

# **Leveraging Financing for Comprehensive Efficiency in the Public Sector**

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## **ABSTRACT**

Since the 1980s, the New York Power Authority (NYPA) has implemented a successful energy efficiency program targeting governmental customers in New York State. NYPA has completed projects in more than 5,200 public facilities resulting in total customer savings of \$161 million annually. These outcomes are the result of a program structure that is fairly unique among programs offered by states and local governments. Providing funds of approximately \$250 million annually, NYPA is able to provide low-interest financing to cover the entire cost of energy-efficiency and renewable energy projects. Instead of direct rebates for efficient equipment, the low cost of the loan acts as the financial incentive for the customer to pursue efficiency improvements. This approach has the added benefit of giving New York State Agencies and municipal customers access to much needed financing for required capital projects such as chillers, boilers, and other major building systems. Further benefits accrue to the customer because NYPA offers “turnkey” services to effectively manage projects through all phases from conception and design to bid, construction, and final measurement and verification. Yet because the program is self-funded through a value-added fee charged at the project level, both non-participant rate subsidies and contributions to program administrator costs are effectively zero. This paper delves into NYPA’s experience, exploring exactly what makes this approach work and how the lessons learned could be leveraged by the “integrated energy service provider” of the future.

## **Brief History of the New York Power Authority**

The New York Power Authority (NYPA), a New York State public benefit corporation, was established in 1931 by the Power Authority Act. NYPA’s original mission, to equitably provide low-cost power to the people of New York, has evolved over time to encompass economic development, job creation, energy efficiency, renewables, and innovation. NYPA is the largest public power utility in the United States, supplying one-fifth of the State’s electricity. NYPA is not supported by tax revenue or state credit and is wholly funded through proceeds from its operations. The Authority owns and operates sixteen power plants generating 27.8 billion kWh in 2013 and serves a variety of customers including 663 businesses and not-for-profits, 114 governmental entities in New York City and Westchester County, and 51 municipal and rural cooperative electric systems along with other customer groups.

## **History of the NYPA Energy Services Program**

The Power Authority Act authorizes NYPA to “... design, develop, construct, implement, provide and administer energy-related projects, programs and services...” for a range of public and institutional facilities in New York State. Furthermore, the Authority has significant tax-exempt borrowing capacity and is authorized to finance these projects using any available

Authority funds including the proceeds of notes and bonds. To date, NYPA has invested over \$1.9 billion in energy efficiency improvements in program participants' facilities. Projects implemented in more than 5,200 facilities currently yield annual electric energy savings of over 1,100 GWh statewide.

NYPA has implemented energy efficiency programs since the late 1980s. In June 1990, NYPA debuted the High Efficiency Lighting Program (HELP) to upgrade participants' lighting systems. The program offered turnkey services from initial audit through design, installation, and final inspection to retail customers in Southeastern New York (SENY). Initially, incentives were offered to ensure that customer payback did not exceed three years. The remaining cost of the retrofits could be financed at low interest rates by tapping into NYPA's borrowing capacity. Resulting energy savings would then be used to repay the loan. NYPA served as general contractor handling negotiations, administration, and hiring of contractors. Engineering and design firms with specialization in project management served as primary Implementation Contractors (IC). The ICs were selected through a competitive bidding process and were responsible for performing audits, design, installation oversight, and the hiring of installation contractors. In June 1991, the program was made available to customers statewide and expanded to support more comprehensive projects that include efficiency measures beyond lighting such as heating, ventilating, and air conditioning (HVAC) equipment and controls, motors, and drive systems. While NYPA has administered a number of other energy efficiency programs, the HELP program and its successors are responsible for the majority of NYPA program savings. NYPA's program costs were recovered exclusively through a fee, calculated as a percentage of direct construction costs, charged on every completed project. As a result, NYPA is able to provide all program services without any cross-subsidy from other ratepayers.

In 1997, recognizing that HELP had outgrown its "lighting" namesake, NYPA's Board of Trustees approved folding all energy efficiency services into the rebranded Energy Services Program (ESP). Throughout the evolution of the HELP program, NYPA had recognized a shift in the marketplace; instead of being driven by direct financial incentives, program participants were primarily drawn to NYPA's programs by the Authority's technical expertise, ability to manage complex projects through to completion, and ability to finance the entire cost of large capital improvements. As a result, NYPA discontinued incentives for retrofits but continued to offer its turnkey project implementation and low-interest financing services through the rebranded Energy Services Program. With the exception of the lack of direct financial incentives, ESP is structured almost identically to the predecessor HELP program. Even without direct incentives, the ESP has thrived and, even today, operates much as it did nearly 20 years ago.

