



The Value Stack Reference Guide for **Energy Storage Developers**





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Overview

The Value of Distributed Energy Resources (VDER or VDER Value Stack) is a methodology to compensate energy discharged by distributed energy resources (DERs). Starting in March 2017, New York State began a transition away from net metering and published the VDER compensation methodology in utility tariffs throughout the State. Compensation under the Value Stack is based on the actual benefits a resource provides to New York's electric grid and is in the form of bill credits. This is determined by a DER's energy value, capacity value, environmental value, demand reduction value, and locational system relief value.

VDER Value Stack compensation is available for excess electricity generated by behind the meter nonresidential projects larger than 750 kilowatts AC, Remote Metered (RM) projects, and Community Distributed Generation (CDG) projects. Projects are up to 5 MW AC and export electricity onto the electric distribution system. Unlike traditional net metering, the value of the exported electricity varies based on the location and time of day/time of year. Eligible technologies include solar photovoltaics (PV), stand-alone and co-located energy storage, certain types of combined heat and power (CHP), anaerobic digesters, wind turbines, small hydro and fuel cells. This document is primarily focused on solar PV and energy storage.

How the Value Stack is Calculated

Value Name	Description	Eligible DERs
Energy Value (LBMP)	LBMP is the day-ahead wholesale energy price as determined by NYISO. It changes hourly and is different according to geographic zone.	All technologies: PV, storage, CHP, digesters, wind, hydro, and fuel cells.
Capacity Value (ICAP)	ICAP is the value of how well a project reduces New York State’s energy usage during the most energy-intensive days of the year. Developers can choose from three payout alternatives and most ICAP rates change monthly.	All technologies receive ICAP. Dispatchable technologies (stand-alone storage, CHP, digesters, and fuel cells) will receive Alternative 3.
Environmental Value (E)	E is the value of how much environmental benefit a clean kilowatt-hour brings to the grid and society. The E value is locked in for 25 years.*	PV, wind, hydro, and storage charged exclusively from PV or wind energy. Standalone storage is not eligible at this time.
Demand Reduction Value (DRV)	DRV is determined by how much a project reduces the utility’s future needs to make grid upgrades. DRV is locked in for 10 years.*	All technologies.
Locational System Relief Value (LSRV)	LSRV is available in utility-designated locations where DERs can provide additional benefits to the grid. Each location has a limited number of MW of LSRV capacity available. The LSRV is locked in for 10 years.*	All technologies. Project must be on a utility-specified substation.
Community Credit (CC)	CC is available on a limited basis to encourage the development of Community Distributed Generation (CDG) projects. CC is the successor to the Market Transition Credit (MTC) and is similar in structure. The CC is locked in for 25 years.* PV projects in utility territories that have fully expended their CC may be eligible for the Community Adder – an upfront incentive administered by NY-Sun.	Available for a limited number of MW of capacity, only for CDG projects, including PV and digesters. Wind, hydro, and fuel cells receive CC at a derated value. Not available for standalone storage.

**Projects will lock in their E, DRV, LSRV, and CC values when they make their 25% upgrade payment to the utility. If no utility upgrade costs are required, the values are locked in when the interconnection agreement is fully executed.*

The energy and capacity values do not require a non-Standard Interconnection Requirements (SIR) interconnection study nor participation in the NYISO market. Like the other VDER Value Stack components, these values are credited through a utility's VDER Value Stack tariff. A project seeking direct payments for energy or capacity may choose to participate directly in the wholesale market. There are three capacity alternatives available to a project.

- Alternative 1 is paid on each kWh injected to the grid throughout the year.
- Alternative 2 is paid at a higher per-kWh rate on kWh injected to the grid 14:00 through 19:00 on non-holiday weekdays from June 24 to August 31.
- Alternative 3, the "Capacity Tag" approach, is paid on kWh injected during a single peak hour of the year. Standalone storage must take Alternative 3.
- For a solar project, once the capacity alternative is chosen, it cannot switch from Alternative 2 to Alternative 1 or switch from Alternative 3 to either Alternative 1 or 2. However, a project may permanently move from compensation under Alternative 1 to Alternative 2 or from compensation under Alternative 1 or Alternative 2 to Alternative 3.

Bill Crediting

The VDER Value Stack tariff only provides a project bill credits; there is no direct cash payment available. A utility applies bill credits to a customer's total electric utility bill and not to specific section of the utility bill. If a customer has an Energy Services Company (ESCO) for their electric supply and are not utilizing consolidated billing, credits would not be applied to the ESCO bill. VDER Value Stack bill credits cannot be applied to natural gas charges on the bill. VDER Value Stack bill credits can reduce a customer's total electric utility bill to zero and offset all charges (delivery, supply, and surcharges) on the bill.

Installation Behind a Single Customer's Utility Meter vs Directly into the Distribution System

A customer can install solar and energy storage for "behind the meter" services, which include peak load reduction for bill savings as well as participating in utility and/or NYISO demand response programs. That customer could then export any excess energy for bill credits under the VDER Value Stack tariff, which is the successor tariff to net metering. If a customer happens to already have solar and is already grandfathered in traditional net metering, then utility demand response program revenue would not be available, but revenue from NYISO demand response would most likely be available.

