ENERGY EFFICIENCY IN NEW YORK:
Midcourse Status Report of '15 by 15'

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1 Introduction

The closer the state comes to its '15 by 15' goal, the more robust the state's green economy, the more savings enjoyed by energy consumers, and the more jobs for New Yorkers the Cuomo Administration will generate in the process.

New York has a long and proud history as a leader on energy efficiency policy, as evidenced by its recent designation as the third most energy efficient state in the nation.[1] Not surprisingly, this policy leadership has also made New York a leader in green economic growth and job creation.[2] Governor Andrew Cuomo has continued this leadership effort, recently overseeing the October 2011 renewals by the Public Service Commission (PSC) of the state's Energy Efficiency Portfolio Standard (EEPS) and Systems Benefit Charge (SBC) programs.[3] Through these and other actions, the Governor has embraced the state's impressive goal of meeting 15% of its projected electricity demand in 2015 through energy efficiency, commonly referred to as "15 by 15." These policies expand the New York economy and create jobs, while also reducing energy prices, delivering energy and economic security, and providing substantial environmental benefits.[4] This

1 "2012 State Energy Efficiency Scorecard," ACEEE, October 2012. http://aceee.org/research-report/e

2 "Sizing the Clean Economy: A National and Regional Green Jobs Assessment," Mark Murro, et al., The Brookings Institution, July 2011. http://www.brookings.edu/~/media/research/files/reports/2011/7/13%20clean%20economy/0713_clean_economy.pdf According to Brookings, the New York metropolitan area has the largest number of green jobs of any U.S. metropolitan area, and the Albany area is also a hotbed for green jobs growth.

3 "Systems Benefit Charge IV Order," New York State Public Service Commission, October 2011. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b963CCA75-76DC-4CC7-83A5-E2417D963477%7d "Order Authorizing Efficiency Programs, Revising Incentive Mechanism, and Establishing a Surcharge Schedule," New York State Public Service Commission, October 2011.http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BC0BD1A5B-6E4F-4C4A-A0E9-BC78799DAA23%7D

4 The New York State Energy Research and Development Authority (NYSERDA) has begun administering Green Jobs-Green NY, a statutory program funded with $112 million in auction revenue from the Regional Greenhouse Gas Initiative (RGGI)

report reviews progress to date and makes recommendations for improving these programs and making New York "Number One" for energy efficiency.

Robust clean energy budgets—while absolutely essential—are not sufficient to maintain and improve upon the leadership New York has displayed to date. Budgets must be accompanied by smart program design and implementation. The state's Public Service Commission, utilities and authorities have traveled up the learning curve on energy efficiency policy design and implementation and have even pioneered award-winning programs in the process.[5] However, if the state is to meet its impressive goals, it must learn from this experience to perform to its full potential and seize all cost-effective energy efficiency.

Too much cost-effective energy efficiency is currently left on the table. The Pace Energy and Climate Center has reviewed available information on the progress New York has made toward its '15 by 15' energy efficiency goal. This report reviews publicly available information on the progress made by each entity responsible for contributing to that overarching target. The analysis below does not seek to identify every technical opportunity or the specific effects of individual policy decisions. Rather, it aims to provide an overview of progress to date, and to identify improvements that increase the likelihood that the state will meet its goal. The closer the state comes to its '15 by 15' goal, the more robust the state's green economy, the more savings enjoyed by energy consumers, and the more jobs for New Yorkers the Cuomo Administration will generate in the process.

The analysis reveals that significant progress has been made in some sectors, while less has been made in others. Overall, New York is not currently on track to meet the '15 by 15' goal, in part because of the slow progress to date. Nevertheless, there is ample evidence that substantial economic and environmental benefits are still achievable. And while recent improvements to program design and implementation are headed in the right direction, more must be done if the state is going to meets its goal. The final section of this report provides recommendations to improve performance.

to support all fuels retrofits in the residential, small business, multi-family, and not for profit sector. This program will add to statewide energy savings.

5 NYSERDA and the Long Island Power Authority (LIPA) received awards from the EPA in 2011 for excellence in delivery and promotion of Energy Star programs. "Profiles in Leadership: 2011 Energy Star Award Winners," EPA, 2011. http://www.energystar.gov/ia/business/industry/2011_profiles_in_leadership.pdf

2 Background

Energy Efficiency: The Cost-Effective Resource that Grows the Economy

New York's 2009 State Energy Plan prescribed five key objectives: (1) maintain reliability; (2) reduce GHG emissions; (3) stabilize energy costs and improve economic competitiveness; (4) reduce public health and environmental risks; and (5) improve energy independence. To that end, the State Energy Plan identified "energy efficiency as the priority resource for meeting its multiple objectives."[6] While the implementation of efficiency measures does address each of these five objectives, it is energy efficiency's cost effectiveness that makes it such an attractive resource.

- **Economic growth:** Investments in energy efficiency result in significant energy benefits. Among the states participating in the Regional Greenhouse Gas Initiative (RGGI), each RGGI dollar invested in energy efficiency in 2010 resulted in $2.30 of total energy benefits.[7]
- **Least cost resource:** The levelized cost ($/Megawatt-hour) of energy efficiency is far less than any other energy resource.[8]
- **Biggest bang for the energy buck:** Energy efficiency is recognized as a low risk, high return investment. When compared to U.S. Treasury Bills, long term corporate bonds, common stocks and small-company stocks, investments in energy efficiency have the highest average annual rate of return, and have a lower risk index than all but U.S. Treasury Bills.[9]
- **Jobs, jobs, jobs:** Meeting the state's EEPS targets would create an estimated 37,000 sustained jobs and inject nearly $12 billion of benefits into the state's economy by 2015.[10]

6 "2009 State Energy Plan: Volume I," Governor David A. Paterson, December 2009. http://www.nysenergyplan.com/final/New_York_State_Energy_Plan_VolumeI.pdf

7 This value excludes non-energy benefits resulting from investment in energy efficiency. "Energy Benefits Resulting From the 2010 Investment of RGGI Auction Revenues in Energy Efficiency," Max Chang, et al., Synapse, February 2012. http://www.synapse-energy.com/Downloads/SynapseReport.2012-02.RAP.RGGI-Energy-Efficiency-Benefits.10-027A.pdf

8 "Levelized Cost of Energy Analysis: Version 5.0," Lazard, June 2011. http://votesolar.org/wp-content/uploads/2012/07/Lazard-June-11-Levelized-Cost-of-Energy-and-proj-to-2020-copy.pdf

9 "Energy Efficiency as a Resource for the Mid-Atlantic," Maggie Molina, ACEEE, September 2012. http://www.pennfuture.org/energy/events/EnergyConf2012_D1a_ACEEE_Molina.pd

10 "2009 NYS Energy Plan: Energy Efficiency Assessment," New York State Public Service Commission, December 2009. http://www.nysenergyplan.com/final/Energy_Efficiency.pdf

- **Reliability—keeping the lights on:** Efficiency investments are the cheapest means to ensuring a reliable electric grid. For the first time in years, the recently released NYISO Reliability Needs Assessment (RNA) predicted some reliability problems with the grid over the coming decade—but concluded that the bulk of these reliability problems could be avoided if the state achieves '15 by 15.' Not achieving the goal will result in the need for more costly infrastructure investments that are ultimately borne by ratepayers.[11]