NYPA's programs have historically allowed program participants to tap NYPA's high credit rating and governmental status to secure low-interest, tax-exempt financing. These loans are repaid over a fixed term and are available to fund all phases of project development. In 1994, NYPA's Board of Trustees authorized the use of commercial paper to finance the expenditures associated with the various energy efficiency projects. Commercial paper is a short-term money market instrument issued by large banks, corporations, municipalities, and non-profit entities. While borrowing rates are variable and based on the weighted average of outstanding commercial paper for the previous 12 months, the variable interest rate for 2014 is 0.86%, far lower than market rates. Typical loan terms range from 10 to 20 years, but program participants can repay the loans at any time without penalty. There is no upfront cost for financing which can save a significant amount of expense for the customer by removing the burden of a bond issue or long term capital approval. The fee for NYPA's project management services is typically

financed with the other project costs. In effect, NYPA serves as a “public purpose energy service company” by developing efficiency projects that are paid for through a stream of energy cost savings over time.

## **Adapting NYPA ESP Keys to Success to Other Programs and Jurisdictions**

NYPA’s programs have been extremely successful in the public and institutional sectors. It is no coincidence that the NYPA ESP also exhibits many of the characteristics of exemplary energy efficiency programs (Nowak 2013) (e.g., targeting a niche market, simplifying program processes, developing comprehensive projects, and offering financing). NYPA’s success is likely a combination of its primarily governmental and institutional customer base, its ability to provide low-cost, tax-exempt financing, and its turnkey technical and construction management services that provide a simple, comprehensive, “one-stop-shopping” experience for its customers. While NYPA enjoys several somewhat unique advantages that may present barriers to other jurisdictions, this section describes how many of these keys to success may be replicated elsewhere to enhance program participation.

### **Capitalizing on Status as a Trusted Entity**

NYPA is a well-known, trusted entity in the State of New York. For over 80 years, the Authority has endeavored to provide the people of the State with low-cost energy. NYPA is in an advantageous position to provide efficiency services as they already have a direct relationship with their retail customers.

Having implemented energy efficiency projects for over 25 years, NYPA has an extensive catalog of completed projects as well as significant qualifications and experience gained through the development of these projects; this experience further enhances the level of trust new participants have in the program. Insufficient knowledge of efficiency technologies is commonly cited as a primary barrier to investing in efficiency upgrades (Ungar et al. 2012). With a sizable portfolio of completed projects across a broad range of technologies and facility types (e.g., offices, schools, colleges and universities, fire and police stations, health care facilities, and wastewater treatment plants), NYPA has direct access to facilities which serve as demonstration projects for potential participants who may be wary of taking the leap with the unfamiliar.

NYPA’s scenario is not unique; many utilities are in a position to capitalize on the existing, direct relationship with their customers. Most utilities benefit from a certain level of trust and customers are generally familiar with them and view them as relatively unbiased sources of information around energy-efficiency products and services (de la Rue du Can, Shah, and Phadke 2011). Numerous program evaluations have found that customers generally trust the recommendations and endorsements of utilities. For example, there is anecdotal evidence that the offering of a product rebate can increase customers’ comfort and trust in a product’s performance even if the rebate is quite low, simply because they perceive the utility backing as an endorsement the product will cost-effectively save them energy. Utilities are poised to capitalize on this trust to encourage customers to invest in larger and more comprehensive projects.

## **Advocating and Leveraging Policy Support**

The State of New York has a strong history of establishing public policy to promote energy efficiency in both the public and private sectors. Beginning in 1990 with Executive Order (EO) No. 132 signed by Governor Mario Cuomo, New York State agencies and authorities have been consistently directed by subsequent governors to improve the energy efficiency of their facilities. Most recently, Executive Order No. 88 signed by Governor Andrew M. Cuomo in 2012 requires that by April 1, 2020, affected State entities “...collectively reduce the average EUI in State-owned and managed buildings by at least 20% from a baseline of the average EUI of such buildings for State fiscal year 2010/2011.”<sup>1</sup> EO No. 88 revised an existing Executive Order No. 111 that also directed state agencies to pursue efficiency. These executive orders have placed pressure on public facilities and have generated a steady flow of projects for NYPA’s programs.

The policy-level support of energy efficiency is not limited to the public sector. On June 23, 2008, the Public Service Commission established the New York Energy Efficiency Portfolio Standard (EEPS) proceeding. This effort is part of a statewide goal of reducing electricity usage by 15% of forecasted levels by the year 2015. Requiring regulated utilities to administer energy efficiency programs, this initiative further promotes energy efficiency in both the public and private sectors.

