Value of Distributed Energy Resources
Phase 1 Order

Highlights for Community Solar
Context of Order

- As part of Reforming the Energy Vision (REV), NYS is transitioning away from net energy metering (NEM)
- NYS’ Public Service Commission (PSC) recently released an order to start this transition
  - *Phase One* (issued March 9, 2017)
  - *Phase Two* (development begins Summer 2017)
- Recognition that CDG is new model needing initial support
Introduction

• NEM has been effective at growing NYS’ PV market
  – Policy in place since 1997
  – However, it’s a blunt method for valuing distributed energy resources (VDER). Time and location of generation are not considered in compensation structure

• NYS PSC has begun to develop a more precise approach to VDER
Phase One

What’s Impacted

• Solar PV, Wind, Hydro, Farm Waste Generation, and Fuel Cells up to 2MW AC
• Combined Heat and Power (CHP) up to 10kW AC
• National Grid, NYSEG, Central Hudson, Orange and Rockland, ConEd, Rochester Gas & Electric
Volumetric vs Monetary Metering

**Volumetric metering** tracks net kWh delivered to grid.

- NEM is a volumetric method. PV production exported to the grid is credited on the customer’s utility bill with a kWh reduction on a 1:1 ratio.

**Monetary metering** converts energy production into dollars.

- PV customers see a dollar credit on their energy bill (rather than a kWh credit)
- Solar energy consumed onsite is not delivered to the grid and is not converted to a monetary credit

*For both metering methods, a PV kWh consumed onsite is a kWh not purchased from the utility. It reduces the customer’s bill like energy efficiency.*
Community Distributed Generation (CDG) or Community Solar

- Off-site projects located behind a nonresidential host meter that provide bill credits to subscribed members
- Typically 10+ members, but in conjunction with VDER order, the PSC approved a waiver for multifamily projects. Array must be located at offtaker site
Other PV Project Types

Non-CDG PV projects are eligible under VDER, but are outside the scope of this presentation

• Mass Market: Residential and non-demand commercial
• On-Site Commercial
• Remote Net Metering
Phase One - Tariff Categories

1. **Net Energy Metering (NEM)** – no longer available for new projects
2. **VDER Phase One NEM** – temporarily available based on project criteria
3. **Value Stack** – available for most CDG projects moving forward
Phase One - Tariff Categories

Net Energy Metering (NEM)

• Volumetric crediting
• Compensation for life of the system
• Annual true-up for net excess production
When does CDG Receive Net Energy Metering?

• All projects already interconnected or completed as of 3/9/2017 will retain NEM for the life of the system
  – Must have notified utilities of finished projects by 3/17/2017
• No action is required for already-interconnected projects to keep NEM
Phase One - Tariff Categories

VDER Phase One Net Energy Metering

Phase One NEM is similar to NEM compensation except:

- Phase One NEM projects are subject to a 20-year term
- After a 20-year period, projects will receive compensation structure then in effect
- Projects must have utility metering capabilities for recording net hourly use and delivery
When does CDG Receive Phase One Net Energy Metering?

• To qualify for Phase One NEM a project must have made payment of at least 25% of interconnection upgrade costs, or have executed an interconnection contract (SIR) if no upgrade payments are required by July 17th 2017

• CDG project eligibility is also subject to capacity limits (available capacity in Tranche 0)
Phase One - Tariff Categories

Value Stack - Overview

• The Value Stack consists of several elements representing the value of a clean kWh to the grid and the environment

• Some elements are time and location sensitive

• kWh produced in congested parts of the grid during peak demand time will be paid more

• CDG projects will receive an additional item (MTC) to align compensation with NEM
Phase One - Tariff Categories

Value Stack

• Applies to projects not eligible for NEM or Phase One NEM
• Monetary crediting only. Customers will see a dollar credit on their bill
• Compensation is based on electricity delivered to the grid (not consumed onsite) on an hourly basis
• Projects receiving the Value Stack will have a compensation term of 25 years, then receive compensation structure in effect
• Credits will carry over to next billing periods, except those held by CDG sponsors
• CDG sponsors have two years to allocate annual excess credits not assigned to members
When does CDG Receive Phase One Value Stack?