The June 2008 PSC Order

Recognizing these marked economic, reliability, and environmental benefits, in June of 2008 the New York PSC issued an Order establishing an Energy Efficiency Portfolio Standard (EEPS) for the state. This "EEPS I" Order set aggressive but achievable savings targets for ramping up energy efficiency across all service territories and end use sectors, presented a cost-benefit analysis of those goals and laid out a framework for implementation through year-end 2011; a subsequent October 2011 "EEPS II" order established budgets and targets through year-end 2015.[12] At the core of the EEPS is the aforementioned '15 by 15' target of reducing forecasted statewide electricity usage 15% by 2015.[13] To help achieve this goal, the PSC established collections on utility bills to fund programs and directed New York's investor-owned utilities (IOUs) and the New York State Energy Research and Development Authority (NYSERDA) to design and implement energy efficiency programs. There are currently over 100 electric efficiency programs that have been approved by the PSC and are being administered by the utilities and NYSERDA, covering everything from single family home retrofits to large commercial and industrial facilities. In addition to these electric efficiency programs, NYSERDA and the IOUs are required by the PSC to implement extensive gas efficiency programs. These gas programs are robust; EEPS gas collections necessitate millions of ratepayer dollars to fund these critical investments. This report, however, will focus on electric efficiency efforts. The following figure shows the dollar budgets for these electric programs.

Figure 1. Electric Efficiency Budgets under Public Service Commission Orders[14]

EEPS Electric Budgets	2008-2011[15] According to June 2008 Order	2012-2018[16] According to Oct. 2011 Order
Utilities	$218,841,134	$734,598,776
NYSERDA[17]	$298,906,622[18]	$767,459,584
Total Collections	$517,747,756	$1,502,058,360

In addition to the above programs, entities outside of the PSC's jurisdiction were encouraged to implement energy efficiency programs of their own to contribute to the overall state target. These entities include the New York Power Authority (NYPA), the Long Island Power Authority (LIPA) and the Department of State (DOS), which is responsible for promulgating and overseeing the enforcement of building codes and appliance standards.[19]

11 In the "low load forecast" assuming the achievement of '15 by 15,' no significant bulk system reliability violations occur. "2012 Reliability Needs Assessment," NYISO, September 2012. http://www.nyiso.com/public/webdocs/services/planning/reliability_assessments/2012_RNA_Final_Report_9-18-12_PDF.pdf

12 "Order Authorizing Efficiency Programs, Revising Incentive Mechanism, and Establishing a Surcharge Schedule," State of New York Public Service Commission, October 2011. http://www3.dps.ny.gov/W/PSCWeb.nsf/All/06F2FEE55575BD8A852576E4006F9AF7?OpenDocument

13 This reduction target is based on 2015 forecasted electricity sales of 166,180,280 MWh. A 15% reduction in 2015 electricity usage results in 141,253,238 MWh. "Order Establishing Energy Efficiency Portfolio Standard and Approving Programs," State of New York Public Service Commission, June 2008. http://www3.dps.ny.gov/W/PSCWeb.nsf/All/06F2FEE55575BD8A852576E4006F9AF7?OpenDocument

14 The budgets provided in this table are the original budgets set forth in the June 2008 and October 2011 PSC Orders. Modifications were made to program budgets following each of these orders, and PA budgets continue to be revised.

15 "Order Establishing Energy Efficiency Portfolio Standard and Approving Programs," State of New York Public Service Commission, June 2008. http://www3.dps.ny.gov/W/PSC-Web.nsf/All/06F2FEE55575BD8A852576E4006F9AF7?OpenDocument

16 "Order Authorizing Efficiency Programs, Revising Incentive Mechanism, and Establishing a Surcharge Schedule," State of New York Public Service Commission, October 2011. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BC0BD1A5B-6E4F-4C4A-A0E9-BC78799DAA23%7D. Programs run through 2015, but the collections for the second phase of the programs run through 2018 due to a lag between collections and disbursements and other accounting procedures.

17 At the PSC's direction, NYSERDA provides funding for certain initiatives that do not directly produce energy savings, such as workforce development, marketing and evaluation. It is important to keep this in mind when comparing PA budgets to achieved efficiency savings.

18 "Systems Benefit Charge: Supplemental Revision for New York Energy $mart Programs," NYSERDA, March 2009. http://www.nyserda.ny.gov/en/Energy-Data-and-Prices-Planning-and-Policy/~/media/Files/Publications/NYES%20Program/2009_sbcsupplement.ashx

19 The DOS also provides guidelines for the enforcement of codes and standards.

Origin of '15 by 15'

In late 2007, New York commissioned Optimal Energy, Inc., to conduct an analysis of the potential for energy-efficiency development in the state. The study demonstrated that there was a wealth of opportunity in New York for implementation of cost-effective energy efficiency measures. Optimal identified 37,000 GWh of electricity demand that could be reduced by 2015 through efficiency measures and improved codes and standards.[20] Achieving that entire GWh reduction would reduce energy consumption by nearly 20% from the forecasted energy demand for 2015, and would come as a financial boon for the state; "the New York economy would capture approximately $2.60 in benefits for every dollar invested in efficiency."[21]

Building off of this study and other stakeholder input, the June 2008 PSC Order provided a year-by-year roadmap of how New York's agencies and authorities—through a collective, coordinated effort—could achieve the '15 by 15' goal. In Figure 2, those annual targets are displayed as cumulative figures, demonstrating the gulf between forecasted electricity demand under "business as usual" vs. demand under the '15 by 15' scenario.[22] As described in the 2008 PSC Order, the "Jurisdictional Gap" refers to the portion of the '15 by 15' goal "to be undertaken by entities subject to the jurisdiction of the Commission. . .this includes all utility activities as well as programs funded through utility rate surcharges and administered by other entities such as NYSERDA."[23] In other words, the jurisdictional gap represents the electricity savings that were assumed to be achieved via the utility and NYSERDA EEPS programs. The other "wedges" were to be achieved by programs outside of the PSC's direct jurisdiction, such as programs undertaken by NYPA, LIPA, and DOS.

This "wedge analysis" provides a framework for evaluating the progress New York is making toward the '15 by 15' goals. The following sections examine the progress made by the key sectors identified in this 2008 forecast.

