



Assessing the Value of Distributed Wind with New York's Value Stack Tool



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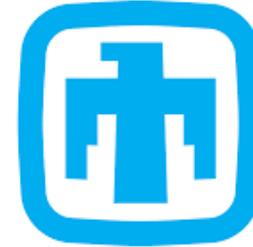
i2X Funded Collaboration Between Industry and Sandia



**INTERCONNECTION
INNOVATION e-XCHANGE**
U.S. DEPARTMENT OF ENERGY



BUFFALO
RENEWABLES INC.



**Sandia
National
Laboratories**

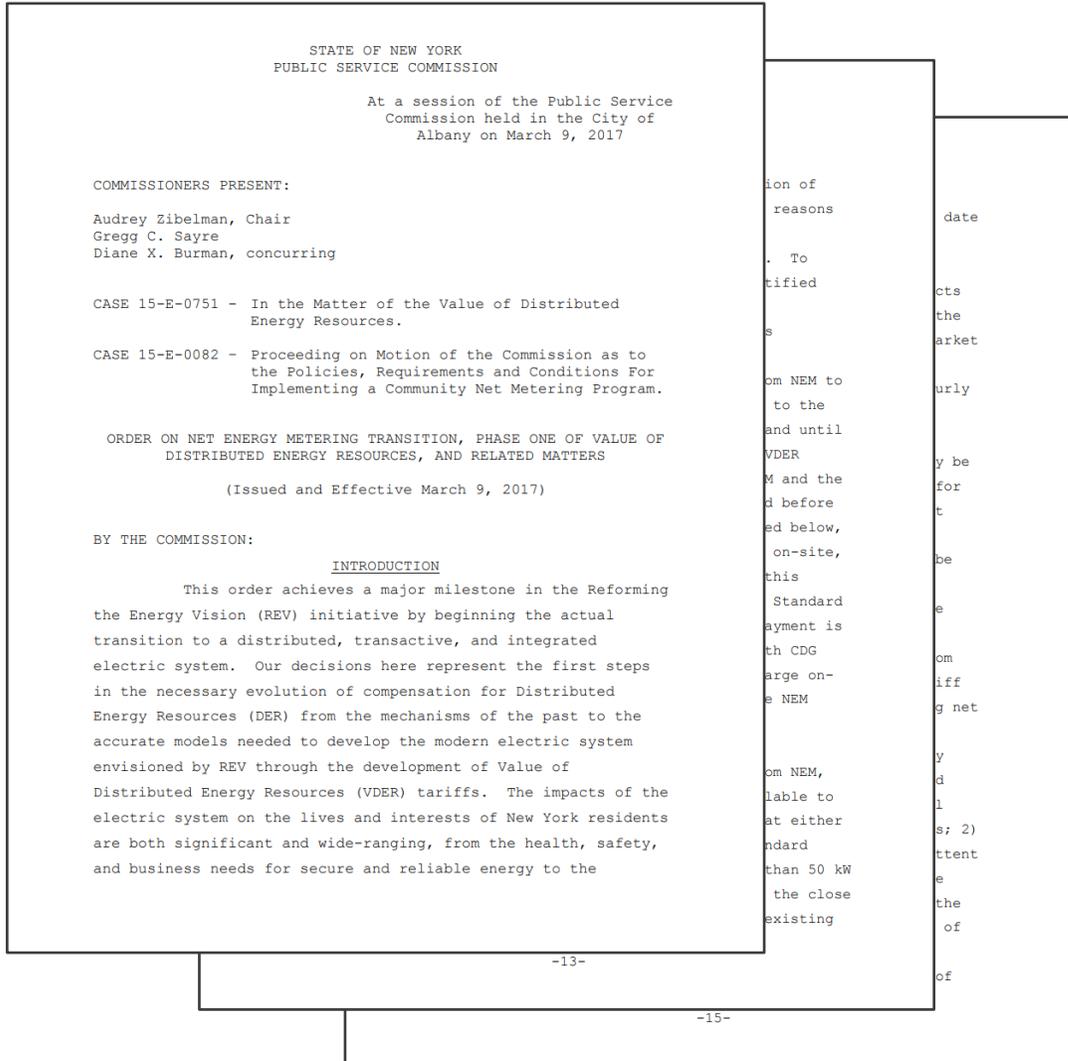
Collaboration goals:

1. Better understand New York's Value Stack method
2. Demonstrate challenges of applying Value Stack to wind energy
3. Suggest future considerations for Value Stack
4. Highlight the potential impact of future considerations



New York's Value Stack





Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters

Effective March 9th, 2017

Motivation for ending traditional net-metering

- It is a “blunt instrument”
- Doesn’t capture specific value
- Won’t encourage development

Transition to new approach

- Value of distributed energy resources (VDER)
- Determined via “value stack”
 - ✓ Energy
 - ✓ Capacity
 - ✓ Environmental
 - ✓ Demand reduction ← Primary interest of this collaboration
 - ✓ Locational system relief

New York's Value Stack



Value of DER Value Stack Calculator: Solar & Solar + Storage
For Projects Impacted by the Phase Two 2019 Value Stack Order (Qualified after 7/26/2018)

Prepared by:





Version 3.1. Last revised March 21, 2024.

The aim of this Calculator is to provide an estimate of the value of distributed solar, front-of-the-meter standalone storage, and paired solar+storage projects installed in New York State pursuant to the State of New York Public Service Commission's March 9, 2017 Order On Net Energy Metering Transition, Phase One Of Value Of Distributed Energy Resources and related following Orders, as well as the January 1, 2018 revision of the Long Island Power Authority Tariff for Electric Service and related following tariff updates.

NOTE: NYSEDA, NY-Sun and their subcontractors make no claim to and do not guarantee the accuracy of project revenue estimated by this calculator. Estimated project revenue modeled in this tool is heavily dependent on user-input factors; actual project revenue will be based on various factors, such as weather and future market rates for energy and capacity. Projected revenues should not be relied upon.

