

NY Green Bank Financial Market Transformation Study

Executive Summary

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1. NY GREEN BANK DESCRIPTION.

NY Green Bank (“**NYGB**”) is a \$1.0 billion investment fund designed to accelerate clean energy deployment in New York State. Since its formation, NYGB has worked to increase the size, volume and breadth of clean energy investment in New York State (the “**State**” or “**NYS**”), expand the base of investors in clean energy deployment in the State, and increase market participants’ access to capital on commercial terms.

To achieve these objectives, NYGB collaborates with the private sector to develop transaction structures and methodologies that address barriers to clean energy investment. Through its work with counterparties (clean energy project developers, other firms delivering clean energy solutions, and financial institutions) NYGB has identified many financial market barriers that impede the flow of capital to potentially attractive opportunities. Among the most common are:

- Lack of transaction standardization;
- Insufficient scale and volume relative to the business objectives and practices of large investors; and
- Inadequate data on project sponsors and counterparty credits; underlying debt (or equity) investments; technology performance; and underdeveloped or nonexistent capital markets for clean energy projects.

To address these barriers, NYGB’s investment strategy focuses on identifying and developing opportunities that create attractive precedents, standardized practices and roadmaps that capital providers can readily replicate and scale. As funders “crowd in” to a particular area within the clean energy landscape, NYGB moves on to other areas that have received less investor interest.

NYGB initiated financing operations in 2014 and closed its first financing transactions in 2015. As of December 31, 2018, NYGB had closed \$637.6 million in overall investments to support between \$1.51 and \$1.75 billion of total clean energy project deployment. In the process, NYGB has worked with 55 counterparties.

NYGB is a division of the New York State Energy Research and Development Authority (“**NYSERDA**”). NYSERDA commissioned this first independent NY Green Bank Financial Market Transformation Study (the “**Study**”) of the effect that NYGB’s activities have had on clean energy financing markets in NYS. This report (the “**Report**”) summarizes the results of the first phase of the Study, which was conducted between September 2018 and February 2019. NYSERDA plans to conduct subsequent updates to measure change over time in NYGB’s impact on these markets.

2. SUMMARY OF STUDY OBJECTIVES AND METHODS.

Working with NYGB, NYSERDA staff developed a study approach designed to assess the influence of NYGB's early activities on the following characteristics of the clean energy finance markets in NYS:

1. Knowledge of and confidence in clean energy investments among financial institutions;
2. Number and type of financial institutions active in clean energy markets;
3. Availability of favorable terms in financing offered to clean energy projects and companies;
4. Pace of clean energy project deployment; and
5. Volume of clean energy project financing.

DNV GL divided the Study into two work streams.

Baseline Assessment. DNV GL appraised the state of the market during the period 2015 – 2018 (“the **Study Period**”), representing conditions before NYGB financing activity began in earnest and as it ramped up, using a set of market indicators specified by NYSERDA and NYGB as part of the Study plan. The baseline assessment (“**Baseline Assessment**”) drew primarily on the results of surveys of developers and financiers conducted for the Study, supplemented by review of internal NYGB documents and an array of secondary sources. The Baseline Assessment was intended to provide a structured snapshot of market conditions that can be replicated in subsequent updates of the Study designed to gauge market progress over time.

Attribution Analysis. The attribution analysis (“**Attribution Analysis**”) addressed the questions: How and to what extent did NYGB's activities contribute to changes observed in the clean energy finance market during the Study Period? The key challenge in answering these questions was to appropriately characterize and weigh factors *other than NYGB's activities* that shaped and influenced the business practices of participants in those markets. Many factors influenced the activities of clean energy project developers: changes in costs, energy prices, energy market regulation, tax law and general economic policy. Financiers were influenced by a similar set of factors, as well as by trends in the costs of capital, financial market regulation, and developments in industries and regions that offered alternate investment opportunities.

The Study team integrated the results of the Baseline Assessment and Attribution Analysis to assess the strength of evidence for market effects of NYGB activities across each of the market indicators.