• Projects not receiving NEM or Phase One NEM will receive the Value Stack
• Projects receiving NEM or Phase One NEM may opt into Value Stack
• All projects receiving the Value Stack must have advanced utility meter capable of measuring hourly electric exports and imports
Phase One Value Stack - Components

- **Energy (LBMP)** – the current wholesale energy price, changes hourly
- **Capacity (ICAP)** – similar to the capacity credit currently provided under NEM, changes over time
- **Environmental benefits (“E”)** – project’s rate is locked in at interconnection. Certain CDG projects can take a non-tradable REC instead
- **Avoided demand (“D”)** – based on amount system will reduce distribution grid’s peak demand
- **LSRV (locational system relief value)** – additional value for location-specific congestion relief in distribution network
- **MTC (market transition credit)** – additional element for CDG or mass market opt-in, given in place of “D”
Phase One Value Stack - Components

- Avoided D – avoided demand
- E – environmental benefit
- Capacity – ICAP
- LBMP – energy commodity
- MTC – market transition credit for CDG

Base Retail Rate (NEM)  Value Stack  Value Stack + MTC
Phase One Value Stack Components –

Energy Value (LBMP)

*The wholesale cost of energy:*
Day ahead Locational-based marginal pricing (LBMP) on an hourly basis inclusive of electrical losses. Compensation only for electricity exported into the grid at the time of generation.
Phase One Value Stack Components – Installed Capacity (ICAP)

• Compensation per kWh, based on the capacity portion of the utility’s full service market supply charges (similar value as NEM)*
• Option 1 – spread across all hours of the year
• Option 2 – spread across 460 summer hours

*For intermittent technologies
A fixed value representing environmental benefits

- Environmental compensation is the higher of:
  - The applicable Tier 1 REC price per kWh generated delivered (currently $0.02424 per kWh)
  - The social cost of carbon (SCC) per kWh value minus Regional Greenhouse Gas Initiative allowance value
- This value will be fixed for the Value Stack term and is locked in at interconnection
Phase One Value Stack Components –
Value of “D” (DRV) - Demand Reduction Value

Value of PV System’s Reduction of Peak Grid Distribution Demand

- Only for projects, or portions of projects, that do not receive MTC
- Compensation is tied to PV system performance over the grid’s 10 highest usage hours per year
- Details of calculation are available starting page 111 of Order
Phase One Value Stack Components –
Locational System Relief Value

A locational adder

- Utilities are required to identify high-value locations and any limits on the MW needed in those areas
- $ per kW-year value identified by utility, locked in, and paid for first 10 years of project
- LSRV can be received in addition to MTC; CDG projects are eligible
- Most utilities have not yet identified LSRVs
Phase One Value Stack Components –
Market Transition Credit (MTC)

Additional Value Stack component for CDG

- Provided to avoid market disturbances in the transition away from NEM
- MTC is also available for Mass Market and CDG NEM projects that opt-in to the Value Stack
- MTC is applied to CDG mass market membership proportion
  - If a project has 70% mass market subscribers (residential or nondemand commercial) and 30% large commercial subscribers, project receives MTC on 70% of capacity, and “D” on 30% of capacity
- The MTC will be calculated by each utility and set once following the Phase One Order, applies for full 25 years
CDG Tranche Design

- Tranche design applies to CDG projects only
- Phase 1 NEM projects (Tranche 0) receive 20-year NEM compensation (volumetric)
  - Open for 90 business days after the order, or until capacity full
  - Any remaining capacity moves into Tranche 1
- Tranche 1: 25-year, NEM equivalent, incorporates Value Stack (monetary)
- Tranche 2: 25-year, 95% NEM equivalent, incorporates Value Stack (monetary)
- Tranche 3: 25-year, 90% NEM equivalent, incorporates Value Stack (monetary)
- To enter a tranche, 25% utility upgrade payment or an executed utility interconnection agreement is required
CDG Tranche Design

• MTC = Difference between *Base Retail Rate* and *Estimated Value Stack*
  - Intended to make estimated CDG compensation…
    - equal to *Base Retail Rates* (NEM) in Tranche 1
    - 5% less than NEM in Tranche 2
    - 10% less than NEM in Tranche 3
• MTC reflects values not yet identified or calculable, especially value of D
• Although Tranche 1 is designed to be generally equal to NEM, it may be slightly higher or lower than actual NEM rates each month, due to slight calculation differences and time lag.
NY-Sun will provide updates and available tranche capacity at nyserda.ny.gov/VDER. Certain tranches have already been filled.