Because the majority of NYPA’s customers are government entities, and because it is also part of the state government, NYPA is in a somewhat unique position to help advance, and then benefit from, public policies in New York State that address government use of energy. However, there are often opportunities for state and regulatory policies to encourage efficiency action in the private sector. For example, recent disclosure and benchmarking policies adopted by various municipalities may result in greater awareness of efficiency opportunities and interest in investing in efficiency services (IMT 2013). Furthermore, ever increasing building energy codes represent a significant opportunity to provide code compliance training, build relationships with contractors and design professions, and get involved with projects from an early stage. Utilities are in a unique position to leverage these policies, as well as to help advocate for their advancement. Where they exist or can be developed, utilities can tailor marketing and other services to focus on providing turnkey solutions to customers faced with perhaps daunting new regulations and commitments.

## **Developing Focused Solutions for the Target Market**

The entities eligible for NYPA’s Energy Services Program, as compared to many residential, commercial, and industrial customers, are relatively stable. Eligible participants, as defined by the Power Authorities Act, include all public entities, independent not-for-profit institutions of higher education within the state, and recipients of low-cost NYPA power made available through an array of economic development programs. The majority of these customers have established credit histories and do not represent a significant lending risk. In fact, to date, NYPA has not experienced a single default on loans provided by the program. Further, these customers are typically large facilities that can accommodate large projects.

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<sup>1</sup> EUI specifically refers to Average Source Energy Use Intensity, that is, the average source energy use per square foot for all state-owned and managed buildings. “Source energy” represents the total amount of raw fuel that is required to operate a building. It incorporates all transmission, delivery, and production losses and enables a fuel-agnostic view of efficiency improvements.

Many of NYPA's eligible program participants also manage large portfolios of buildings. For example, the State University of New York manages hundreds of facilities. Working with these entities means fewer points of contact and lower administrative burden and transaction costs. As a result, virtually all of NYPA's customers receive personalized account management services and benefit from these relationships. NYPA account managers have played a key role in marketing and developing projects.

Finally, as NYPA's programs target a relatively homogeneous market niche of public and institutional facilities, the program can be catered specifically to these types of customers without the need to develop a broad range of programs capable of addressing the needs of, for example, both single family residences and large, specialized manufacturing facilities. This allows program resources to be focused on a specific sub-segment of facility types.

Investor-owned utilities attempting to replicate NYPA's experience are likely to find the greatest success by focusing program offerings on their larger and more sophisticated customers. Personalized account management services can assist utilities in building and maintaining close relationships with key customer decision-makers and position utilities as trusted and technically capable entities to be part of customers' decisions around major energy infrastructure investments. Through ongoing account management, utilities can effectively build a pipeline of projects and ensure that they are involved when efficiency opportunities arise.

While opportunities certainly exist to offer similar services to smaller commercial, industrial, and residential customers, beginning with larger customers is likely to help establish a track record of success and minimize transaction costs as a percentage of total project costs. This can help utilities in eventually establishing trust with small customers and develop ways to scale up services to address large numbers of individual small customers cost-effectively.

### **Streamlining Program Processes**

One of the primary benefits of using NYPA's services is the turnkey approach to the ESP program design. This approach removes the burden of project oversight from program participants and allows them to focus on their organization's essential functions. NYPA provides a one-stop shop solution to customer needs. Once the customer contacts the Authority and agrees to participate in the program, NYPA either provides or arranges for all subsequent services. While the approach is intentionally flexible to meet the needs of each unique participant, the process typically begins with a review of candidate facilities followed by detailed energy audits conducted by the Implementation Contractors (IC). These studies contribute to the planning process with the participant to develop an action plan, final scope of work, and design documents. At the request of the participant, NYPA will provide financing to cover all project costs. Once the customer signs the Customer Installation Commitment (CIC), subcontractors begin installation work at the direction of the IC. NYPA acts as the general contractor and serves as a single point of contact throughout the project development process.

For smaller projects under a certain cost threshold, NYPA directs project implementation without the services of an IC. Due to their reduced scopes of work, small projects are typically not appealing for ICs. Furthermore, the added expense and transaction costs of involving an IC can reduce the cost-effectiveness of these projects. By handling these participants directly, NYPA is able to seamlessly maintain the same level of customized service as that provided for larger, more lucrative projects.

While large customers may offer the largest efficiency opportunities, ultimately, to bring efficiency services to scale will require the ability to streamline services and offer them to a large

portion of a utility's customers. Keys here will be in establishing systems and procedures that can be duplicated across many customers while minimizing transaction costs, securing sufficient capital funding, and effectively managing financing risks. New York State's development of the "Green Bank" model, as further discussed below, is an innovative way to manage the financing risks and potentially bring efficiency services to scale with all energy users in New York State.