How Are Efficiency Dollars Being Used?
A NYSERDA Case Study[a]

In 2012 Rensselaer Polytechnic Institute (RPI) completed construction of a new, high-efficiency sports arena on their campus in Troy, NY. In order to help RPI achieve Gold-Level LEED certification for the project, NYSERDA provided $404,491 in incentives for the implementation of efficiency measures, including high-efficiency lighting, demand-controlled ventilation, premium efficiency motors and more. With a payback time of less than two years, RPI's investment in efficiency is expected to result in annual energy savings of 1,159 MWh and annual energy cost savings of $221,778.

a "Rensselaer Polytechnic Institute Athletic Village," Case Study: College and University, NYSERDA, 2012. http://www.nyserda.ny.gov/en/Commercial-and-Industrial/CI-Programs/New-Construction-Program/~/media/Files/EERP/Commercial/Programs/New%20Construction/Case%20Studies/EES-CI-rpiathvill-cs-1-v1.ashx

3 Utility, State Agency, and State Authority Programs

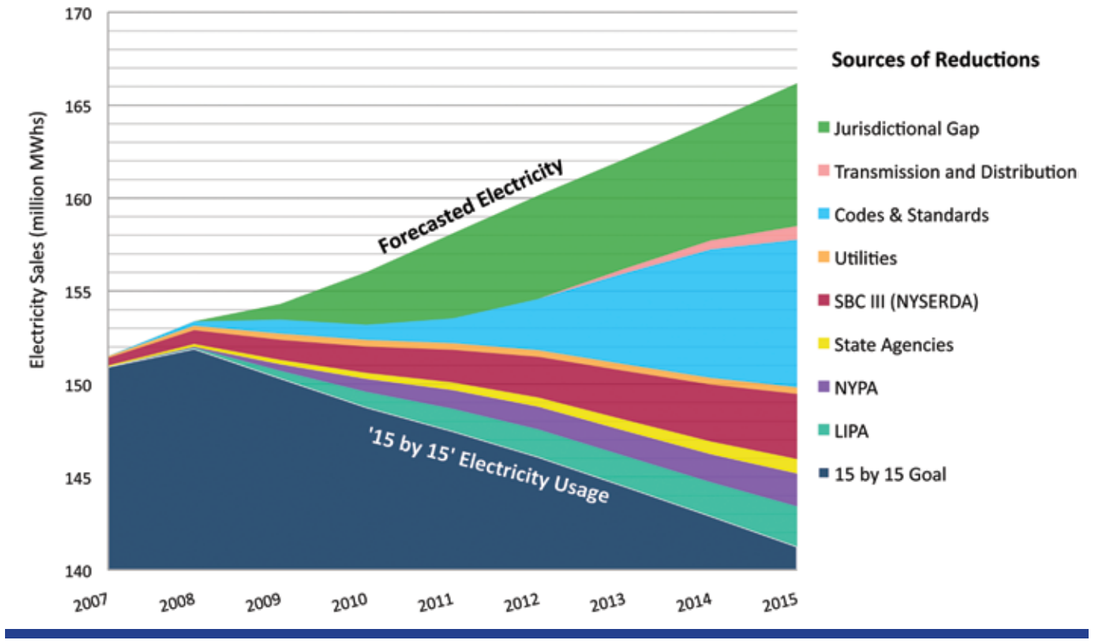
NYSERDA and Investor Owned Utilities (IOUs)

The EEPS electric programs include energy efficiency programs from NYSERDA as well as New York's six IOUs.[24] EEPS programs are ratepayer funded, with surcharges included in utility bills for energy efficiency. As illustrated in Figure 1, roughly half of this energy efficiency funding is allocated to NYSERDA's energy efficiency efforts, while the other half is allocated for utility-administered energy efficiency programs proportionally by load.[25] Through these efforts, the PSC sought to develop a semblance of a competitive market for energy efficiency resources while providing economic and environmental benefits to New Yorkers.[26]

The 2009 New York State Energy Plan identified significant projected benefits that would be realized from the successful implementation of the EEPS electric program:[27]

20 "Achievable Electric Energy Efficiency Potential in New York State," Optimal Energy, Inc. 2008.
21 "New York State Energy Plan 2009: Energy Efficiency Assessment," December 2009. http://www.nysenergyplan.com/final/Energy_Efficiency.pdf
22 The values in Figure 2 represent the New York PSC's projected cumulative energy savings that each entity will need to achieve in order to meet the '15 by 15' goal. "Order Establishing Energy Efficiency Portfolio Standard and Approving Programs," State of New York Public Service Commission, June 2008. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={D9F7E0DF-A518-4199-84CC-C2E03950A28D}
23 Ibid
24 New York's six IOUs are Central Hudson, Con Ed, National Grid, New York State Electric and Gas (NYSEG), Orange and Rockland (O&R) and Rochester Gas and Electric (RG&E)
25 EEPS Gas programs are under way as well as EEPS Electric, but as this paper focuses on '15 by 15' goals, only electric efficiency programs are analyzed.
26 "New York's System Benefits Charge Programs Evaluation and Status Report," NYSERDA, March 2012. http://www.nyserda.ny.gov/en/Energy-Data-and-Prices-Planning-and-Policy/~/media/Files/Publications/NYES%20Program/2012/2011-nyes-evaluation.ashx
27 "New York State Energy Plan 2009: Energy Efficiency Assessment," December 2009. http://www.nysenergyplan.com/final/Energy_Efficiency.pdf

Figure 2: Forecasted Electricity Usage vs. '15 by 15' Usage



- **Financial Savings**
  - **$6.5 billion:** directly avoided energy payments
  - **$2 billion:** reductions in wholesale electricity prices from decreased statewide electricity demand, also known as the Demand-Reduction-Induced Price Effect (DRIPE)
  - **$3 billion:** avoided capacity payments due to reduced peak load demand
- **Emissions Reductions**
  - **NO_x:** 6,544 tons
  - **SO_2:** 9,040 tons
  - **CO_2:** 9,123,570 tons
- **Economic Development**
  - Creation of **37,000 sustained jobs**

However, during the first phase of EEPS through year-end 2011, NYSERDA and IOU electric programs have "acquired" 2,132 GWh of energy savings,[28] compared to the June 2008 PSC Order goal through year-end 2011 of 3,943 GWh.[29,30] Figure 3 illustrates this shortfall.

Figure 4 provides a rough estimation of the foregone benefits from these shortfalls. This lost opportunity is

28 The total savings from EEPS I value of 2,132,093 MWh is not an official calculation, and does not include retroactively applied Tech Manual adjustments. In addition, some EEPS I programs that required longer lead times such as larger and more complex commercial/industrial projects actually included savings targets that would be "acquired" after 2011.
29 This goal is the sum of the PSC-determined wedges for NYSERDA (3,499,995 MWh), utilities (353,806), transmission and distribution (724,379) and the "jurisdictional gap" (7,687,095). The jurisdictional gap refers to all additional efforts carried out by entities under the jurisdiction of the PSC.
30 NYSERDA has filed a petition to reduce its EEPS savings target by 43%. "Petition for Modification of Energy Efficiency Portfolio Standard Budgets and Targets," NYSERDA, March 30, 2012. New York's six IOUs are in various stages in the process of filing their own adjusted targets. At time of writing PSC had not yet issued a response.
31 As the time from the start of the '15 by 15' program through 2011 represents approximately 45% of the program's total duration, this column shows 45% of the total projected energy savings and associated benefits.
32 While the projected energy savings through 2011 were 3,424,379 MWh, only 62% of that projection was actually acquired. This column shows 62% of each benefit associated with the projected energy savings. The projected benefits from achieving EEPS targets can be found in the March 24, 2008 FGEIS.

