

Enabling Growth & Expanding Financing Opportunities for Hydrogen Fuel Cell Projects

Plug Power, Inc.

NY Green Bank (“NYGB”) has closed two transactions with Latham, NY-based hydrogen and fuel cell systems manufacturer Plug Power, Inc. (“PP”) to support deployment and growth of its New York State (“NYS”) operations. These transactions – including an original \$25.0 million term loan facility (the “Facility”) and an upsize of that facility with another \$20.0 million from NYGB – will enable PP to expand deployments of its GenDrive units, adding up to 2,340 new systems for commercial customers, replacing current infrastructure with cleaner, more efficient alternatives, while growing its NYS labor force by up to 156 new employees.

Transaction Description

On December 23, 2016, NYGB and PP closed on a \$25.0 million term loan facility to PP to finance the deployment of fuel cell systems powering forklifts in distribution centers across NYS (the “**Project**”). On July 21, 2017, that facility was upsized by an additional \$20.0 million to finance Plug’s continued deployment growth, which surpassed initial expectations. The overall \$45.0 million financing facility (the “**Facility**”) allows PP immediate access to capital that is currently held as cash collateral in restricted accounts, rather than waiting for it to be released over time as payments are made through sale-leasebacks arrangements with tax equity providers. NYGB’s participation in the Facility is significant because it enables PP to deploy more systems and convert more forklift fleets in a shorter amount of time than would otherwise be possible.

PP is a designer and manufacturer of fuel cell systems and fueling infrastructure that specializes in deploying its fuel cell propulsion systems across entire fleets of forklifts and transportation vehicles within distribution centers throughout the U.S. PP deploys these systems and then provides a suite of services to operate them – such as procuring the hydrogen fuel the systems run on, and providing ongoing operations and maintenance to keep the systems running at a guaranteed uptime level – all as a single turnkey offering to the owner of the manufacturing site or distribution center. Many of PP’s current customers are major corporations in the automotive manufacturing, retail distribution and consumer goods industry.

These transactions constitute NYGB’s first investments in the fuel cell industry, which is still relatively small nationally but growing at an above-market average rate. As a result of the relatively limited track record for this particular technology, many firms in the industry experience high borrowing costs. NYGB participation in the transaction aims to address those high costs for PP and other similar companies in the sector by making otherwise restricted capital available to PP, so they can continue scaling their business, including to the levels where capital costs are expected to be significantly reduced.

This Transaction Profile is provided pursuant to the “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, 2016.² This Transaction Profile contains specific information in connection with the Facility (which was entered into on December 23, 2016, and increased on July 21, 2017), as required by the Metrics Plan.³

¹ Refer to the Summary of Changes document for details of updates, available at www.greenbank.ny.gov/Investments/Transaction-Profiles.

² Case 13-M-0412.

³ See Section 4.0, page 8 and Schedule 3.

Form of NYGB Investment

NYGB Product	Product Sub-Type	Committed Capital
Term Loan	Senior Secured Debt	\$45.0 million

Location(s) of Underlying Project(s)

Statewide.⁴ Projects will be located in distribution centers across NYS.

Types of Client & Partner Organizations that are Transaction Participants

	Name	Participant Type
Clients & Counterparties (current)	Plug Power, Inc.	Energy Technology Provider & Vendor
	Lessor Banks	Boutique Investment Banks/Advisory, Specialty Finance Company
Counterparties (future)	To be determined	Property Owner/Developer

Summary of Financing Market Objectives & Barriers Addressed

Beneficiary	Market Barrier	Financing Solution
Fuel Cell Industry	Because fuel cell technology at commercial scale is relatively new, private capital providers are often hesitant to lend to the industry. As a result, fuel cell manufacturers and providers face high costs of capital which impede further business development. Many capital providers also don't assume project risk, and consequently require large cash collateral accounts if they are funding new projects. These collateral accounts, in addition to high borrowing costs, decrease the already thin margin under which fuel cell providers currently operate.	NYGB participation in the Facility will lessen the burden of the cash collateral accounts for PP, and allow PP to expand its business in NYS. This signals to private capital providers that fuel cells are a viable and profitable technology, which should further drive down future costs of capital, reduce or remove the need for cash collateralization, and encourage more capital providers to enter the market.
	To date, limited availability and high costs of capital have kept the fuel cell industry from a more rapid expansion. Many logistics and distribution center customers, who could greatly benefit from the reduced cost and increased efficiency of fuel cell systems, are unable to access these opportunities due to a lack of financing.	NYGB's participation in these transactions will facilitate the more widespread deployment of fuel cell systems at a reduced cost. This should expand the number of interested parties that can benefit from this advanced technology while increasing demand for fuel cells and ultimately driving down costs as economies of scale are achieved.