Successful models have been used that combine positive cash flow financing with rebates and other turnkey services for small customers that, while still requiring some ratepayer cross-subsidy, have enhanced participation while minimizing long term ratepayer costs (Mosenthal and Wickenden 1999). Hybrid approaches like this can begin to expand the ability of utilities to scale up services while minimizing total program costs borne by non-participating ratepayers. Over time, as the services become more widely known and used, and the utility trust is enhanced, models may be able to shift to 100% financing strategies.

### **Offering Low-Cost Financing**

NYPA discovered long ago that financing, when offered in tandem with technical expertise and sophisticated project management capabilities, can help boost penetration in the government and institutional markets. NYPA's status as a "public benefit corporation" provides several key benefits with respect to access to capital. First, NYPA has the authority to issue commercial paper, a type of short-term, unsecured promissory note. The Authority's excellent credit rating enables both tremendous lending capacity and the ability to offer loans at very low rates – 0.86% for 2014. It has the ability to efficiently disburse funds to pay for customer projects without any separate underwriting by project. Further, as a public benefit corporation, NYPA's debt is off the State's books, allowing the Authority to provide loans not subject to New York State's borrowing limits. NYPA's financing-based approach has the added benefit that, because the program is self-funded through a value-added fee charged at the project level and all project costs are eventually paid back through loan payments, both non-participant rate subsidies and contributions to program administrator costs are effectively zero.

Many utilities have offered financing as a tool to persuade customers to participate in efficiency programs. Nearly as many utilities have struggled to capture robust participation or to encourage customers to make use of the financing services. For example, in a review of 27 loan programs, Hayes et al. (2011, 4) found that "...only two of the programs surveyed had [participation] rates that exceeded 3% of the customers targeted by the programs and more than half of the programs had participation rates below 0.5%." Financing is often touted as a "silver bullet" for spurring the energy efficiency market. However, there is little evidence to suggest that financing alone considerably increases program participation (Borgeson, Zimring, and Goldman 2012). Participants must first be "sold" on pursuing a project; it is very unlikely that they will take action simply because money is there for the borrowing. While the widespread availability of financing no doubt removes some of the barriers to energy efficiency investment, financing by itself is unlikely to significantly increase demand for efficiency services. As evidenced by NYPA's program, financing can be successful when supplemented by turnkey services and comprehensive technical assistance to drive project initiation.

As described above, one significant advantage of NYPA's program is that it can access and make available very favorable financing terms because of its status as a public benefit corporation. Many public utilities that are municipally owned may be in a similar situation of being able to draw on tax-exempt bonding mechanisms. For investor-owned utilities, interest rates will likely be higher, and existing debt may also constrain the amount of additional

financing that it can offer. To deal with this challenge, and expand the availability of efficiency services, New York State recently established the New York Green Bank (NYGB).

Drawing upon the success of NYPA's Energy Services Program, Governor Andrew Cuomo announced the establishment of the New York Green Bank in his 2013 State of the State Address. The NYGB is a joint public-private initiative to make energy efficiency financing available to a broader base of private sector participants at reasonable rates (NYSPSC 2013). The Green Bank is envisioned as a key tool to facilitate, to the extent possible, a transition away from a subsidy-dependent energy efficiency market toward a functional private market with less dependence on government support. The NYGB represents a \$1 billion initiative to mobilize private sector capital to stimulate growth in New York's clean energy economy.

The NYGB will work to eliminate market barriers by partnering with private sector intermediaries. While still in the development stages, the NYGB will provide credit enhancement services to eligible borrowers by, for example, establishing loan loss reserve pools. Furthermore, working with private sector originators, the Green Bank may also acquire and warehouse energy efficiency loans. Once this pool of loans reaches adequate size to garner the interest of the financial markets, the loans could be sold off and securitized. In time, the Green Bank may also pursue direct lending services and more complex structured products.

The Green Bank also intends to address the relative lack of loan history for energy efficiency loans. The NYGB will publish loan payment and project performance data on all financed transactions. This is intended to boost private sector confidence and garner interest in this market. Finally, the Green Bank will work to standardize documents and underwriting procedures and requirements.

Other states could pursue the "Green Bank" model to both increase the availability of energy efficiency financing and provide such financing to more customers at reasonable rates.