Figure 3: Energy Efficiency Portfolio Standard Electric Savings Through 2011

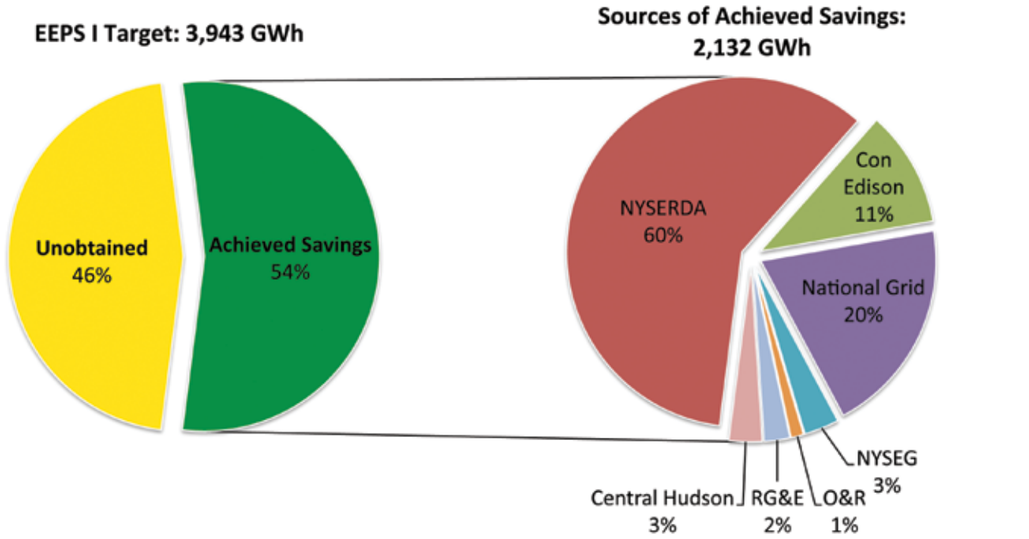


Figure 4: Benefits Not Realized by Missing Energy Efficiency Portfolio Standard Targets

Benefits	Projected Savings and Associated Benefits Through 2011[31]	Actual Savings and Associated Benefits through 2011[32]	Lost Opportunities
Electric Savings	3,424,379 MWh	2,132,093 MWh	**1,292,286 MWh**
Directly Avoided Energy Payments	$2.914 billion	$1.814 billion	**$1.1 billion**
DRIPE Savings	$897 million	$558 million	**$338 million**
Avoided Capacity Charges	$1.345 billion	$837 million	**$508 million**
Total $	$5.16 billion	$3.21 billion	**$1.95 Billion**
Jobs Created	16,586	10,327	**6,260 Jobs**

represented by the difference between the approximate benefits received from actual EEPS savings and the projected benefits that would have been realized had the IOUs and NYSERDA been on pace to meet their '15 by 15' targets for 2008-2011.

These shortfalls are due to a number of factors, many of which were discussed at length in the July 2011 EEPS White Paper, prepared by a DPS Administrative Law Judge in an effort to inform the PSC as it pondered the next phase of the initiative.[33]

> *Beyond timing issues, the principal cause of the shortfall appears to be the economic downturn. Program administrators report a reluctance or inability of customers to invest in efficiency improvements. Other causes of the shortfall include: lack of cooperation among program administrators, counterproductive effects of shareholder incentive mechanisms, fuel restrictions and other eligibility restrictions.*[34]

33 "EEPS Program Review White Paper," Department of Public Service, July 2011. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=BDD432F1-2C88-4375-A18D-A2047CCCAFF4

Some of these factors—such as the recession and the challenge IOUs faced in ramping up after a long period of not being in the efficiency business—were beyond the control of regulators and program administrators, while other factors were within their control. And while surrounding states also struggled with the economic downturn, the lack of flexibility afforded New York's program administrators appears to have exacerbated that impact here.[35] The following are some factors contributing to the shortfall, all of which can and should be addressed going forward:

- **Administrative delays:** In some instances it has taken more than 18 months from program proposal to ultimate PSC sign-off for implementation. The amount of time that it takes for a program administrator to make adjustments to an existing program, which often requires going through the State Administrative Procedures Act petition process, results in protracted delays. While positive steps have been taken to accelerate this process by affording DPS staff more latitude to approve changes within a certain threshold, more must be done to streamline these efforts. Furthermore, changes in reporting and screening requirements resulted in substantial uncertainty, causing additional delays for program administrators.
- **Customer confusion:** NYSERDA and IOUs chasing the same efficiency projects in the same market segments while offering different incentive designs results in customer confusion. The end result is that fewer projects are closed on, and fewer savings are acquired. One alternative would be to carve out certain markets for NYSERDA and leave others for IOUs to capture. Another more comprehensive change could entail shifting NYSERDA's MWh goals to the utilities while retaining the overall goal—thereby offering a uniform statewide program co-branded by the utilities and administered by NYSERDA in close coordination with utility staff and contractors.

34 EEPS Program Review White Paper, at page 2.

35 A recent annual report on Massachusetts' efficiency programs shows positive results. Massachusetts Energy Efficiency Advisory Council: http://www.ma-eeac.org/2012%20Minutes.htm. Connecticut also has performed well: "2011 Report of the Energy Efficiency Board," Connecticut Energy Efficiency Fund, March 2012. http://www.ctenergyinfo.com/Final%202012%20ALR%2020120301.pdf

- **Flawed approach to cost-effectiveness screening:** The methodology required to screen efficiency proposals fails to capture many of the benefits generated by these investments, and in some instances overstates the costs, resulting in substantial cost-effective savings being left on the table at project sites. Additionally, applying this screening at the measure level instead of the program or portfolio level results in less comprehensive projects being completed. All of these factors make project scopes less attractive to the customer due to added administrative burdens for participants and program administrators, along with delays and uncertainties in assessing eligible project scope. These factors discourage program participation, and ultimately reduce the electricity savings needed to meet the state's goal. The PSC's protocol of screening at the measure level—a policy not shared by other states—poses a major barrier to the successful implementation of comprehensive efficiency programs. This issue is discussed in greater detail later in the report.

While the above factors and target shortfalls for Phase I of EEPS paint a somewhat disappointing picture, the PSC, NYSERDA, and IOUs have been working diligently to improve program performance. The final section of the report presents suggestions for how to build on that progress and ensure that Phase II of the program more successfully captures these benefits and reaches savings targets.