INSTRUCTIONS:

1. Make sure macros have been enabled using the yellow ribbon at the top of the Excel window. If you are receiving a red error message stating that the file is untrusted or macros cannot be enabled, you will need to first make this a trusted file in your Excel settings. We also recommend closing other large files in order to reduce run time.
2. Use User Inputs tab to select and enter data about your solar or solar + storage project.
3. Click either of the Calculate buttons on the User Inputs tab to run the calculator. Note that none of the outputs will update until the user hits Calculate.
4. See calculator results on the Summary Outputs and Detailed Outputs tabs.

TAB CONTENTS:

Cover	You are here! Provides instructions and tab contents.
User Inputs	Allows user to select solar, storage, and compensation inputs, and hit Calculate to run the calculator.
Summary Outputs	Provides annual summary outputs for total project value under Value Stack compensation
Detailed Outputs	Provides detailed monthly and annual outputs
Documentation	Documents sources and key assumptions made
Storage Outputs	Consolidates storage dispatch value from paired or standalone storage systems
Hybrid Storage	Provides storage dispatch logic and calculates value from paired solar+storage systems
Standalone Storage	Provides storage dispatch logic and calculates value from front-of-the-meter standalone storage systems
Retail Rates	Contains retail electricity rates commonly applicable for charging and discharging energy storage systems
Solar Profile	Contains PVWatts solar profiles for several locations, array types, and orientations in New York
On-site Loads	Contains DOE commercial building load shape profiles
Energy	Contains day-ahead locational-based marginal prices (LBMPs) from NYISO
Losses	Contains loss factors and factors of adjustment based on utility tariffs
Capacity	Contains values for the capacity component of the Value Stack by utility
DRV	Contains DRV compensation rate by utility
LSRV	Contains LSRV locations and compensation rates by utility
LSRV Hours	Contains estimated call hours for LSRV, by utility
CommunityCredit	Contains Community Credit information for each utility based on their filings

Excel workbook
prepared by
NY-Sun and E3

Detailed
definitions and
instructions

Quantifies all
value stack
elements

15+ sheets of
calculations and
results

New York's Value Stack



Value Stack Calculator v 3.1, for Projects Impacted by the 2019 Value Stack Order (Qualified after 7/26/2018)										
MONTHLY COMPENSATION FOR EXPORTS - SOLAR:										
	2025_1	2025_2	2025_3	2025_4	2025_5	2025_6	2025_7	2025_8	2025_9	2025_10
	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25
Exports										
Solar generation immediately exported by solar system (kWh)	15,634	36,693	25,953	30,688	16,611	17,342	14,540	13,812	14,379	25,320
Value stack compensation from solar exports (\$Nominal)										
Energy value	\$ 854	\$ 1,999	\$ 658	\$ 773	\$ 418	\$ 766	\$ 831	\$ 878	\$ 743	\$ 1,028
Capacity value (36-month average Alternative 1 Rate (Jan 2021-Dec 2023) selected)	\$ 312	\$ 697	\$ 200	\$ 108	\$ 233	\$ 261	\$ 231	\$ 228	\$ 279	\$ 679
Environmental value	\$ 485	\$ 1,139	\$ 805	\$ 952	\$ 515	\$ 538	\$ 451	\$ 429	\$ 446	\$ 786
Demand reduction value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 121	\$ 373	\$ 444	\$ 316	\$ -
Locational system relief value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Community Credit	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Value Stack compensation from solar generation immediately exported	\$ 1,651	\$ 3,834	\$ 1,663	\$ 1,834	\$ 1,167	\$ 1,685	\$ 1,886	\$ 1,978	\$ 1,784	\$ 2,492

Value stacked

Amount of energy exported

	2025_1	2025_2	2025_3	2025_4	2025_5	2025_6	2025_7	2025_8	2025_9	2025_10
	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25
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Locational system relief value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Community Credit	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total value of that energy	\$ 1,651	\$ 3,834	\$ 1,663	\$ 1,834	\$ 1,167	\$ 1,685	\$ 1,886	\$ 1,978	\$ 1,784	\$ 2,492

