

## Supporting Residential Solar in New York State

### Spruce – Residential Solar

*NY Green Bank (“NYGB”) has committed \$27.1 million to the recapitalization of a portfolio of residential PV assets by Spruce Finance Inc. (“Spruce”), including 9.0 MW of capacity in New York State (“NYS” or the “State”). NYGB’s participation in this transaction – alongside other commercial banks – supports the medium-term financing of post-tax equity residential photovoltaic (“PV”) assets and the secondary market for residential PV assets more broadly. The existence of a robust secondary market supports even greater development of residential solar assets through price discovery and greater availability of capital interested in investing in this asset class. In addition, NYGB’s involvement in this transaction contributes to ratepayers’ greater energy choices, and ultimately, lower-cost clean energy opportunities.*

### Transaction Description

Spruce owns a portfolio of approximately 23,500 residential PV systems that it operates and manages, located in 11 states including New York and California. NYGB has committed \$27.1 million alongside capital from five commercial banks to support the medium-term financing of these residential PV assets.

Since being acquired in 2017 by HPS Investment Partners, Spruce has crystalized its focus on its key business lines, sold non-core assets and cut administrative costs. Through the leadership of a new executive team, these initiatives resulted in Spruce achieving positive operating cash flow commencing in the fourth quarter of 2018. Market recognition of this transformation should continue to put downward pressure on credit financing costs. This transaction demonstrates to the market that a high quality portfolio of residential solar assets can successfully go through a turnaround under a well executed reorganization and recapitalization plan.

NYGB will provide support to an active actor in the residential solar value chain, Spruce. Both NYGB and Spruce believe that developers and investors will continue to view the New York residential solar market as robust and competitive. Developers and investors can enter the residential solar market knowing that potential buyers of their assets exist. Should they decide that they would like to exit their position and monetize their assets, Spruce (among similar parties) can support this as an active buy-side market player. A competitive landscape of both buyers and sellers will drive the continued growth of residential solar in the State.

This transaction compliments a previous commitment by NYGB to Spruce in March 2017, that was refinanced by this new recapitalization transaction. In the prior transaction, NYGB committed \$6.0 million to a five-year \$99.4 million senior secured term loan (which Spruce used to refinance an existing aggregation facility supporting 86.0 MW of generating capacity across 12,711 homes in 11 states). Over 6.2% of the initial portfolio was located in New York State and NYGB’s activity helped establish a new medium-term lending market for financing existing residential solar systems in NYS while providing liquidity for Spruce to develop additional projects.

Many benefits of Clean Energy Fund initiatives in the State (including NYGB investments like the Rock Wind and Valcour transactions) comprise follow-on market activity as part of quantifying overall impact. In this instance, the provision of secondary financing of operating PV assets is expected to provide confidence to developers and future financiers that there is increasing liquidity in the residential solar asset class, throughout the project lifecycle, spurring even greater interest and activity from developers and financiers. NYGB expects to see material indirect benefits from transactions like this one in the form of more residential PV development for NYS. Specific estimated indirect impact benefits associated with this transaction are set out in the “Metrics & Evaluation Plan” section of this Transaction Profile, below.

This Transaction Profile is provided pursuant to the updated “NY Green Bank – Metrics, Reporting & Evaluation Plan, Version 3.0” (the “**Metrics Plan**”) developed in collaboration with the NYS Department of Public Service and filed with the NYS Public Service Commission (the “**Commission**”) on June 20, 2016.<sup>1</sup> This Transaction Profile contains specific information in connection with the Spruce transaction entered into on April 30, 2019, as required by the Metrics Plan.<sup>2</sup>

## Form of NYGB Investment

NYGB Product	Product Sub-Type	Committed Capital
Asset Loan & Investment	Term Loan	\$27.1 million

## Location(s) of Underlying Project(s)

Statewide.<sup>3</sup> Spruce will refinance projects throughout New York

## Types of Client & Counterparty Organizations that are Transaction Participants

	Name	Participant Type
<b>Client</b>	Kilowatt Systems, LLC Volta Solar Owner 1, LLC Volta MH Owner II, LLC	Project Holding Companies
<b>Sponsor(s)</b>	Spruce Holding Company 1, LLC Spruce Holding Company 2, LLC Spruce Holding Company 3, LLC (together, “ <b>Spruce</b> ”)	Solar Operating Company
<b>Counterparties (current)</b>	Silicon Valley Bank, ING, KeyBank, EastWest Bank, BankUnited	Commercial Banks

## Summary of Financing Market Objectives & Barriers Addressed

Beneficiary	Market Barrier	Financing Solution
<b>Project Developers / PV Asset Managers</b>	Solar developers may face difficulties refinancing assets efficiently after the tax equity period ends.	NYGB’s participation supports a liquid secondary market for operating projects where the perceived market need is greatest. This may catalyze growth and developer activity throughout the project life cycle.
<b>Capital Market Participants</b>	Capital market participants may be interested in owning or financing residential solar assets, but may have a mismatch between the life of the solar assets and the duration of their desired exposure.	NYGB’s participation provides an important market signal that a liquid secondary market in such assets exists and should continue to exist. Knowledge of market liquidity and ability to periodically validate asset value via the market should provide enticement to interested investors.
<b>New Yorkers</b>	While interest and activity in residential solar projects has been robust and continues to increase in NYS, certain inefficiencies may exist in financing the full PV asset life cycle.	By bridging financing gaps in the secondary marketplace, NYGB is encouraging more primary residential solar development in the State. Ultimately this is expected to provide New Yorkers with greater choices and access to clean energy at a lower cost.