<table>
<thead>
<tr>
<th></th>
<th>CHGE</th>
<th>O&amp;R</th>
<th>NGRID</th>
<th>NYSEG</th>
<th>ConEd</th>
<th>RG&amp;E</th>
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<tr>
<td>Total Incremental CDG MWs</td>
<td>77</td>
<td>47</td>
<td>474</td>
<td>223</td>
<td>548</td>
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<td>Tranche 0/1</td>
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<td>23</td>
<td>119</td>
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<td>Tranche 2</td>
<td>19</td>
<td>12</td>
<td>178</td>
<td>84</td>
<td>206</td>
<td>42</td>
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<tr>
<td>Tranche 3</td>
<td>19</td>
<td>12</td>
<td>177</td>
<td>83</td>
<td>205</td>
<td>41</td>
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</tbody>
</table>
Energy Storage

• Storage is included in Phase One when paired with an eligible technology. Details on compensation will be determined in future orders.
• Storage is also permitted under NEM and Phase One NEM.
• NYSERDA is in the process of developing a solar + storage solicitation.
• Stand-alone storage and other storage valuation will be taken up in Phase Two.
Renewable Energy Certificates (RECs)

Central Concept: No projects receiving Phase 1 NEM or the Value Stack will receive monetizable RECs

Details:

• Renewable Energy Standard (RES) Tier 1 differentiates between transferrable (monetizable) and nontransferable (non-monetizable) Renewable Energy Credits (RECs)
• RECs are tracked in NY Generation Attribute Tracking System (NYGATS) database, administered by NYSERDA
• 1 MWh = 1 REC
• NEM customers without an RPS (Renewable Portfolio Standard) or RES contract may still receive non-transferrable RECs
• Phase 1 NEM projects will not be eligible for Tier 1 solicitations or tradable RECs, but can receive non-transferrable RECs
• All rights to any environmental claims, credits, certificates, or attributes for energy produced by any system funded by Customer-Sited Tier or NY-Sun programs have been relinquished by NYSERDA
Any VDER project receiving the value stack is ineligible for Tier 1 solicitations or transferrable RECs, but will receive one of two options:

A. Default *Interconnecting-LSE-Option*: Utility (LSE) receives non-transferrable RECs, and customers receive environmental value component in Value Stack (“E”)

B. Customers may permanently opt into *Customer-Retention-Option* at time of interconnection. The customers forfeit “E” in the Value Stack but receive non-transferrable RECs (not redeemable for monetary value)

NYGATS can create RECs retroactively to 1/1/16, but only if the system owner completes the registration process and provides the associated generation data by 5/31/17.

Questions? Email attributes@nyserda.ny.gov
Glossary

- **CDG/Community Distributed Generation/Community Solar/Shared Solar**: A PV project that remotely supplies energy to multiple off-takers
- **Distributed Energy Resources (DER)**: Non-centralized energy generators, such as PV
- **LSE (Load Serving Entity)**: One of the electric utility companies
- **MCOS**: Marginal costs of services
- **MTC (Market Transition Credit)**: An element of the value stack, available for CDG projects only
- **Net Energy Metering (NEM)**: Net metering
- **NYGATS (New York Generation Attribute Tracking System)**: Used to track RECs
- **REC**: A renewable energy credit. Sometimes redeemable or tradable for monetary value, but not under Phase One order
- **Tier 1**: The Clean Energy Standard mandate on Load Serving Entities to procure RECs
## VDER Order Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>03/09/17</td>
<td>Phase 1 VDER Order issued and effective</td>
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<tr>
<td>03/16/17</td>
<td>Utilities report on CDG projects that have already met milestone to lock into a tranche</td>
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<tr>
<td>03/31/17</td>
<td>Utilities report final capacity of MW interconnected/grandfathered under NEM</td>
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<tr>
<td>04/01/17</td>
<td>Utilities amend their tariffs to bring them in line with Phase 1 (extended to April 27)</td>
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<tr>
<td>04/05/17</td>
<td>VDER Technical Conference</td>
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<tr>
<td>05/01/17</td>
<td>Utilities file Implementation Proposals, including value stack calculations</td>
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<tr>
<td>May 2017</td>
<td>Phase Two procedural conference begins</td>
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<tr>
<td>05/31/17</td>
<td>Deadline to register in NYGATS for retroactive generation from January 1, 2016</td>
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<tr>
<td>Summer 2017</td>
<td>PSC to issue Value Stack Implementation Order</td>
</tr>
<tr>
<td>07/17/17</td>
<td>Deadline to submit 25% construction payment or interconnection agreement to receive Phase 1 NEM. Dependent on Tranche 0 capacity</td>
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<tr>
<td>09/01/17</td>
<td>Staff to file Low-Income CDG Proposal</td>
</tr>
<tr>
<td>12/31/17</td>
<td>Grandfathered RNM projects must be completed</td>
</tr>
<tr>
<td>01/01/20</td>
<td>Phase 1 NEM no longer available for new Mass Market projects</td>
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Links and Resources

- PSC order and related documents: [http://www.dps.ny.gov/VDER](http://www.dps.ny.gov/VDER)
- NY-Sun VDER resources, including tranche capacity: [nyserda.ny.gov/VDER](http://nyserda.ny.gov/VDER)
- REC questions: [attributes@nyserda.ny.gov](mailto:attributes@nyserda.ny.gov)