Total value of that energy



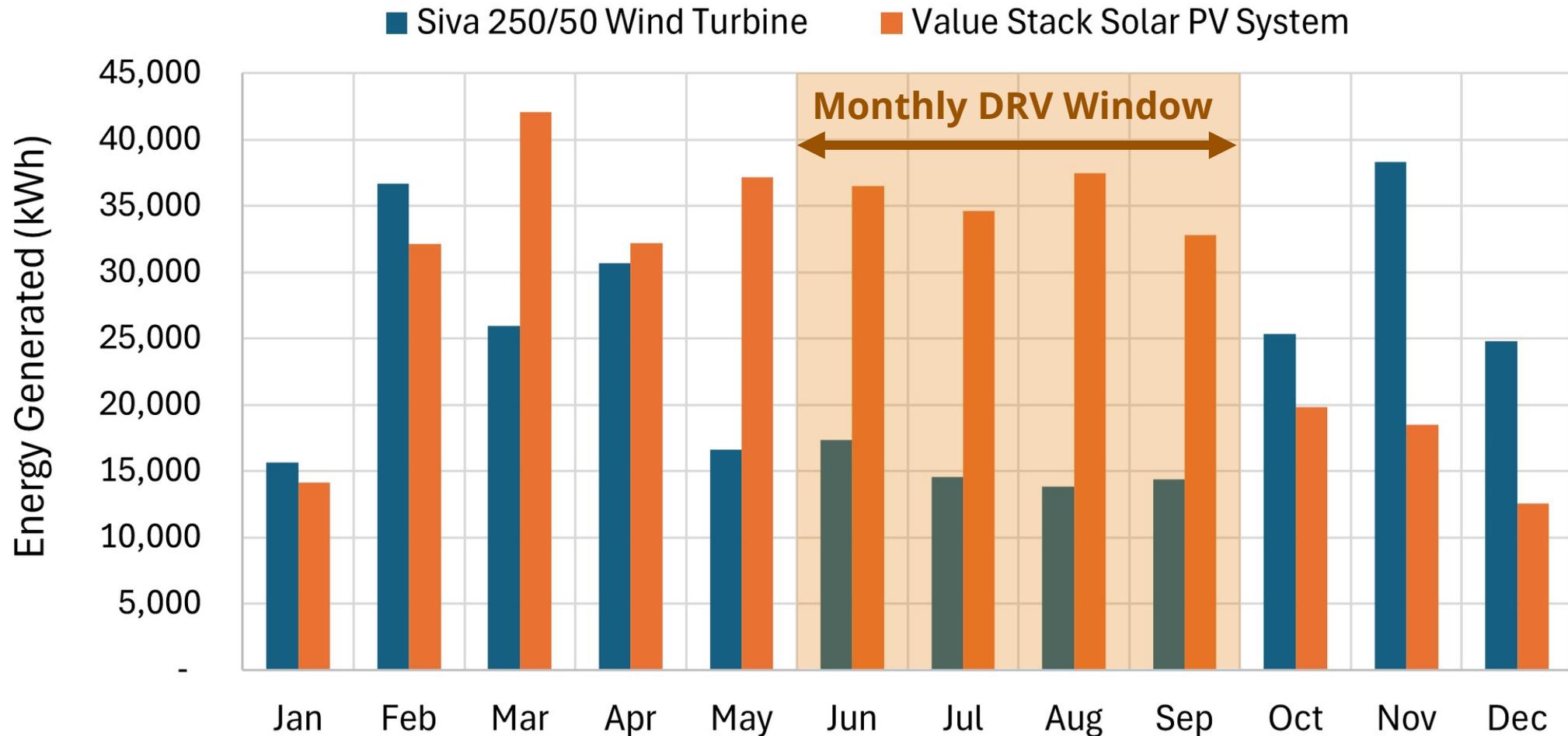
The Challenge of Evaluating Wind with the Value Stack



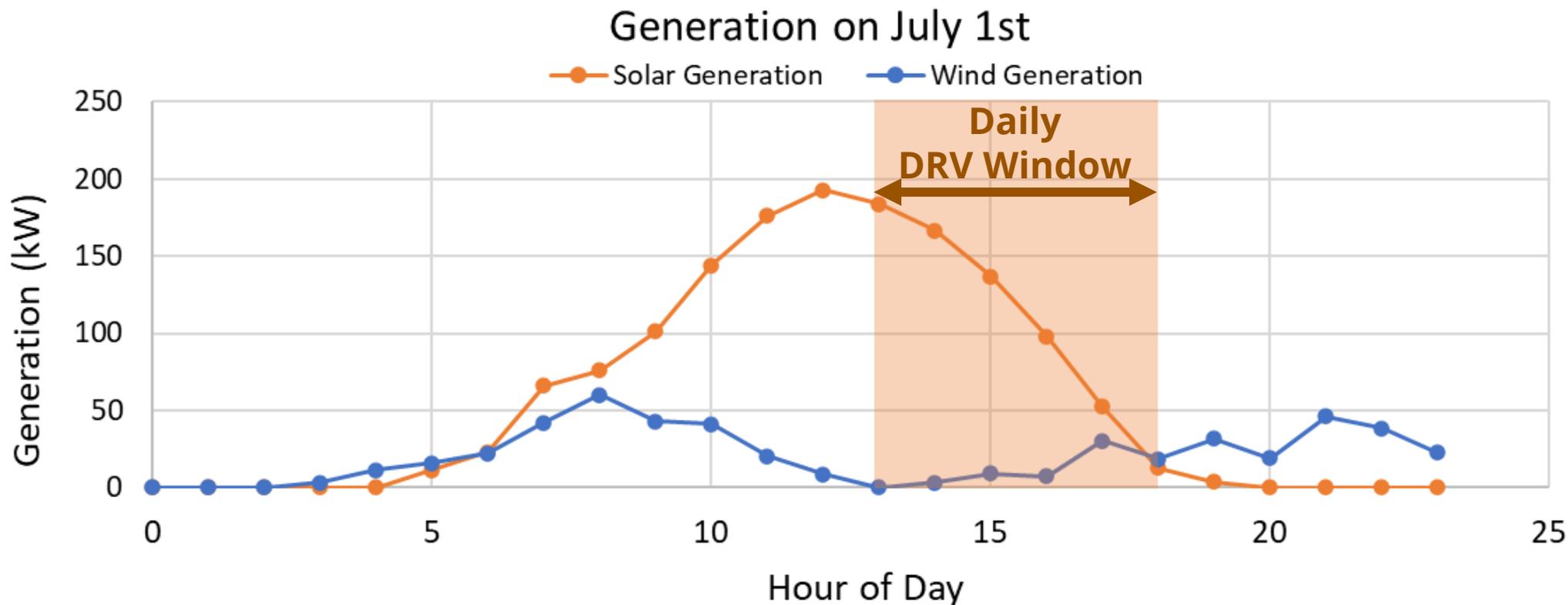
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Demand reduction value (DRV) is based on reducing the need to make future grid updates.