### **Developing Comprehensive Projects**

In this capital constrained world, it is often difficult for customers to consider the long term economic impact of greater investment today that will only pay for itself years down the road. In many cases, the customer's focus is first and foremost on how to fund basic infrastructure needs. Any incremental efficiency that can be captured at the same time may be nice, but is generally considered of secondary importance.

One of the unique aspects of NYPA's program is that it can provide capital to fund needed infrastructure improvements that many capital constrained entities struggle with on an on-going basis. As a result, NYPA has positioned itself as a solution provider to customers whose main concerns may be simply keeping a piece of equipment operational, addressing health and safety concerns in a facility, or other challenges that are only partially related to efficiency. Because NYPA's program model does not rely on any cross-subsidies from non-participant ratepayers, NYPA can consider additional financial and technical services that may not as directly lead to efficiency as some other utility programs. For example, a customer with a large, old chiller system may desire to invest in an entirely new HVAC system. While most rebate programs would only provide funds to offset the incremental costs of a higher efficiency new chiller as compared to a standard efficiency new chiller, NYPA can provide financing to cover the full labor and equipment costs of removal and replacement of the old system with a new high efficiency system. Often this may include ancillary costs such as for asbestos removal, equipment disposal, design services, or other costs that would be incurred by any customer but not related to an incremental efficiency expense. By offering customers a turnkey strategy and

the necessary capital to deal with these other issues, NYPA has effectively leveraged a great deal of comprehensive efficiency projects that might otherwise have not happened.

NYPA's model of effectively ensuring that each customer ultimately pays back the full cost of all efficiency projects (including NYPA overhead, administration, technical and evaluation, measurement, and verification services) allows NYPA to be less concerned about ensuring that every dollar must go to incremental efficiency improvements. As a result, NYPA is in a unique position to use its financing authority to bring the customer to the table with a solution to its problem, leverage the customer's interest in this solution to promote the addition of cost-effective efficiency opportunities as part of larger scale investments, and ensure that NYPA and its technical and design services are brought to bear at the earliest stage in any investment to ensure that comprehensive efficiency opportunities are captured efficiently.

Traditionally, utility programs will not fund any costs beyond incremental efficiency costs, and generally desire to see any efficiency program funds directly contributing to cost-effective efficiency improvements that pass both a total resource cost (TRC) test as well as program administrator cost (PAC) test, indicating the benefits from investment exceed the costs. If a source of financing capital can be made available, for example through a model such as the Green Bank, to assist customers with other desired investments at the time of efficiency improvements, this can greatly expand customer interest and increase the leverage that a utility might have in encouraging deeper efficiency investment.

## **Implications for the “Utility of the Future”**

Based on NYPA's success, we envision a future where the “integrated energy service provider” will bundle turnkey services and financial capital to directly assist customers in solving their facility problems and leverage all cost-effective efficiency as part of this ongoing relationship. Rather than simply providing an after-the-fact rebate to reimburse customers for incremental efficiency costs, a full service provider must come to the table with a full suite of professional and technical services, as well as the financial backing to ensure the customer can move forward with minimal administrative burden.

We believe utilities are in a unique position to provide these integrated services. Utilities generally are trusted entities, and already have established account management functions and resources to provide large scale services to their customers. Further, utilities generally have significant financial resources and borrowing capacity. However, it will require a more nimble and flexible utility than has often been the case under traditional regulatory models, where the utility is primarily a commodity provider and not rewarded or allowed to be an overall partner with customers in investing in new facility infrastructure. Given the extreme challenges currently faced by traditional vertically integrated electric utilities from changes in energy markets, growth in distributed generation, and increased environmental regulation, we envision a solution to these challenges will be to reposition the utility as an integrated energy service provider that works with customers to provide a wide array of technical, professional, administrative, and financial services in long term partnerships with customers. This can allow utilities to truly focus on “least-cost energy services” by enabling them to make large and cost-effective direct investments in their customers' facilities that minimize the total long term costs of energy services. With the right design, this service could be sustainable and self-funding through customer loan payments in a way that ensures all customers pursue the lowest life-cycle cost solution by adopting an optimal mix of distributed generation, efficiency, and central power supply.



## Conclusion

By capitalizing on customer trust, focusing program offerings to best serve the target market, streamlining program processes to offer turnkey solutions, offering low-cost financing to cover 100% of project costs, and developing comprehensive energy efficiency projects, NYPA has successfully become more than a mere commodity provider. NYPA has responded to customer needs to assist with the capital planning processes, develop projects, and, as a result, drive a tremendous amount of efficiency investment with little impact on non-participants. NYPA has effectively become a prototype of the integrated energy service provider, a partner with customers to address infrastructure needs and improve energy performance.

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