



Community Solar Gardens: Lessons Learned

2017 Annual Meeting & *Conference*

April 3-4, 2017

Community Solar Gardens (Solar*Rewards Community) in Minnesota **Lessons Learned**

April 4, 2017

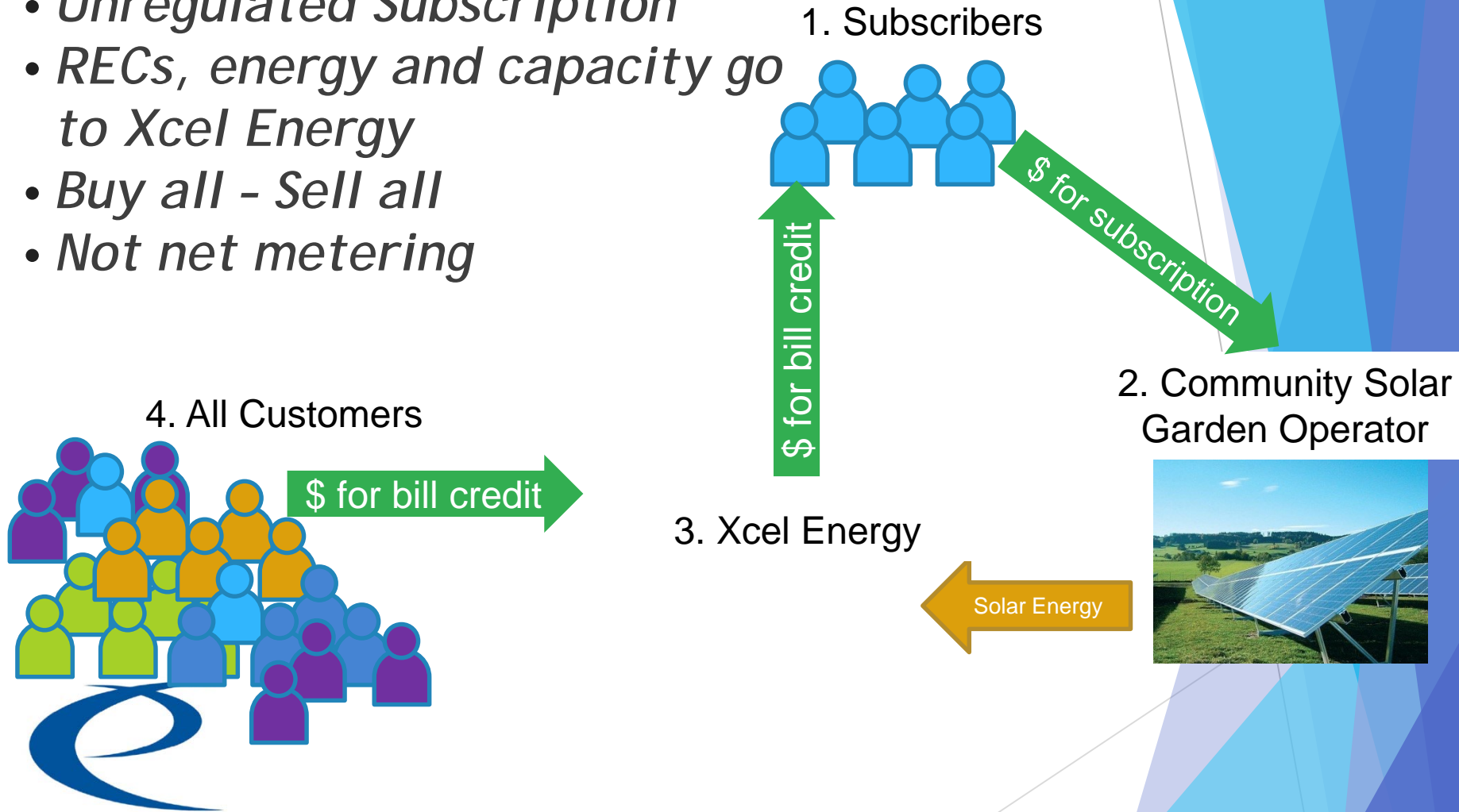
James R. Denniston
Assistant General Counsel
Xcel Energy