Long Island Power Authority (LIPA): Efficiency Long Island (ELI)

LIPA initiated Efficiency Long Island (ELI) in 2009, a continuation of the preceding *Clean Energy Initiative*.[36] Through the ELI portfolio, LIPA aims to provide its customers with cost-effective energy efficiency measures that will substantially reduce electricity consumption and peak demand. The program's goals are to reduce energy consumption by 1,400,000 MWh by 2018 from forecasted usage, and to reduce peak demand in 2018 by 520 MW. In order to achieve these goals, LIPA has set aside a budget of $924 million to be used over ELI's ten year lifespan.[37]

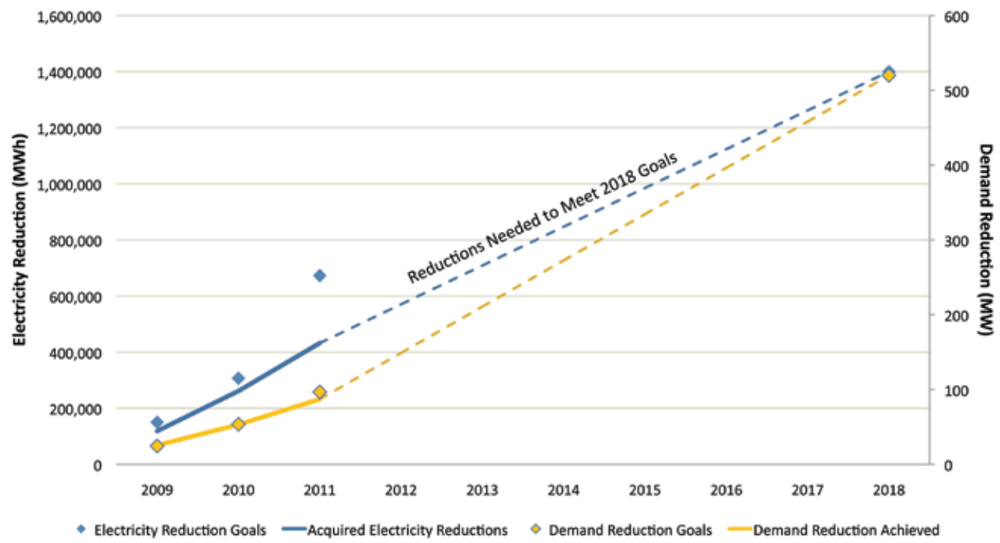
En route to meeting its 2018 goals, LIPA has set aggressive annual reduction targets for ELI. Through the first three years of the program (2009-2011) the acquired reductions from ELI have fallen just short of the annual targets, but LIPA has made significant headway towards achieving ELI and its voluntary '15 by 15' goals. Thus far, ELI has achieved 432,274 MWh of electricity reduction (31% of the 2018 goal) and 87.18 MW of demand reduction (17% of the 2018 goal). Figure 5 shows the progress that LIPA has achieved towards its ELI goals through 2011.[38,39,40]

Efficiency gains through ELI have been on the rise. In 2009, acquired efficiency gains as a percentage of LIPA's electricity sales were 0.6%. This figure rose slightly to 0.7% in 2010,[41] and again to 0.8% in 2011.[42]

The PSC assumed '15 by 15' target for LIPA through 2011 was 2,500,277 MWh.[43] LIPA's own energy efficiency program goals culminate in 2018 with a target of 1,400,000 MWh. To match the 2009-2011 EEPS I timeframe used by the PSC, LIPA's proportional savings target through 2011 would be 420,000 MWh—83% less savings than the PSC target. However, based on the aforementioned target of 420,000 MWh that LIPA itself adopted, the 432,274 MWh of savings that LIPA achieved through 2011 means they exceeded their adopted savings target by 2.9%. A similar dynamic exists under NYPA's programs (see next section), and illustrates the need to better align the many disparate efficiency efforts under one comprehensive regime, which was the intention if '15 by 15.' Instead, efficiency programs have become more balkanized since 2008, which hampers the ability of the entire statewide suite of programs to deliver timely results.

36 From 1999 to 2008 (before ELI began), efficiency efforts were included in LIPA's Clean Energy Initiative (CEI).
37 'Efficiency Long Island': http://www.lipower.org/eli/
38 "LIPA Efficiency Long Island PY2009 Assessment: Volume 1," Energy and Resource Solutions Inc., May 2010. http://www.lipower.org/pdfs/company/papers/ELI2009assessvl.pdf
39 "LIPA Efficiency Long Island 2010 Annual Report: Volume 1," Energy and Resource Solutions Inc., April 2011. http://www.lipower.org/pdfs/company/papers/eli_annual2010a.pdf
40 "LIPA Efficiency Long Island 2011 Annual Evaluation Report," Energy and Resource Solutions Inc., May 2012.
41 "2012 Approved Operation Budget," Long Island Power Authority and Affiliates, December 2011. http://www.lipower.org/pdfs/company/investor/2012budget.pdf
42 2011 LIPA Filing Form for U.S. Department of Energy. April 2012.
43 "Order Establishing Energy Efficiency Portfolio Standard and Approving Programs," State of New York Public Service Commission, June 2008. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={D9F7E0DF-A518-4199-84CC-C2E03950A28D}

Figure 5: Efficiency Long Island Acquired Efficiency Compared to Program Goals



New York Power Authority (NYPA)

The Authority's existing energy services plan includes efficiency budgets of over $1.4 billion for 2008-2015, though these budgets are not restricted to electric and also include gas and oil efficiency.[44]

In April of 2012, Governor Cuomo announced NYPA's goal to reduce energy consumption in state buildings by 20%.[45] This effort will focus on improving the efficiency of state buildings and local governments. In order to achieve these savings, NYPA funding will be "directed toward the largest and most inefficient buildings."[46]

As NYPA does not fall under the jurisdiction of the PSC, it is not required to meet the savings targets set forth in the 2008 PSC Order. While LIPA, which is also outside of PSC jurisdiction, has focused largely on acquiring electric efficiency savings, NYPA has, to date, put more of an emphasis on achieving gas and oil efficiency goals. As a result, at time of writing it is unclear whether NYPA will achieve the electric energy efficiency savings that were assumed in the original "wedge" analysis.

From the '15 by 15' planning perspective, the PSC assumed target for NYPA through 2011 was 2,059,543 MWh. NYPA's own projected energy efficiency savings from 2009 through 2015 are 436,000 MWh. Thus, to match the 2009-2011 timeframe used by the PSC, NYPA's proportional savings target through 2011 would be 186,857 MWh—91% lower than what the original '15 by 15' NYPA target assumed.

However, based on their own target of 186,857 MWh for the same time period, the 153,000 MWh of savings that NYPA achieved through 2011 equates to achieving 82% of their self-proclaimed savings target.

As details of the ambitious efficiency effort for state buildings emerge, it will be possible to have a better sense of whether NYPA may ultimately meet the MWh savings assumed for its part of '15 by 15.' One thing is certain: NYPA has the potential to play a massive part in the state's efficiency efforts, and the state buildings initiative can be a national model if its ambitious goals are met through smart implementation and program design.

44 Source: NYPA.
45 "Governor Cuomo Announces Clean Energy and Environmental Initiatives During Earth Week Cabinet Meeting," Governor's Press Office, April 2012. http://www.governor.ny.gov/press/04262012earthweek
46 Ibid.

4 Key Issue: Cost Effectiveness Screening

A well-designed and properly applied cost-effectiveness screening process is the cornerstone of any effective efficiency portfolio. This step ensures that ratepayer dollars are only invested in projects that will provide a net benefit to the electric system and society as a whole. There are a number of different methodologies for screening programs, as well as different policy approaches regarding how the results of screening informs program approval by regulators. This is a key consideration, and these decisions have a huge impact on which programs ultimately receive funding. The metrics policymakers depend on to make funding decisions vary from state to state, and vary from agency to agency within New York. For example, the New York PSC imposes the Total Resource Cost (TRC) test at the measure level, which limits the ability of program administrators to implement efficiency measures whose benefits are not included in the current cost-effectiveness calculation. No other state applies the TRC at such a granular level.