Alternatively, solar and energy storage can be installed directly on the distribution system with its own utility meter separate from customer load. It is compensated for injections of electricity into the distribution grid under the VDER Value Stack tariff in the form of bill credits under a CDG or Remote Metered project configuration.

A standalone energy storage system may be configured as a RM project, requiring that the bills receiving credits are under the same utility account.¹ A standalone storage system may also function as a CDG project with diverse offtakers, provided that it follows all CDG guidelines (10+ offtakers, at least 60% to mass market, etc.). Standalone storage projects are not eligible for the MTC/Community Credit/Community Adder, and thus the bill credits from a standalone storage projects are the same value no matter the type of customer receiving the credits.

A project receiving VDER Value Stack compensation for electricity injected into the distribution grid may make a one-time election to participate in a utility's demand response program known as the Commercial System Relief Program (CSR) in lieu of receiving compensation for the DRV and LSRV Components. The project would be directly compensated for providing load relief during these demand response events by exporting during called load relief periods, rather than following the DRV and LSRV price signals. If a project makes this election, Value Stack components (Energy, Capacity, Environmental and adders, if applicable) are still otherwise available.

Metering

A project must be installed either exclusively for behind the meter services or exclusively as a RM or CDG project. It is not permissible for a single system to switch between exporting for remote crediting as a RM or CDG project and also behind the meter services like demand charge savings or demand response participation.

For example, if a customer leases out their rooftop or land for an exporting remote metered solar or storage project, that same system cannot be configured to provide behind the meter services. While a customer can opt into a demand response program in lieu of receiving the DRV and/or LSRV of the VDER Value Stack tariff, in most cases demand response revenue is earned only by curtailing a customer's load.

If a customer seeks both behind the meter service and remote crediting from their system, two separately metered PV and/or storage systems would need to be separately interconnected: one remote metered exporting system, and one for the behind the meter curtailment and demand response services. Any follow-up questions on this topic, and requests for novel interconnection possibilities, should be directed to the appropriate utility.

Grid Charging Costs for a Separately Metered CDG or RM Project

If a project is a CDG or RM configuration and requires new electric service, the utility will determine the service class based on the project's demand. The project will accrue any applicable delivery or commodity service charges, and its subscribing customers will separately receive their bill credits based on the project's exports. A CDG or RM project cannot offset its own electric utility bill.

Solar PV, and hybrid solar plus storage projects are not required to take standby service nor buyback service and are thus not subject to contract demand charges. This exemption for hybrid solar plus storage projects currently applies regardless of the solar PV capacity, however, this broad exemption may only be temporarily available.

An export only CDG or RM solar PV project will not accrue any fees for exporting under its service class. For example, this type of project served by Con Edison would be under SC-2, would not accrue delivery fees for buyback service, and would not accrue any fees for imports.

If a CDG or RM hybrid solar plus storage project charges from the grid, the delivery rate will be based on the standard customer rate for the project's service class. The commodity rate is required to be the full-service rate applicable to that customer's service class. For example, the commodity rate would be Rider M - Day Ahead Hourly Pricing for projects served by Con Edison.

The service class for a standalone energy storage system will depend on its demand. For standalone storage, charging MWs are billed at the standby rate and discharging MWs are billed at the buyback rate. Like a hybrid system, the commodity charge for standalone storage is the utility's full-service rate applicable to the customer's service class. For example, in Con Edison a standalone energy storage system would be billed under SC-9 standby rate 4 or 5 and Rider M for charging, billed under SC-11 for discharging, and credited under Rider R (VDER) for discharging.

Under the standby rate, the contract demand charge will equal the contract demand rate multiplied by the highest registered kW demand for the month. Because the contract demand applies to charging under the standby rate and to discharging under buyback service, this is either the highest import or export kW value. The contract demand will be charged every month, irrespective of whether the system operates during the month. Other as-used delivery charges will be accrued based on the metered demand of the storage.

Any proportion of the storage system that is charged from the grid rather than from the solar PV that it is paired with will directly reduce the available federal Investment Tax Credit (ITC) credits and Environmental value from the VDER Value Stack tariff compensation. Under the ITC, anything less than 75% solar PV-charged receives no ITC for the storage and will only get the full ITC if 100% charged by the solar PV.

A project cannot receive compensation for both capacity Alternative 2 and Alternative 3, even on a prorated basis. For example, a solar plus storage system may select capacity Alternative 2, which only compensates for the solar-charged electrons and is not available to a grid-charged energy storage system. If some portion of the energy storage charges from the grid at the Alternative 2 project, those grid-charged electrons would not be compensated for the Capacity component of the Value Stack tariff.

End Notes

¹ On May 14, 2020, under Case 19-E-0735, the NYS Public Service Commission approved allowing RM projects to serve up to ten customer accounts. Customers must be nonresidential or farm residential customers and receive Value Stack compensation (not net metering). Updated utility tariffs reflecting this rule change are expected to be effective on November 1, 2020.

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