The Challenge of Evaluating Wind with the Value Stack



The Challenge of Evaluating Wind with the Value Stack



“The aim of this calculator is to provide an estimate of the value of distributed **solar**, front-of-the-meter standalone storage, and paired **solar**+storage projects installed in New York State”

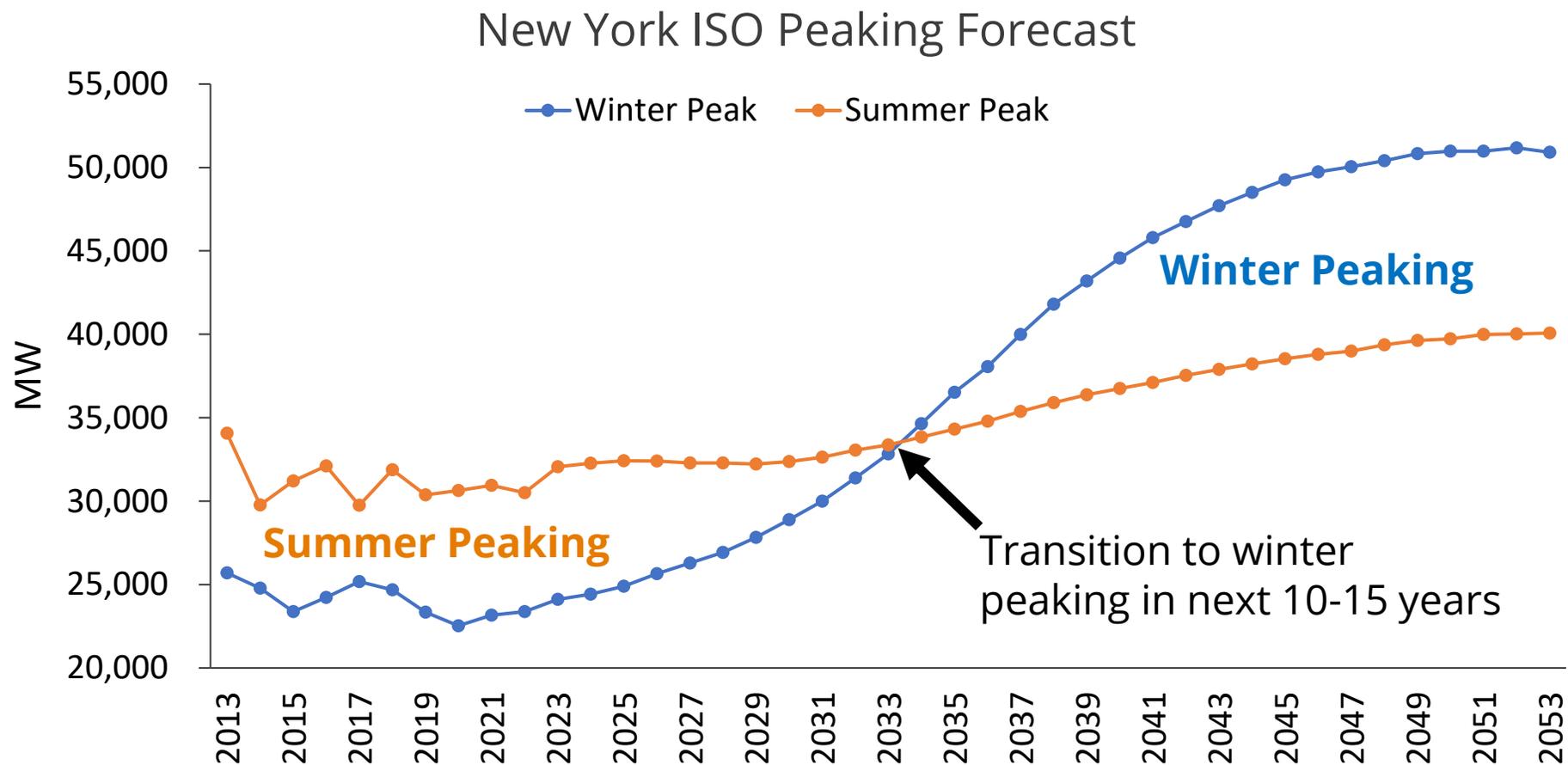
“Eligible technologies include solar photovoltaics (PV), stand-alone and co-located energy storage, certain types of combined heat and power (CHP), anaerobic digesters, **wind turbines**, small hydro and fuel cells.”