<sup>1</sup> Case 13-M-0412.

<sup>2</sup> See Section 4.0, page 8 and Schedule 3.

<sup>3</sup> Defined as projects located in four or more regions of the State

## Technologies Involved

Technology	Measures
Renewable Energy	Residential PV Systems

## Metrics & Evaluation Plan

### Planned Energy & Environmental Metrics

NYGB's minimum investment criteria specifically require that "transactions will have the potential for energy savings and/or clean energy generation that will contribute to greenhouse gas ["GHG"] reductions in support of New York's energy policies".<sup>4</sup> In addition, the Metrics Plan requires that the following energy and environmental measures, applicable to this transaction, be reported on:<sup>5</sup>

- Estimated gross lifetime and first-year clean energy generated (MWh);
- Estimated gross clean energy generation installed capacity (MW); and
- Estimated gross lifetime and first-year GHG emission reductions (metric tons).

Since this transaction involves the secondary market financing of existing PV assets, there are no claimed direct incremental impact benefits. However, material indirect impact benefits are expected to result for the State from NYGB investments of this nature.<sup>6</sup> The estimated additional gross lifetime and first-year energy and environmental impacts of the Spruce projects are as follows:

Energy/Environmental Indirect Impact	Annual Estimate	Lifetime Estimate
Estimated clean energy generation installed capacity (MW)	9.1 – 21.0	
Estimated clean energy generated (MWh)	10,674 – 24,724	266,845 – 618,106
Estimated GHG emission reductions (metric tons)	5,616 – 13,009	140,406 – 325,230

### Planned Market Characterization Baseline & Market Transformation Potential

The Metrics Plan requires that market evaluation occurs when a critical mass of NYGB financing and investment arrangements are put in place, approximately three to five years following initial NYGB capital deployments. Market evaluation activities commenced in 2018 to collect baseline data on key market indicators for the sectors that have been supported by NYGB since its inception, and the dataset will be updated going forward to include indicators specific to this and other transactions. Baseline data will be used as a comparison point against which to assess market progress in the later studies. Progress indicators are defined below for the short, mid and long-terms.

Output indicators will identify early activity levels and will be regularly tracked at least for the duration of the transaction. These include, but are not limited to:

- Number of new PV projects acquired by Spruce or similar market participants;
- Average and aggregate dollar value of projects;
- Location of projects;
- Size of projects (i.e., installed capacity in MW);
- Estimated renewable energy generation (in MWh); and
- Estimated GHG emission reductions (in metric tons).

<sup>4</sup> Case 13-M-0412, "Order Establishing New York Green Bank and Providing Initial Capitalization" issued and effective December 19, 2013 of the Commission, Ordering Clause 6 at pages 24 - 25.

<sup>5</sup> See Metrics Plan, Section 2.0, pages 2 - 6.

<sup>6</sup> As the attribution of indirect benefits is an evolving area for the Clean Energy Fund and NYGB, details with respect the methodologies and key assumptions involved will be included in NYGB's future Quarterly Metrics & Evaluation Report, with the next such report due to be filed on [May 15, 2019].

Outcome indicators are expected to show progress through program tracking or market evaluation over time. These include, but are not limited to:

- Favorable financial performance data;
- Favorable technology performance data;
- Increasing market volume of residential PV (both development and primary/secondary financings);
- Investment risk/default rates become increasingly attractive to investors as a result of positive financial performance data;
- Amount and scale of PV investment increases, together with increased end-use market demand;
- Decreasing project technology costs/increasing output and efficiency; and
- Decreasing financing costs based on higher liquidity and price discovery.

### **Proposed Method of Outcome/Impact Evaluation (by NYSERDA) & Timeframe**

NYSERDA will evaluate the direct and indirect impacts that this transaction has on the clean energy finance markets and the energy/environmental benefits delivered by this transaction.

**Market evaluation** will address the short, mid and long-term indicators identified above. Methods will include analysis of program data along with interviews and surveys of market participants to track information including but not limited to: project scale information, interest in solar financing and influence of NYGB's participation on primary and secondary financial markets. As noted, baseline data is being collected on key indicators in the first phase evaluation during 2018 – 19. Later follow-up studies will assess progress against baseline levels for other market segments as those evolve. The specific timing of these efforts may be revised based on experience or other factors as NYGB's investment portfolio further develops and evolves.

**Impact evaluation** will assess the further development of projects to verify that PV system installations are occurring over time as part of expected market follow-on activity and that those new systems are collectively generating clean energy and impact benefits within the estimated ranges set out in this Transaction Profile.

As with all NYGB investments, projects that receive an incentive or funding from other entities (e.g., utility, other NYSERDA program) will, in accordance with the Metrics Plan, be tracked in order to minimize any double-counting activity on a consolidated basis. As set out in the Metrics Plan, evaluation sampling approaches will also be used as a mechanism to estimate overlap and minimize double counting. Attempts will be made to coordinate market and impact evaluation activities for these projects that receive support from multiple sources in order to maximize the efficiency of data collection and avoid participant survey fatigue.