⁴ Defined as projects located in four or more regions across the State.

Beneficiary	Market Barrier	Financing Solution
Capital Market Participants	Many private capital providers are hesitant to enter the fuel cell market due to the limited track record of the technology and its implementation at scale. Many of those who are interested in entering into this segment of the market are charging higher capital costs to address the perceived risk associated with this lesser known technology type.	The transaction structure NYGB is using can ultimately encourage other fuel cell companies to monetize their cash collateral accounts via the capital markets by demonstrating a transaction structure through which this can be done and replicated. In addition, NYGB capital will allow the fuel cell propulsion model to further build its track record, making it more attractive to, and financeable by, private capital providers.

Technologies Involved

Technology	Measures
Fuel Cells	Hydrogen-based fuel cell propulsion systems capable of powering forklifts and industrial and commercial vehicles.

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".⁵ In addition, the Metrics Plan requires that the following energy and environmental measures, applicable to these transactions, be reported on⁶:

- 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).

The estimated lifetime and first-year energy and environmental impacts of the Project, facilitated by NYGB's financial participation in the Facility, are as follows:

Energy/Environmental Impact	Lifetime Low Estimate	Lifetime High Estimate	First-Year Low Estimate	First-Year High Estimate
Estimated clean, renewable energy generated (MWh)	131,000	161,000	13,100	16,100
Estimated clean energy generation installed capacity (MW) ⁷	4.21	5.15	Not Applicable	
Estimated GHG emission reductions (metric tons) ⁸	72,600	95,700	7,260	9,570

⁵ 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.

⁶ See Metrics Plan, Section 2.0, pages 2 - 6.

⁷ First year energy generation refers to the first year of estimated energy generation once a measure is installed and as such generation will not necessarily correspond to the first year of the investment term. The majority of NYGB's investments have a two to three-year development cycle in which projects are originated, installed, and placed into commercial operation.

⁸ As of January 1, 2016, the New York State Energy Research and Development Authority ("NYSERDA") utilizes a 1,160 lbs/MWh conversion factor to estimate GHG emissions reductions for electric generation and energy efficiency savings across all components of the Clean Energy Fund. NYSERDA previously utilized a 625 lbs/MWh conversion factor.

Planned Market Characterization Baseline & Market Transformation Potential

The Metrics Plan requires that market evaluation will occur when a critical mass of NYGB financing and investment arrangements are put in place. This market evaluation will be conducted on sectors that NYGB has supported and will occur approximately three to five years following initial NYGB capital deployments.⁹ Baseline data will be collected in 2017 for most indicators 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.

Short-term progress indicators will identify early activity levels and will be regularly tracked for the duration of the Facility. These include, but are not limited to:

- Increased system deployment;
- GHG emission reductions;
- Job growth within PP; and
- Favorable technology performance data.

Mid and long-term indicators will be expected to show progress through program tracking or market evaluation over time. These include, but are not limited to:

- Increased volume of projects in core and secondary markets;
- Lower cost of capital and increased operating margin for PP;
- Financial entities emerge showing interest in NYGB's transaction position;
- Relationships with financial partners established; and
- Continued energy savings, emissions reductions.

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

NYSERDA will evaluate the impact these transactions have had on the clean energy finance markets and the corresponding energy/environmental benefits delivered.

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 fuel cell financing, and influence of NYGB's participation on financial markets. As noted, baseline data will be collected on most key indicators in 2017 and later follow-up studies will assess progress against baseline levels. The specific timing of these efforts may be revised based on experience or other factors as the project evolves.

Impact evaluation is expected to draw upon and include data collected to support Project-specific measurement and verification activities. Impact evaluation activities will likely include use of reporting data provided by PP on a Quarterly/Monthly basis. Annualized first-year GHG emission reductions and cost savings will be based on fuel cell deployment statistics and equipment replacement data (Lead Acid/Propane). Analysis will be conducted beginning in 2018 with follow-up studies as appropriate. On-site performance verification of deployed equipment may be conducted.

As with all NYGB investments, PP projects that receive an incentive or funding from other entities (e.g., utility, other NYSERDA program) will, in accordance with the Metrics Plan, ideally be tracked in order to minimize any double-counting activity on a consolidated basis. As contemplated 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 to maximize data collection and avoid participant survey fatigue.

⁹ See Metrics Plan, Section 3.3 at page 7.