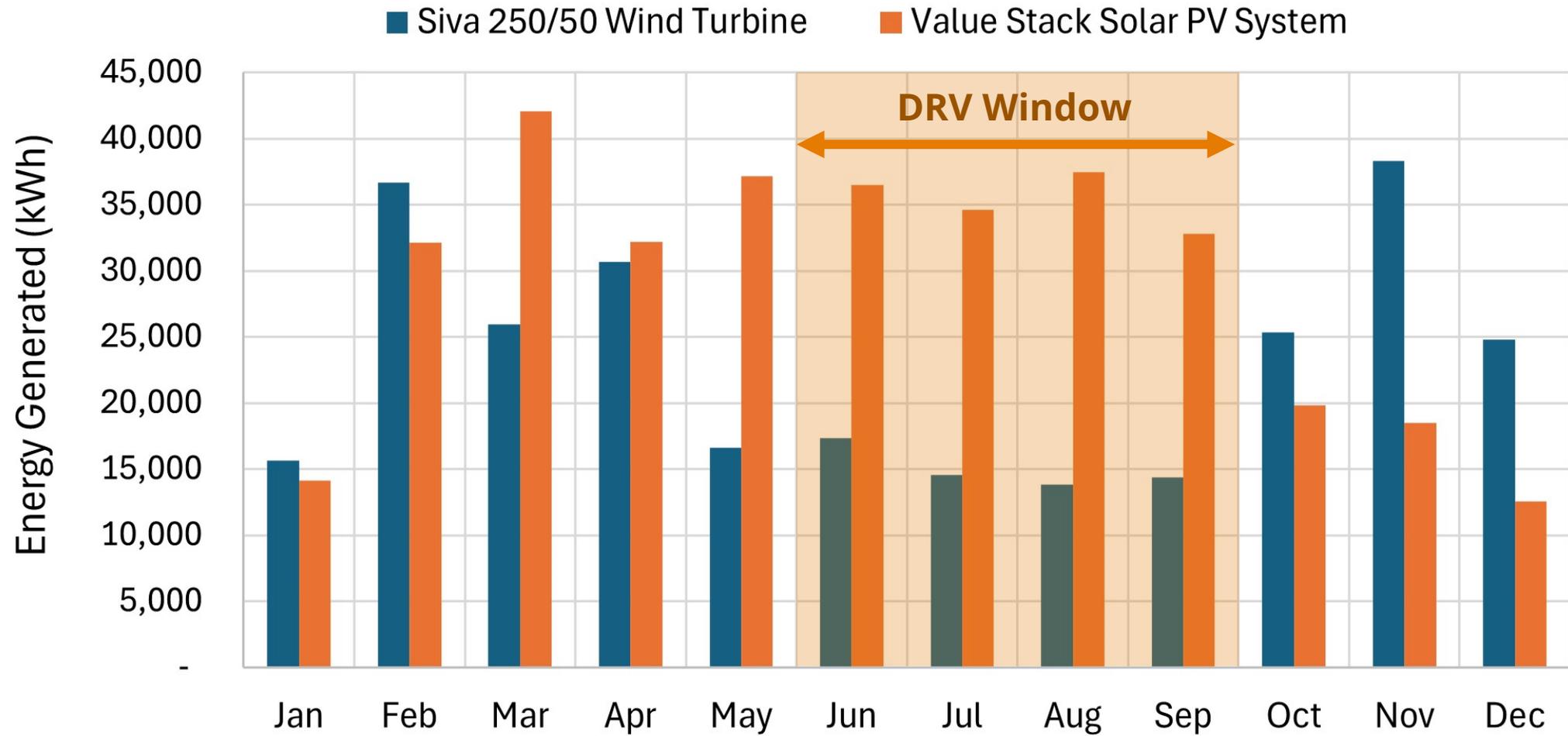
Future Considerations for the Value Stack



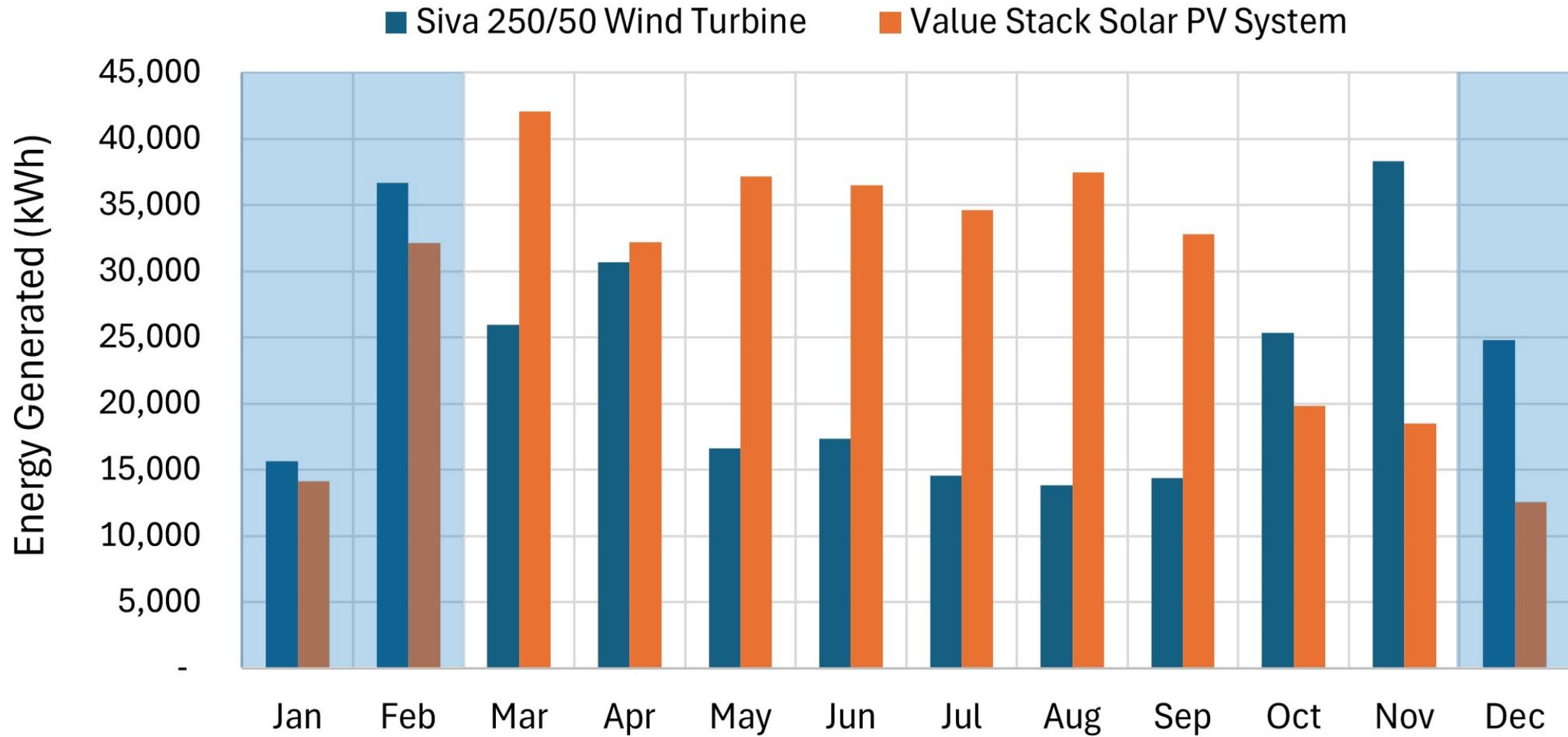
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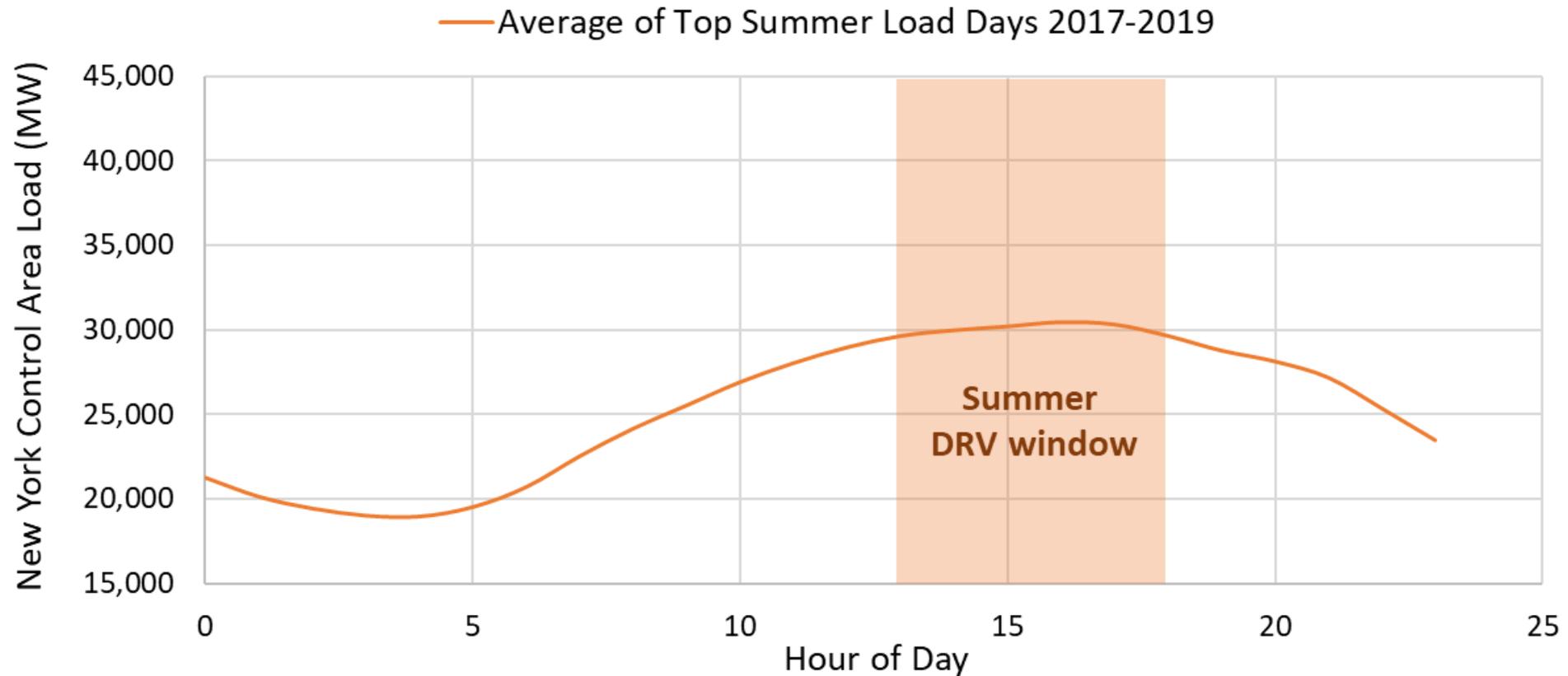
Future Considerations for the Value Stack