3. OVERVIEW OF FINDINGS

NYGB has made a strong start in achieving its goals. Five years after its formation, and with \$637.6 million in overall investments as of December 31, 2018, NYGB has become a more established investment and asset management platform. However, some of NYGB's investments are still in their

early stages while the portfolio continues to mature. NYGB's transactions typically involve agreements among multiple parties and often require months to close. In sectors such as community and commercial/industrial solar, for example, the underlying projects typically take 18 – 24 months to plan and complete. The Study Period encompasses the earliest stages of NYGB's financing operations and the market response to those activities.

Given the timeframe of the Study Period and the range of other influences on clean energy finance markets, the DNV GL study team expected to find, at best, modest evidence of NYGB's influence. However, DNV GL identified credible evidence of NYGB's influence on many of the market indicators. The following summarizes the Study's major findings.

The success of the Mosaic transaction demonstrates the efficacy of NYGB's strategy. In 2014, Mosaic, Inc. launched a novel business model for financing residential solar systems that reduced the high customer acquisition and financing costs that had begun to inhibit growth in the solar PV industry. By mid-2015, Mosaic needed a pool of capital from which it could make thousands of loans to homeowners through a nationwide network of participating dealers. In early 2016, NYGB joined one other bank and committed \$50 million in two stages to the credit facility which grew to \$270 million with the participation of two other financial institutions. Mosaic used the credit and operating experience gained with the warehouse credit facility to support the development of a credit-rated securitization, through which it could access significant sums from large investors on favorable interest terms. Over the next 20 months, Mosaic issued four additional securitizations, raising over \$1.1 billion from more than 30 banks and investor groups. After only four years in the market, the Mosaic Solar Loan program commanded 14% of the market for residential solar project financing nationally. DNV GL identified links between NYGB activities and positive developments in four of the five market characteristics identified above and concluded that NYGB had influenced the speed and scale of Mosaic's growth.

DNV GL identified changes in many of the evaluated market indicators that were directionally consistent with hypotheses concerning the market effects of NYGB activities. DNV GL also found evidence of NYGB influence on most of these observed changes. However, the evidence was generally not significant enough to support a definitive judgment of a causal relationship between NYGB activities and the market changes observed. As discussed earlier, DNV GL anticipated this pattern in the findings given that the Study Period covers only the earliest stages of NYGB operation.

The Study found evidence of NYGB's impact on the following market changes:

- Increase in the number of and average size of project financings and their total dollar volume in markets NYGB entered, particularly in residential, community, and commercial/industrial solar.

- Increase in the number and type of financial institutions active in the clean energy finance markets.
- In the residential solar financing market, the Study team found evidence of decreases in costs of capital for transactions that fund loans or leases to customers, the growth of secondary markets, and replication in the structure of transactions in which NYGB played an early role.

Most of the clear evidence on NYBG influence came from the Mosaic case study. NYGB's key role in financing Mosaic's first major credit facility, the importance of the operating information generated by that facility in supporting access to lower-cost securitized financing, the company's rapid growth *within the three-year Study Period*, and the small number of significant competitors in the market support a strong case for NYGB's impact.

It is too early to infer a strong influence of NYGB's activities and the transformation of other markets in which it operates, such as community solar, commercial industrial solar, and commercial sector energy efficiency. Exogenous factors such as government regulation and industry fragmentation across both developers and financiers, coupled with limited data on market activity made it difficult for the Baseline Assessment and Attribution Analysis to isolate the impact of NYGB. In other cases, the scale of business activity by NYGB's counterparties remained too small during the Study Period to support a plausible argument related to effects on the broader market. It is expected that future studies will identify further evidence of market change and of NYGB's impact.

DNV GL identified little consistent evidence of NYGB's influence on one of the key market indicators: financial institution knowledge and confidence in clean energy investments. This indicator was originally anticipated to show change over a short (1-3 year) time frame. In several cases, NYGB's counterparties were first movers willing to make new kinds of investments. Thus, NYGB's investments generated new operating and credit experience that could serve as a guide to structuring similar future transactions. However, the volume of such experience remains too small for NYGB to aggregate across transaction types and disseminate anonymized data to the market more broadly. Hence, it is too early to detect a strong observable effect of NYGB's activities on financier and developer knowledge and confidence in clean energy investments. Future impact studies may detect a stronger influence of NYGB on this market indicator.