NYSERDA/IOUs

All EEPS programs administered by NYSERDA and the IOUs must be reviewed and approved by Department of Public Service (DPS) staff and PSC to ensure they pass the TRC test. As described by DPS in the June 2011 EEPS White Paper, the TRC test "assesses the extent to which the cost of buying and installing an energy efficiency measure is exceeded by the savings associated with the traditional supply resources that the energy efficiency measure allows the utility system to avoid."[47] In order to pass and be approved, a measure or program must score a 1.0 or higher. The TRC is a valuable tool for regulators and is in wide use across the country. However, the inputs and assumptions built into the TRC formula can vary, along with how the outputs of the TRC are applied. The importance of proper choice and application of cost-effectiveness screening tests is one that has been receiving increased attention across the region and the nation. One major paper on the topic was recently released by the National Home Performance Council,[48] with a second by the Regulatory Assistance Project forthcoming. The Conclusion section of this paper presents some potential improvements to the PSC's approach to cost-effectiveness screening, which would allow for more savings to be captured by NYSERDA and utility programs.

Figure 6: ELI Cost Effectiveness

	$/MWh	PA Test
2009	$50	2.2
2010	$27	6.1
2011	$40	4.4

LIPA

LIPA measures the cost effectiveness of its ELI portfolio by using a Program Administrator (PA) test. The PA test determines the benefit/cost ratio for each ELI program, in terms of the costs incurred by LIPA.[49] This contrasts with the TRC, which counts program participant contributions to an efficiency project as a "cost." Under the PA test, a score of greater than 1.0 indicates that a program's benefits outweigh the administrator's costs. As Figure 6 shows, the total ELI portfolio has been well above the 1.0 PA threshold in each of its first three years. LIPA also utilizes the TRC to screen programs and help inform policy decisions. It is important to note that some programs that do not pass the TRC are still being implemented, because LIPA decides there are sound policy reasons nonetheless for investing in those initiatives—some of which are difficult to capture in the TRC. In this regard, LIPA has chosen to follow a sound and reasonable approach to cost effectiveness screening; one that the PSC, other program administrators and states should consider adopting.

47 "EEPS Program Review White Paper," Department of Public Service, July 2011. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=BDD432F1-2C88-4375-A18D-A2047CCCAFF4

48 "Best Practices in Energy Efficiency Program Screening: How to Ensure that the Value of Energy Efficiency is Properly Accounted For," is available on NHPC's website: http://www.nhpci.org/images/NHPC_Synapse-EE-Screening_final.pdf

49 The PA test does not account for costs to participants.

NYPA

NYPA's efficiency efforts encompass electric, natural gas, and oil savings, and focus mainly on the commercial/institutional sector—facilities such as state-owned buildings, schools, universities and hospitals. The authority's approach to cost-effectiveness screenings differs from LIPA and the PSC in that it focuses more on a "simple payback" criteria and financing rather than an explicit TRC or PA formula. Building owners participating in NYPA efficiency programs pay back 100% of a project's cost but enjoy the turnkey service (from audit to design and installation) and financing terms that are more attractive than those available on the open market. Financing is typically for a ten-year period, though in capital intensive scenarios that timeframe can be up to twenty years. Thus, depending on the economics of a given work scope, NYPA has the flexibility to pursue more comprehensive projects on a case by case basis. Such an approach will be essential to an effective state buildings initiative and any additional efforts NYPA undertakes.

5 Codes and Standards

Building energy codes and appliance standards are of utmost importance to New York's plans for an energy efficient future. The original 2008 PSC Order demonstrated this importance by calling for improved codes and standards to account for 7,947,588 MWh of electricity savings by 2015– approximately one third of the total '15 by 15' target.[50] Due to a number of factors, that original 2015 target may no longer be a realistic goal, but the potential savings from high rates of compliance with updated codes and standards remain vast. The Department of State is working diligently with NYSERDA to ensure that New York's codes and standards are updated as expeditiously as possible, in part to comply with federal regulations,[51] and in part because it is sound public policy. Accelerating the pace of code updates must also be accompanied by sufficient attention to training and enforcement, so that sound policies on the books are actually complied with in the field. However, at time of writing, the following challenges are holding back efficiency gains that would otherwise be realized from codes and standards:

Factors Limiting Savings from Codes and Standards

- **Delays in codes and standards updates**
  - Under '15 by 15,' new codes were assumed to be adopted, published and generating savings beginning in January 2013 – as it stands now that date has now slipped to December of 2014, which would result in nearly two years' worth of foregone savings that would have otherwise been realized in all new construction and significant renovations.[52]
- **Low compliance rates**
  - Energy savings from codes cannot be realized unless new construction and significant renovations in fact comply—cash strapped municipalities often struggle to provide adequate enforcement.
  - The energy components of building codes are complex and often difficult to understand, and as a result builders, architects and engineers are less likely to comply.[53]
- **Down economy**
  - The 2008 PSC Order made savings estimates based on higher new construction/renovation rates and faster appliance turnover rates. The economic downturn has significantly reduced savings on both fronts.
- **Exemptions**
  - Certain exemptions have drastically reduced the effectiveness of appliance standards:

50 "Order Establishing Energy Efficiency Portfolio Standard and Approving Programs," State of New York Public Service Commission, June 2008. http://www3.dps.ny.gov/W/PSC-Web.nsf/All/06F2FEE55575BD8A852576E4006F9AF7?OpenDocument

51 In accordance with 42 U.S.C. § 6833 and Federal Register Volume 76, Number 202 (October 19, 2011): 64904-64923, States have until October 2013 to update Codes. "The Department of Energy (DOE or Department) has determined that the 2010 edition of the Energy Standard for Buildings, Ex- cept Low-Rise Residential...would achieve greater energy efficiency in buildings subject to the code, than the 2007 edition (Standard 90.1–2007 or the 2007 edition). Also, DOE has determined that the quantitative analysis of the energy consumption of buildings built to Standard 90.1–2010, as compared with buildings built to Standard 90.1–2007, indicates national source energy savings of approximately 18.2 percent of commercial building energy consumption. Additionally, DOE has determined site energy savings are estimated to be approximately 18.5 percent.

52 At time of writing, there were efforts underway to accelerate this schedule, but no details were publicly available to incorporate into the report. Any such progress would substantially increase the savings from codes contributing to '15 by 15' and should be provided the necessary attention, funding, and staff time to be completed.

53 In conjunction with DOS, NYSERDA is leading an initiative to address this challenge, and initial results are promising.

- Most of the almost 8 million MWh of targeted codes and standards savings was expected to come from standards, in which the largest source of savings is lighting.
- Exemptions for less efficient T12 lamps results in a missed opportunity for significant savings.

6 Conclusions & Recommendations

New York is an energy efficiency leader. The well-intentioned efforts of the PSC, NYPA, LIPA, DOS, NYSERDA and the utilities fell short of achieving the level of energy efficiency savings necessary to put the state on target to meet its '15 by 15' goal. In the process, the state left significant energy efficiency savings on the table, along with the economic growth and jobs that would have accompanied that additional energy efficiency. The state must get better at capturing these cost-effective opportunities.