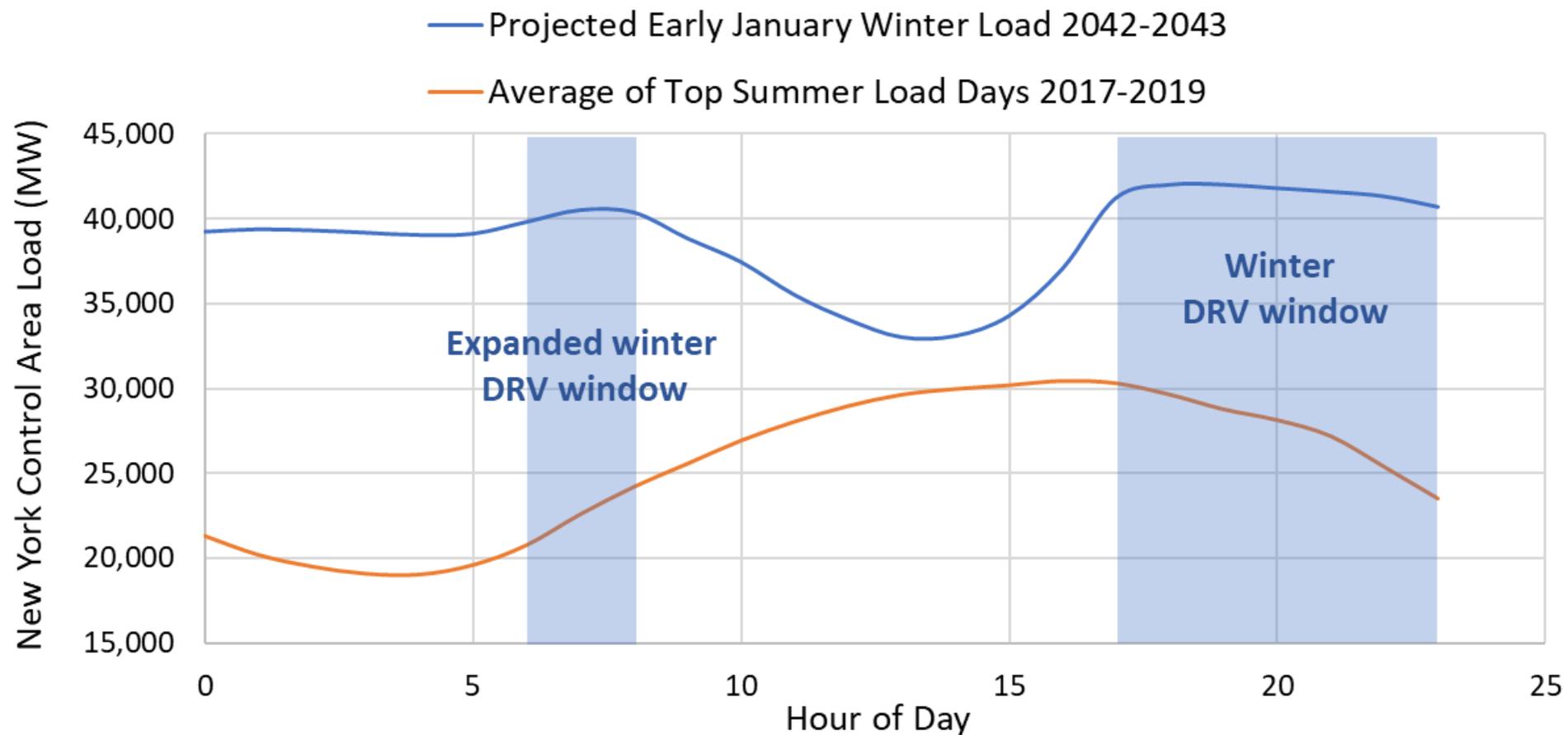
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Future Considerations for the Value Stack



