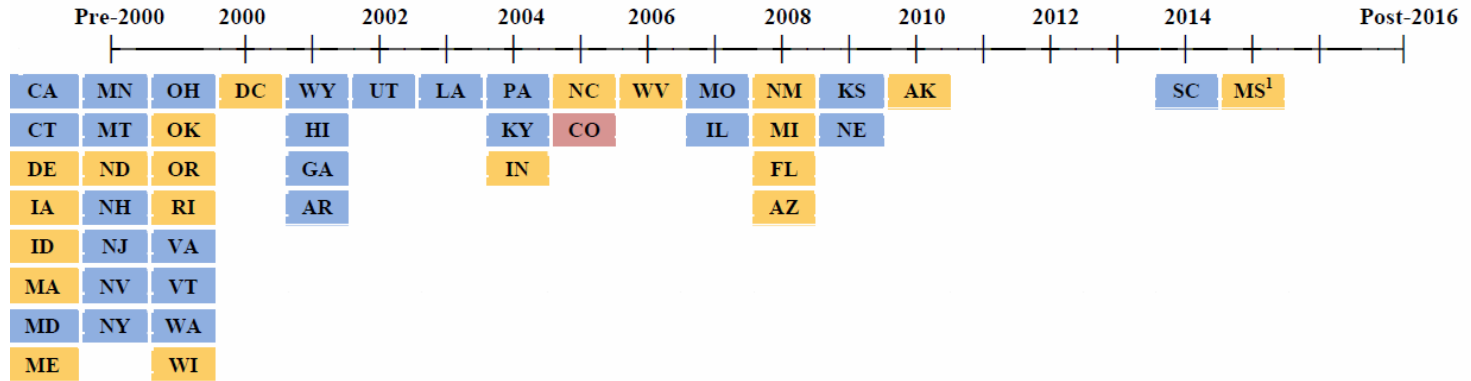
- States with virtual net metering legislation
 - Differences in laws
 - Differences in rules
- Other legislation enabling community solar?
- States implementing community solar without laws or rules (utility sponsored, regulator-approved)
- Review of current dockets



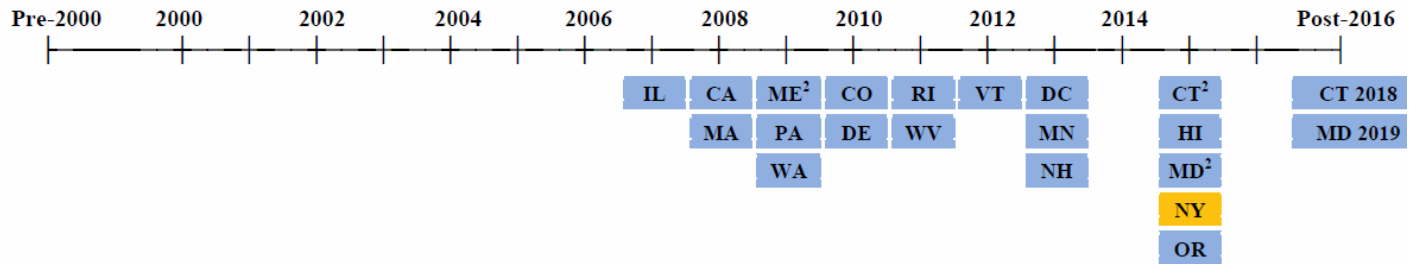
VNEM Timeline

Figure N: Timeline of State Net Energy Metering Policies

NEM Established – 21 states initiated NEM before 2000, all but four states had established programs by year-end 2015



Added community-shared solar virtual net metering



¹ Program does not meet broadly accepted industry criteria for NEM (DSIRE 2016)

² Pilot program

KEY: Law Commission Order Voter Referendum

T. Stanton and K. Kline, NRRI, May 2016



3. Community Solar P's and Q's

- All the major categories, concerns, issues (list on 9)
- Maximizing the value of community solar:
 - geo-targeting for non-wires alternatives,
 - ancillary services
 - co-benefits (e.g. public purpose microgrids, NTAs)
- Evaluating community solar success:
 - Standard benefit-cost testing & TRC
 - Sharing benefits with customer subscribers, owners
 - Participation by LMI customers
 - Flexibility for participation
 - Subsidies & cross-subsidies
 - Numbers of projects and total MW operating & subscribed



3.1 A Baker's Dozen CS P's & Q's

- Year initiated? Pilot or not?
- Who can develop and own & operate (utility or third parties)?
- CS only, or more broadly shared-renewables?
- Locations for projects, for participating customers?
- Program maximum capacity in MW?
- Project maximum capacity in MW?
- Customer subscription maximum (% of annual energy)?
- Minimum number of subscribers per project?
- Maximum size per subscriber (in kW)?
- Bill credit treatment (retail, avoided-cost/wholesale, VOS)
 - What is included in VOS?
- Contract term and transferability of shares?
- # of projects implemented?
- Total MW of projects implemented?