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How Solar*Rewards Community Works

- *Unregulated Subscription*
- *RECs, energy and capacity go to Xcel Energy*
- *Buy all - Sell all*
- *Not net metering*



Solar*Rewards Community

Current Status

- 72 solar gardens (68 MW) in commercial operation as of end of February 2017
- Currently have over 800 MW worth of active applications not yet in commercial operation
- ~ 140 MW in Construction and expected to be in commercial operation by end of 2017.
- ~ 260 MW in Design



Solar*Rewards Community

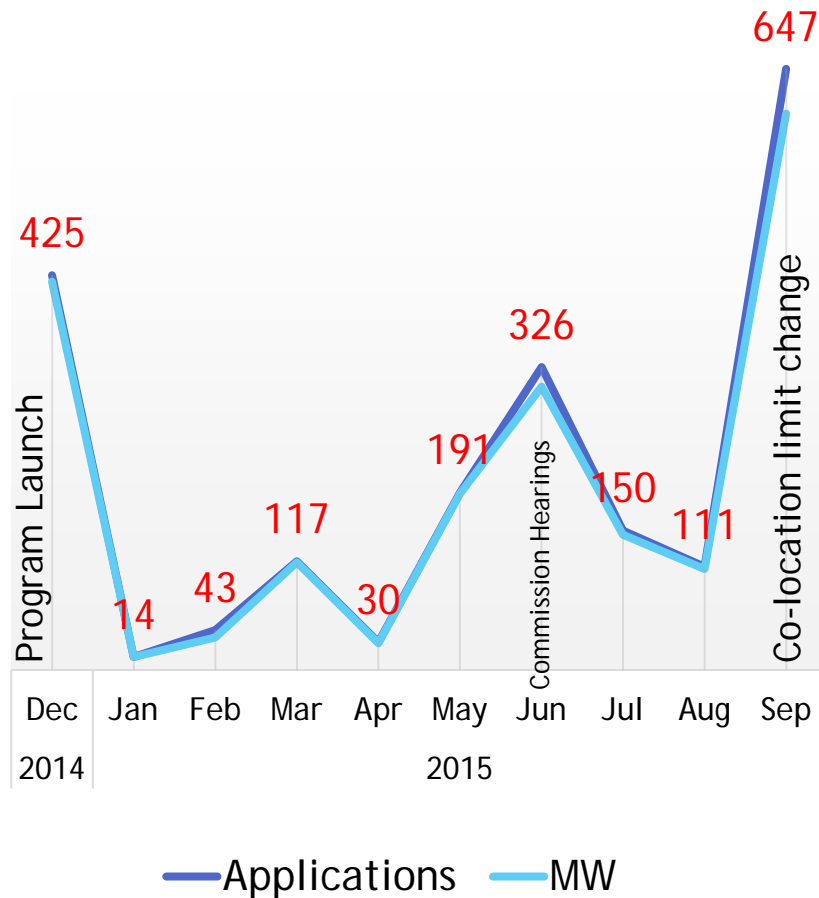
Lessons Learned indicated with (*)

- ▶ Created by statute - Minn. Stat. § 216B.1641; Implemented in MPUC Docket No. 13-867
 - ▶ In Service Territory (*)
 - ▶ Subscriber:
 - ▶ Same or adjacent county to Garden
 - ▶ Maximum 120% of annual usage (*)
 - ▶ Up to 40% of a single garden (*)
 - ▶ 1 MW size limit (*) - *In the Matter of the Petition of Northern States Power Company for Approval of Its Proposed Community Solar Garden Program*, Minnesota Court of Appeals, A15-1831, May 31, 2016 (unpublished).