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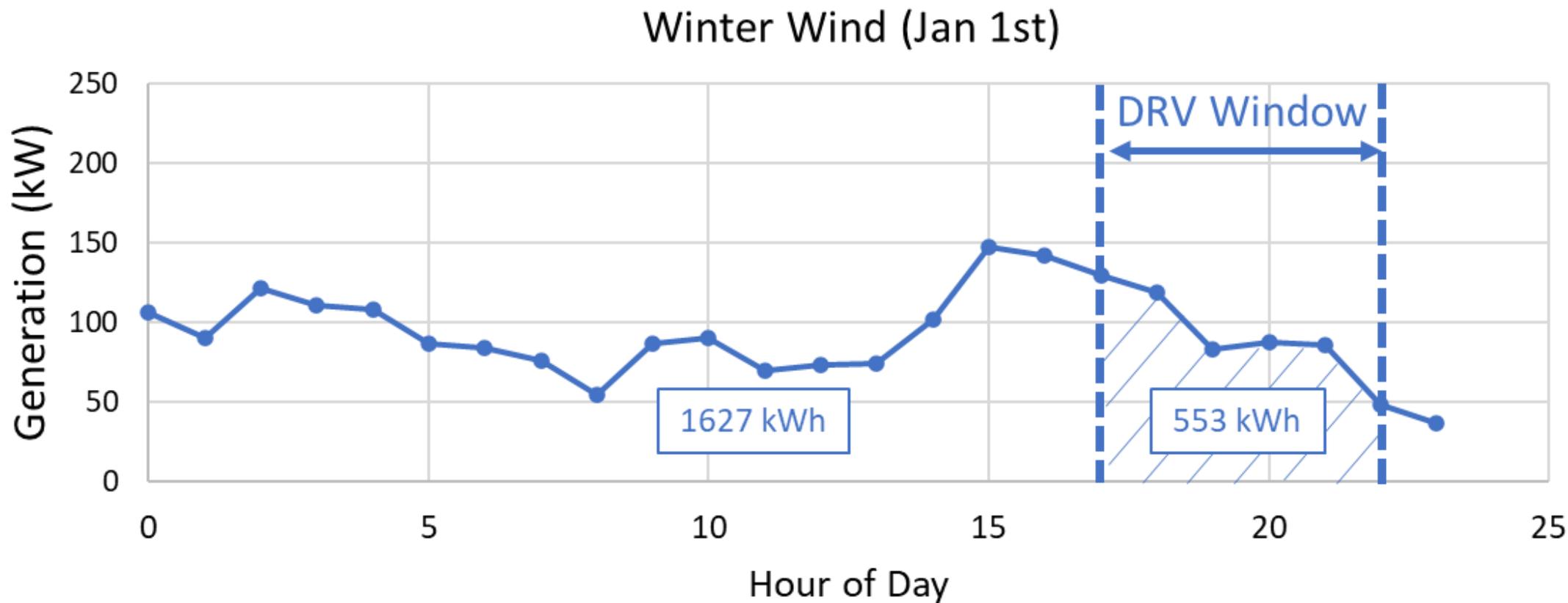