3.1.1 Examples of P's & Q's

- California: Authorizes CS for local government (2008), all multi-tenant buildings (2011). Customers can subscribe to 100% of their annual usage. Facility maximum 20MW.
- Colorado: Commission is prohibited from regulating prices paid. Commission is required to: (a) support projects that “lower total costs” for customers; (b) set annual program limit (in MW). Customers can subscribe for up to 120% of annual usage. Facility maximum 2MW. Subscribers must reside in the same or an adjacent county to the CS system.
- Connecticut: Since 2011, VNEM for customers of muni's has been allowed. 2015 legislation calls for a 2-year pilot program, with report to legislature due January 2018. Program cap 6MW. Project cap 2MW. Project participants minimum 2. Any “Class 1” renewable generator is eligible.



3.1.2 Examples of P's & Q's

- DC: Maximum facility size 5MW. Minimum of 2 subscribers per facility. Bill credits roll over month to month. Subscribers offset not more than 120% of their previous 12 months of usage. Legislation includes disclosure requirements. Electric utilities can recover program costs, but they can be charged only to subscribers. Commission does not regulate prices paid and contractual matters.
- Delaware: Participating customers must “share a unique set of interests” and be served by the same supplier. CS facilities should produce no more than 110% of participants’ annual energy requirements.
- Hawaii: All utilities required to file CS tariffs by October 2015. All customers must be able to participate.



3.1.3 Examples of P's & Q's

- Illinois: Law requires utilities to consider offering meter aggregation for community-owned generation. Biomass, methane digesters, solar, and wind generators are eligible.
- Maine: Established a pilot program, up to 50MW. Maximum participant 10MW. Maximum contract term 20 years. Commission must determine the project ROI is reasonable. Average annual price paid by participants should not exceed 10¢/kWh.
- Maryland: 3-year pilot program established in 2015. Program size limit 2MW. Minimum of 2 participants. Subscriptions not to exceed 200% of baseline usage. Commission to set VNEM compensation rate.



3.1.4 Examples of P's & Q's

- Massachusetts: All IOUs must offer CS; optional for Muni's. Facility minimum 2 participants. Facilities must be in the utility's territory and ISO load zone. Credits roll over indefinitely, but can be transferred to other customers. Half of program limit is reserved for government-owned CS. Facility size limits 10MW for government-owned systems, 2MW for others.
- Minnesota: No program maximum limit. CS must be within the utility's service territory Minimum of 5 participants per project. Maximum project size 1MW, but as many as 5 projects can be co-located at one interconnection.



3.1.5 Examples of P's & Q's

- New Hampshire: Program size limited to 1MW. VNEM compensation at full retail rate. Annual NEG true-ups with excess paid at avoided cost/default service rate.
- New York: Phase 1 projects (thru April 2016) were limited to those that serve one of two objectives: (1) siting for greatest locational benefits to the grid; or (2) at least 20% LMI participation. Facility limit 2MW. Minimum of 10 participants per project. Limits on maximum number of 25+kW customers participating in each project. Credits roll over monthly.
- Oregon: PSC was directed to examine shared solar options and recommend a program by November 2015.



3.1.6. Examples of P's & Q's

- Pennsylvania: Since 2007, VNEM restricted to customers within 2-miles of the generating source, and within a single distribution company service territory.
- Rhode Island: Legislation just passed (H8354/S2450).
- Vermont: Projects are organized by the participants, who determine how generation credits are allocated. Minimum of 2 participants. Facility size limit is 500kW, or 2MW on military property. Excess credits roll over monthly, then accrue to the utility after 1 year.
- Washington: Facility maximum 75kW. Utilities can also offer green pricing CS, using voluntary contributions.
- West Virginia: Since 2011, VNEM for meters within 2-miles of generating source. Meter aggregation costs are paid by the customers, not the utility.



4. Regulatory Considerations

- Emulating competitive markets:
 - Sharing benefits with program participants
 - Minimizing overhead and administrative costs
 - Maximizing benefits and co-benefits
- Community solar as a gateway to DER:
 - Community storage, DR, deep energy efficiency, other
 - Full IRP and DIRP for maximizing non-wires benefits
- Cost recovery:
 - Costs eligible for recovery from all customers
 - Costs assignable only to participants



5. Future Research?

- Principles applicable to all “green rate” programs
 - Growing community based investments in all cost-effective energy projects, using new crowd-investing rules
 - Ensuring benefits flow to subscribers in all green rate offerings
- What’s next?