Solar*Rewards Community

Application Cadence Early On



Partial Settlement Agreement

June 2015

- ▶ Projects limited to 5 MW on a co-located basis; Projects proposed after 9/15 limited to 1 MW
- ▶ Co-location dispute process (*)
- ▶ 50-business day indicative costs estimates (*)
- ▶ Projects requiring a “Material Upgrade” are ineligible
- ▶ Independent Engineer dispute process (*)

Other Lessons Learned (*)

- ▶ Jumping the gun
- ▶ Monthly Workgroup Meetings; Engineering examples
- ▶ Independent Report from ICF - 26 Findings
- ▶ Garden Contract Amendments approved if no objection filed within 30 days.
 - ▶ Annual Reports; Insurance; Revision to Bill Credit Rate
- ▶ Low-income representation



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Central Hudson Community Solar Interconnection

April 3-4, 2017

Paul A. Colbert
Central Hudson Gas & Electric Corporation



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Central Hudson Current Interconnection Status

As of 2/28/17	PSL §66J - Non-Wind Net-Metered Generation					PSL §66L - Wind Net-Metered Generation				
Central Hudson Gas & Electric	Connected *	Proposed **	Total	Limitation	Percentage	Connected	Proposed	Total	Limitation	Percentage
MW	63.425	774.064	837.489	72.00	1163.18%	0.182	0.000	0.182	3.60	5.04%
# of systems	6,882	834	7,716			22	0	22		

* All of the Connected systems under PSL §66J are PV except, 1-CHP (0.0018 MW) and 1-Hydro (0.003 MW)

** All of the Proposed systems under PSL §66J are PV.

Systems Installed >500kW:

1368 kW

780 kW

600 kW

Systems Pending >50kW:	4	⚙️ CESIR complete; construction upgrade payment received and construction commenced. Included in proposed above.
(Most are 2MW - CDG apps)	36	⚙️ CESIR complete; awaiting estimated construction payment. Included in proposed above.
	17	⚙️ CESIR impact study in progress. Included in proposed above.
As of Today 3/10/17	315	⚙️ Technical Review complete; CESIR required. Awaiting payment and/or final design package. Included in proposed above.
	3	⚙️ Technical Review in progress, NOT included in above counts.



Community Distributed Generation in New York

- ▶ Prior to March 9, 2017 Net Energy Metering (“NEM”) was available to all Community Distributed Generation (“CDG”) in New York
 - ▶ Net Energy Metering allowed the CDG to obtain a credit for every kWh sold equal to the customer’s rate for energy, distribution and government charges
 - ▶ Excess credits were distributed to residential and farm waste customers once a year
 - ▶ Credits were carried over to the next year for all other customers



Community Distributed Generation in New York

- ▶ The Public Service Commission (“PSC”) issued an Order on March 9, 2017 in Case 15-E-0751 phasing out NEM
- ▶ NEM replaced by a Value Stack
- ▶ Value Stack includes: (1) Energy at day ahead zonal locational-based marginal price; (2) Capacity based on retail rate for intermittent technologies; (3) Environmental attributes based on the higher of Renewable Energy Credit or Social Cost of Carbon price; (4) Market Transition Credit (“MTC”) equal to the difference between Net Energy metering and Estimated Value Stack (“EVS”); and (5) Locational Values based on de-averaging of utility marginal cost of service studies



Community Distributed Generation in New York

- ▶ Projects may retain NEM if they provide written notice that they have completed interconnection to the utility by March 9, 2017
- ▶ If 25% of interconnection costs are paid by June 7, 2017 the may retain NEM for 20 years and all mass market customers may retain NEM through January 1, 2020



Community Distributed Generation in New York

- ▶ Four tranches established to limit cost transfers to non-participating customers
 - ▶ Tranche 0 retains Net Energy Metering
 - ▶ Tranche 1 is up to 39 MW if not filled by Tranche 0. Customers receive MTC equal to NEM less Value Stack for a 25 year term
 - ▶ Tranche 2 is up to 19 MW after Tranche 1. Customers receive MTC equal to 95% NEM less Value Stack for a 25 year term
 - ▶ Tranche 3 is up to 19 MW after Tranche 2. Customers receive MTC equal to 90% NEM less Value Stack