It is true that when New York embarked on its quest to achieve '15 by 15,' no one could have foreseen the impact that the economic downturn and historically low gas prices would have on the deployment of its energy efficiency programs.[54] The energy efficiency portfolio standard (EEPS) programs have had a slower-than-hoped-for start, as exhibited by the savings shortfalls for EEPS I. The state must learn from the experiences of the past several years and step up the performance of the programs.

In addition to renewing robust dollar budgets, the October 2011 PSC "EEPS II" Order took stock of these program administration problems and other factors that were responsible for target shortfalls. That Order included some modest steps to improve program administration and performance, but left most of the EEPS structure intact for the sake of consistency. However, this need for program consistency must be balanced with the needed changes that can be taken now to increase energy savings—namely directing DPS staff to apply the TRC at the program level rather than the measure level. Doing so would immediately result in more effective programs, and has the support of nearly all program administrators.[55]

The state can achieve '15 by 15' only if certain steps are taken now to improve program design: reforming the Commission's approach to cost-effectiveness, accelerating the deployment of programs, and confronting the challenges posed by the "non-jurisdictional wedges."

The programs are moving in the right direction and a philosophy of "continuous improvement" is being adhered to both in word and in practice—particularly with respect to the efforts of the Evaluation Advisory Group (EAG) and the Implementation Advisory Group (IAG), which foster productive dialogue amongst the entities tasked with meeting these targets. These forums are vital to accelerating the deployment of programs, improving their design, and ensuring that savings can be tracked and verified—all of which are fundamental to the integrity of these programs. We commend the PSC and DPS Staff for these efforts, and urge that they be expanded and continue in the future, while also affording more opportunity for public forums and outside expert input.

The PSC and DPS Staff have indicated that they believe it is still possible to achieve the 2015 savings goals set for the regulated utilities and NYSERDA.[56] However, based on this analysis, meeting these PSC jurisdictional targets, and particularly the broader '15 by 15' goals that span NYPA, LIPA and Codes and Standards, will be challenging. The state can achieve '15 by 15' only if certain steps are taken now to improve program design: reforming the Commission's approach to cost-effectiveness, accelerating the deployment of programs, and confronting the challenges posed by the "non-jurisdictional wedges."

54 Utilities faced the additional challenge of ramping up energy efficiency programs after over a decade of being out of the efficiency business.

55 Joint Utilities and NYSERDA filed comments supporting the NRDC/Pace petition requesting that DPS apply the TRC at the program/portfolio level. Joint Utilities Comments: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={5F32C342-8091-4B75-A0A5-8465A4016A34} NYSERDA Comments: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={AC5C2B7E-B956-44B3-9773-06334E550DB0}

56 Taken in the aggregate, the EEPS electric programs are on a trajectory to achieve the Commission's goal of reducing electricity use by 11.2 million MWh by the end of 2015." October 25, 2011 – "Order Authorizing Efficiency Programs, Revising Incentive Mechanism, and Establishing a Surcharge Schedule"

Recommendations

The following recommendations are designed to accelerate cost-effective investments in energy efficiency:

1. Update Codes & Standards more quickly, improve enforcement: The Department of State—working closely with NYSERDA and other state agencies—must adopt and enforce updated Energy Building Codes and Appliance Standards. Until this issue is addressed, every new construction project or significant renovation and each outdated-appliance sale results in a lost opportunity for highly cost-effective energy savings. The state should move quickly to update the code and increase funding to support code official training and enforcement efforts.

2. Ensure sufficient staff levels to implement ambitious goals and empower those staff to accelerate programs. In the past decade, the workload for which DPS staff is responsible has increased dramatically. Over the same time period staff levels at DPS and other agencies working on clean energy have declined significantly. Likewise, DOS must have sufficient staff and resources allocated to update, adopt, publish and ensure enforcement at the local level of building codes and standards. The state must ensure that these agencies have the personnel necessary to effectively implement these growing programs, and that protocols are put in place that provide them sufficient latitude to break through bureaucratic delays and deliver results.

3. Improve cost-effectiveness screening—and apply it as a tool, not the final word. The current PSC practice for cost effectiveness screening of energy efficiency programs—New York's version and application of the Total Resource Cost (TRC) test—must be updated. A number of parties have filed comments to this effect with the PSC.[57,58] Under current DPS practice, the TRC test fails to fully account for the benefits and overstates the costs of energy efficiency programs. It is of utmost importance that ratepayer dollars be invested as effectively as possible; preserving a flawed TRC test to maintain the status quo jeopardizes the achievement of '15 by 15' by leaving cost-effective savings on the table.

Efficiency measures result in many societal benefits that are not reflected in the TRC test, such as public health, environmental benefits, and economic development.

An improved TRC test should incorporate the following changes, and could be explored via a Technical Conference or other expert forum:

57 Analysis of New York Cost-Effectiveness Screening Methodology and Framework for Energy Efficiency Programs," Optimal Energy, Inc. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={00483E7A-6A11-4F58-BBD6-8D1760A12933}

58 "Pace, et al. Petition for Rehearing," November 2011. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={25726874-0835-4FA4-8CB3-024B668AA5DC}

- Account for the wholesale price suppression effect/ Demand-Reduction-Induced Price Effect (DRIPE).
  - Efficiency investments drive down demand for electricity, which results in lower electricity and capacity prices, resulting in significant savings to all consumers.[59]
- Calculate benefit-cost ratios at the project/portfolio level—not the measure level.[60]
  - Certain energy efficiency measures foster and encourage the implementation of other measures and lead to more comprehensive work scopes that save more energy. Cost-effectiveness applied at the measure level interferes with these more interactive building solutions. It also interferes with the sales process, inhibiting the ability of the installation contractors to package measures to suit their customers' needs. The measure level application of the tests is resulting in significant lost opportunities in New York State. Another possibility would be to allow program administrators to rely on alternative tests (e.g. PAC) at the project level during implementation while continuing TRC at program level.
- Assign value to non-energy benefits (NEBs) of efficiency investments.
  - Efficiency measures result in many societal benefits that are not reflected in the TRC test, such as public health, environmental benefits, and economic development.
  - Cutting greenhouse gas emissions was a major impetus for the introduction of New York's aggressive EEPS program, yet climate benefits are not fully accounted for in the current TRC test. DPS staff currently applies a very conservative $15/ton benefit for CO2 reductions from EE investments; the number should be much higher in order to account for the threat posed by climate change. Recent research by Synapse suggests an $80/ton metric would be more appropriate.[61]
- A dollar saved on electricity by a New Yorker should be valued more than a dollar earned by an out-of-state generation owner.
  - The 2009 State Energy Plan estimates $1.4 billion in consumer electric savings as a result of EEPS, but TRC disregards this substantial sum on the grounds that this is merely a "transfer payment" from generation owners to electric customers. However, a core driver of the EEPS was to provide economic benefits to New Yorkers—not to generation companies whose earnings are invested in large part outside of New York.
- The discount rate used by the TRC should be reduced.
  - The current TRC real discount rate of 5.5% undervalues the societal benefits of these investments; a lower rate would be more appropriate.
- Adopt the recommendations, as reasonable, of *Best Practices in Energy Efficiency Program Screening* Tim Woolf, et al of Synapse Economics, Inc. for the National Home Performance Council, July 2012, to expand the portfolio of energy efficiency programs in the state while ensuring their cost-effectiveness. Many of those recommendations are listed above.