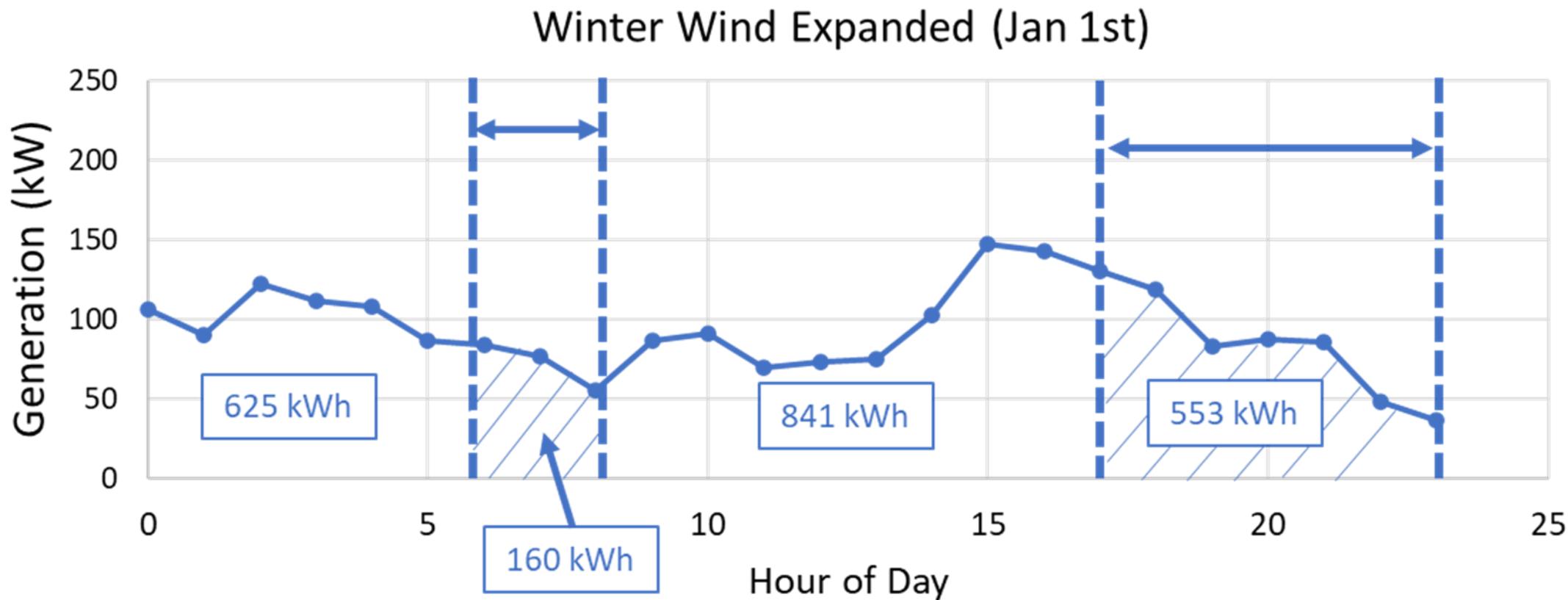
Impact of Future Considerations



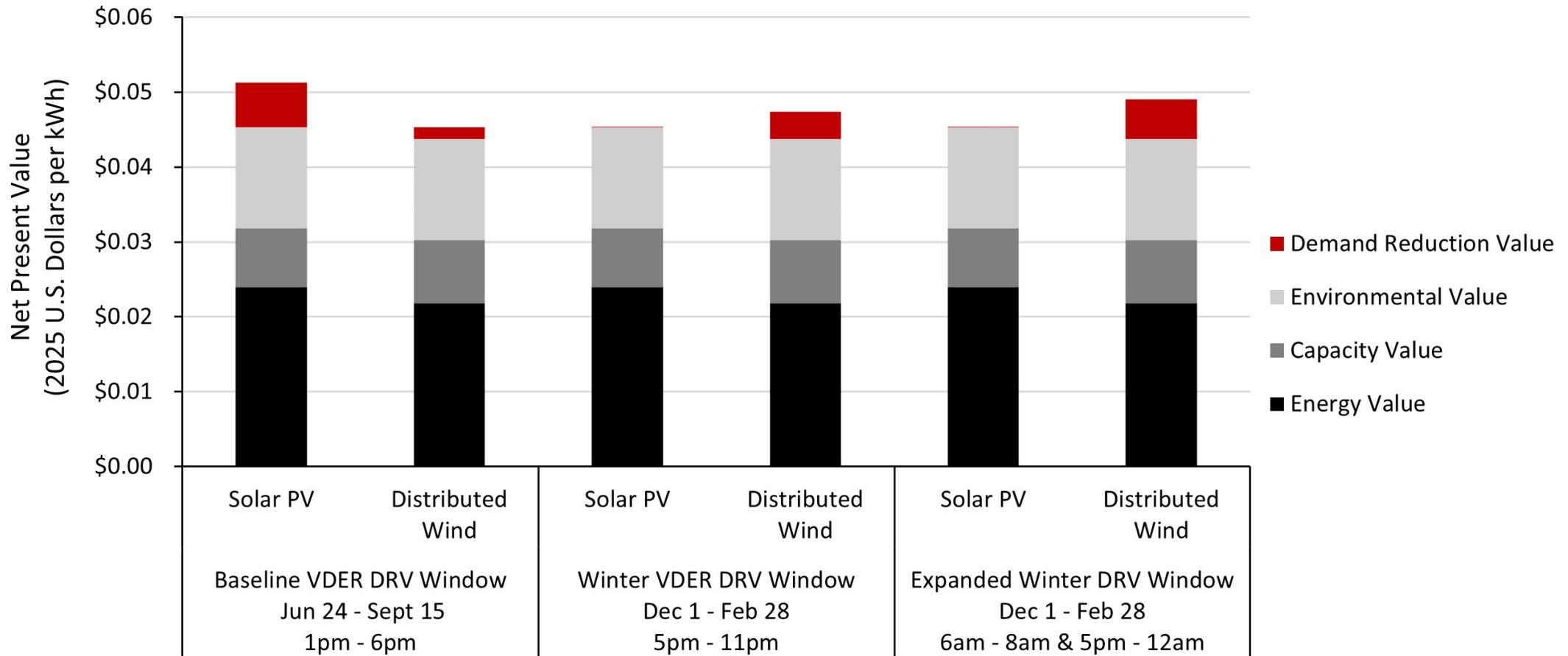
Impact of Future Considerations



Impact of Future Considerations



Impact of Future Considerations





Summary of Key Findings



Summary of Key Findings



Collaboration goals:

1. Better understand New York's Value Stack method
 - Sandia and Buffalo Renewables have improved understanding of the Value Stack
2. Demonstrate challenges of applying Value Stack to wind energy
 - Calculator built around solar generation and peak summer demand
 - In current value stack wind demonstrates lower value
3. Suggest future considerations for Value Stack
 - Alter the demand reduction value (DRV) windows to account for future winter peaking
4. Highlight the potential impact of future considerations
 - Wind becomes more valuable due to generation during peak winter hours

Questions or feedback?



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