Which tranche a customer qualifies for is determined by the date they pay 25% of interconnection costs



Community Distributed Generation in New York

- ▶ Other issues include
 - ▶ Floating caps, utilities are required to report to the PSC when each utility hits 85% of the applicable cap
 - ▶ For Central Hudson that is 25.5 MW for Mass Market Phase One NEM customers and
 - ▶ Tranches 0-3 64.5 MW



Community Distributed Generation in New York

► **QUESTIONS?**



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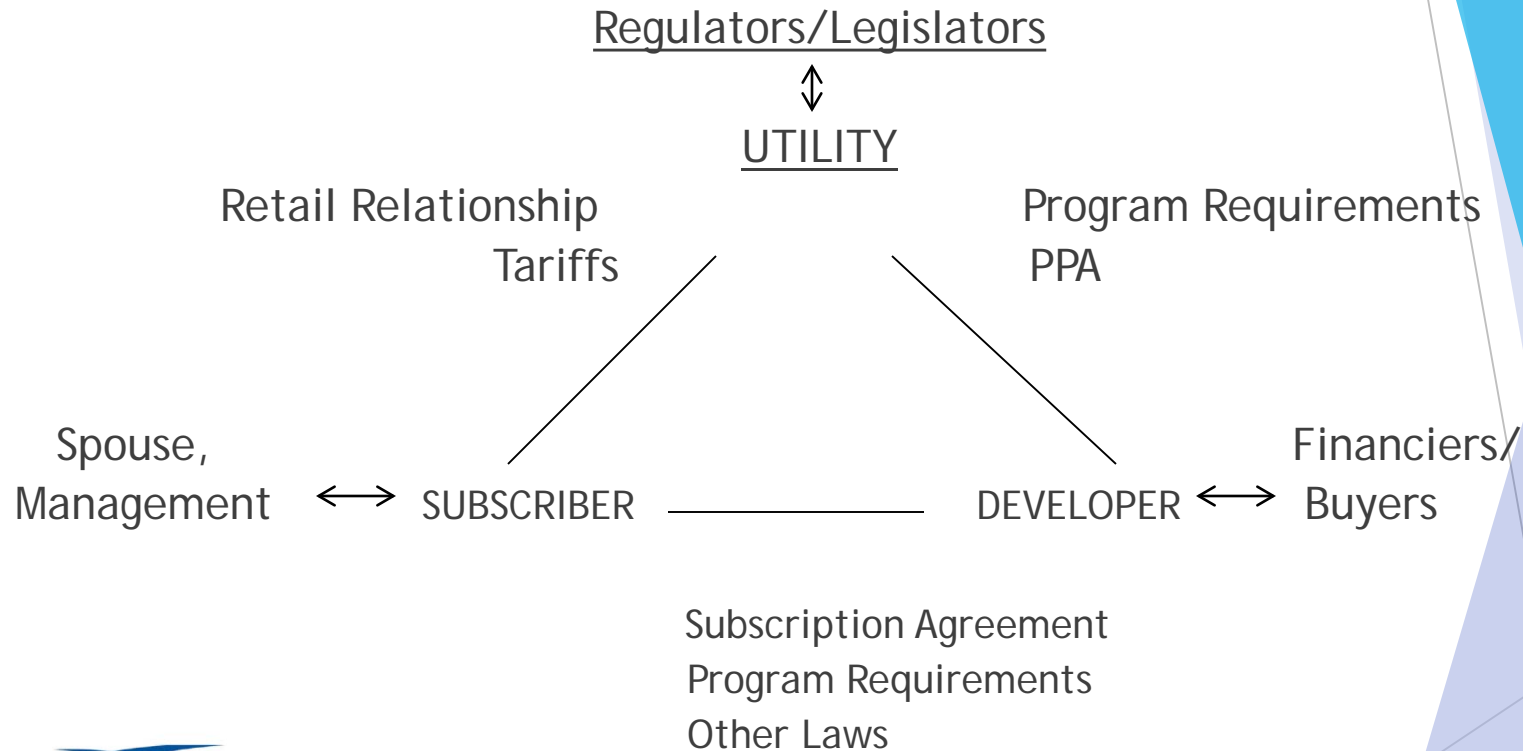
COMMUNITY SOLAR GARDENS - Developer Perspectives and Issues

Jeffrey C. Paulson
Paulson Law Office, Ltd.