4. Leverage and coordinate the currently balkanized suite of NY EE programs. Buffalo is a different market than Manhattan or Long Island, and programs should be tailored to the unique weather, electric system conditions, and even contractor business networks of these diverse regions. However, as this report illustrates, consumers face a confusing alphabet soup of multiple state authorities, state agencies and investor-owned utilities that have different rules governing their efficiency programs. If consumers and contractors find it difficult or confusing to participate in efficiency programs, program administrators will have to invest more in marketing and outreach to overcome this obstacle, and long-term support for efficiency collections may dwindle.

59 This point is often countered with the claim that avoided electricity payments enjoyed by consumers are equal to the losses from power plant owners, and therefore DRIPE amounts to a "transfer payment" from generators to consumers. As the TRC test is designed to measure the economic impact on New York, savings for New Yorkers should be valued more than losses for out-of-state power plant owners.

60 "Best Practices in Energy Efficiency Program Screening: How to Ensure that the Value of Energy Efficiency is Properly Accounted For," Tim Woolf, et al., Synapse, July 2012. http://www.synapse-energy.com/Downloads/SynapseReport.2012-07.NHPC.EE-Program-Screening.12-040.pdf "Avoided Energy Supply Costs in New England," Biewald, B. et al., Synapse Economics, Inc., July 2011. http://www.ma-eeac.org/docs/PAcites/AESC%202011%20Final%20-amended%208-11-11%20-Synapse.pdf.

61 "Analysis of New York Cost-Effectiveness Screening Methodology and Framework for Energy Efficiency Programs," Optimal Energy, Inc. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={00483E7A-6A11-4F58-BBD6-8D1760A12933} "While similar cost effectiveness methodologies. . .have been adopted in many of the leading energy efficiency states. . .New York's current version of the TRC test does not sufficiently account for the full range of energy efficiency costs and benefits, and we believe uses a somewhat high discount rate."

The Governor should ensure these disparate programs actually obtain as much publicly-funded leverage as possible rather than run the risk of over-incentivizing or competing for the same projects. This will result in reduced customer confusion and, in turn, more energy efficiency projects being completed for the same dollar investment. One step to this end would be to expand the structure and role of the Implementation Advisory Group to more than just DPS staff and program administrators, and provide opportunities for public forums and outside expert input.

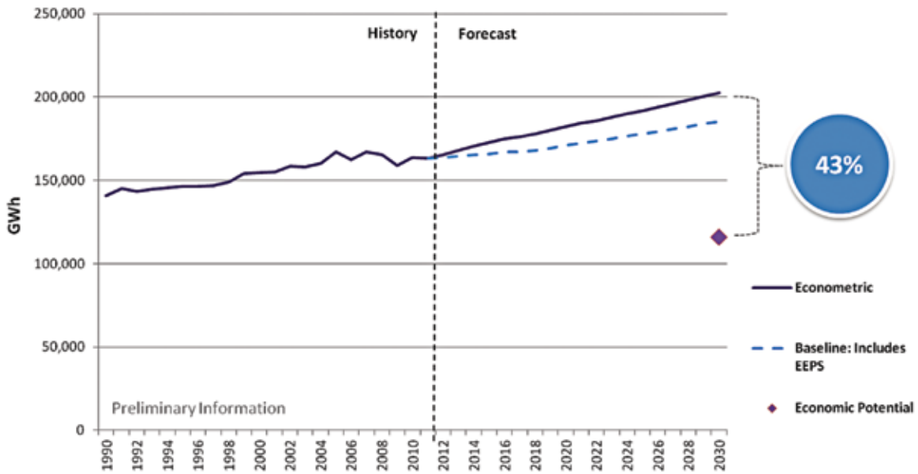
Additionally, ongoing work to better coordinate and increase the effectiveness of marketing efficiency should continue. Building consumer awareness through promising initiatives such as the recently launched unwasteNY website is essential.[62] Reducing the complexity of pursuing efficiency investments is paramount, and more must be done in this area to change consumer behavior and bridge the divide that persists between most consumers and their energy use.

5. What happens after 2015? Begin the process now. With both the EEPS and the Renewable Portfolio Standard (RPS) scheduled to sunset in 2015, Governor Cuomo, the PSC and all relevant state agencies and authorities are faced with a monumental opportunity to shape the future of clean energy in New York. Preliminary results from an updated energy efficiency potential study under the 2013 State Energy Plan found that there is massive potential for incremental economic electric efficiency above and beyond '15 by 15'—as much as 43% below forecasted demand by 2030, as illustrated in Figure 7.[63]

62 http://www.unwasteny.org/

63 NYSERDA presentation to the State Energy Planning Board. July 9, 2012. http://www.nysenergyplan.com/meeting/NYSERDA%20Presentation%20July%209%202012%20SEPB%20Meeting.pdf

Figure 7: Energy Efficiency Potential in New York State Significant



Source: NYSERDA and Optimal, Inc.

The Governor should initiate a proceeding in early 2013 to begin exploring what the next generation of energy efficiency (and renewable energy) programs will look like. Doing so under this timeframe will provide policy-makers and stakeholders sufficient opportunities to provide feedback and design smart programs. Equally (if not more) important, charting a path early next year will provide sufficient lead time to the clean energy marketplace—thereby sending the signal that New York is "open for business" when it comes to energy efficiency and renewable energy investment, and all the job creation, economic development, and environmental benefits this growing sector create.

With the necessary hands-on leadership and vision on the part of Governor Cuomo, the state can meet not only '15 by 15' but could also claim the honor of becoming the most energy efficient state in the Nation.

6. Don't lose sight of the Big Picture. Regulators such as the PSC and DPS staff have a statutory obligation to ensure ratepayer dollars are invested prudently, and approach EEPS programs accordingly. However, in some instances regulatory micromanagement has hindered the deployment of this highly cost-effective resource. In order to ensure a more coordinated and cohesive suite of efficiency programs, the state should assemble a team or create a new position with the explicit purpose of overseeing all of the state's energy efficiency efforts. The state—as well as the many parties with vested interests in the progress of the state's efficiency efforts—would benefit greatly from a source of comprehensive information and updates on '15 by 15' and future statewide efficiency initiatives.

'15 by 15' is not just about light bulbs, insulation and furnaces; it is about job creation, economic revitalization, and confronting the greatest environmental challenge of our time in climate change. Thus, overlaying these good faith efforts by DPS staff to oversee program design, approval, and deployment must be an engaged Commission and an Executive that together take those valuable inputs and make policy decisions regarding New York's clean energy future. With the necessary hands-on leadership and vision on the part of Governor Cuomo, the state can meet not only '15 by 15' but could also claim the honor of becoming the most energy efficient state in the Nation.

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