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Program Relationships



Program Goals

Legislature/Regulators

- Grow Solar
- Provide ability of customers who are physically/financially unable to directly own solar to receive benefits from local solar generation

See Minn. Stat. Section 216B.1641 (2013)

Utility

- Comply with regulatory/legal requirements
- Protect control over resource acquisition/costs
- Protect system integrity
- Maintain/protect customer relationships
- Minimize price/subsidies

Subscriber

- Support solar and renewable development
- Capture economic benefits with little or no risk



Developer Objectives

Developers are an important means to an end - the creation and management of the generation assets needed to create program benefits and transfer to subscribers.

CSG Programs offer market opportunity free of other market restrictions.

Developers not uniform in objectives:

- Financially Driven
- Community Driven

Developers - Financial

- Make Money
- Grow Portfolio

Developers - Community

- Make Money
- Grow Portfolio
- Increase participation by low-income or other subscribers
- Direct development profits to community owners



Developer Requirements

1. Project Creation; Usual Development Needs
 - Site, permits
 - Interconnection
 - Offtake
2. From Utility
 - System data and access [Interconnection]
 - Open CSG markets without barriers (size, ownership)
 - Timely program compliance by utility, including delivery of subscriber benefits
 - No unreasonable program requirements (deposits)
 - Maximize bill credits/price
3. From Subscribers
 - Enrollment with limited costs/administration
 - Creditworthiness/payments
4. Meet Financiers/Buyer Expectations
 - Limited risk/uncertainty
 - Enhanced financial results
 - Administrative simplicity

Utility Tension Points

See MPUC Order dated April 7, 2014 in Docket E002/M-13-867

1. Program/Project size and ownership limitations
2. Grid Transparency/Access

- Limited system data for planning
- Unreasonable Interconnection standards
- Equipment
- Performance requirements (flicker, etc.)
- Delays
- Changes in expectations

Increased costs, delays, uncertainty

3. Program Changes and Requirements

- Conflicting or changing interpretations of program
- Deposits, other barriers

Subscriber Tension Points

1. Disclosure/consumer protection requirements balance between legitimate needs and paralyzing demands
2. Program complexities and restrictions
 - Increase difficulties of marketing/explanation
 - Increase ongoing administrative costs
3. Creditworthiness
 - Financier requirements v. participatory goals of program
4. Agreement terms - flexibility and uniformity
 - Residential - readability and leniency v. financial and program requirements
 - Commercial - negotiability v. financier certainty
5. Pricing
 - Financing expectations v. need to provide meaningful, tangible benefits to subscribers
 - Escalators
6. Securities issues

Advice to Developers

1. Utility/regulators

- Need to honor and promote program goals beyond simple minimum compliance or risk adverse program changes.

2. Subscribers

- Need to provide adequate disclosures and protections to avoid adverse program changes or liability
- Must provide meaningful benefits to subscribers and reasonable terms for subscription
- Need to find tools to allow access by all customers, even those not meeting credit requirements

3. Financiers/buyers

- Convince of the need for sensitivity to larger program objectives

About Jeffrey C. Paulson

- Jeffrey C. Paulson is the principal in his own law firm in Minneapolis, and has been practicing in the area of energy law for over twenty years, with his practice focusing on representing clients developing and owning renewable energy projects, including locally owned wind and solar projects across the US. He has extensive experience in leasing and site acquisition, project ownership structures, permitting, construction and turbine contracting, PPA and interconnection agreement negotiation, and negotiation of financing terms and documents. With respect to CSGs, he has represented developers, large subscribers, financiers and project buyers, and consulted with municipal utilities on design and implementation of CSG programs.
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