

**A STATEWIDE PLAN
TO ACHIEVE THE ELECTRIC REDUCTION TARGETS
OF THE 15 BY 15 POLICY**



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Executive Summary

Some parties to the PSC's generic energy efficiency case have proposed partial solutions to achieving the electric savings targets of Governor Spitzer's 15x15 Policy. Those efforts have left efficiency "gaps."

Employing information Central Hudson has developed on the cost effectiveness of utility-led energy efficiency programs that reflect national best practices, and market research for its territory, Central Hudson proposes a complete solution. One that:

1. Achieves the 15x15 electric savings target,
2. Is reasonably balanced among public and private sector energy efficiency programs,
3. Is superior to the prior work of the other parties from a cost-effectiveness perspective, and
4. Is in the best interests of the People of the State.

The following table provides a comparison of the various proposals.

Summary of Results

	Central Hudson Recommendations		Agency and Authority Collaborative		DPS Staff "Fast Track"	
	GWh by 2015	Total Cost, MM\$	GWh by 2015	Total Cost, MM\$	GWh by 2009	Total Cost, MM\$
Energy Codes and Appliance Standards	8,250	\$22	8,250	\$22	N/A	
Current State Agency & Authority Programs ¹	4,740	\$3,134	4,740	\$3,134	N/A	
Agency and Authority "Fast Track" ²	NA ³		7,380	\$3,114	N/A	
DPS Staff "Fast Track" ⁴	5,659	\$1,525	N/A		1,511.4	\$352.7
Utility-Led Programs	8,887	\$2,363	N/A ⁵		N/A	
Gap (GWh in 2015)	0		7,170		N/A	
Totals	27,536	\$7,044	20,370	\$6,270	N/A	N/A
Cost Effectiveness, MM\$/GWh		\$0.26		\$0.30		N/A

¹ Values for "Current State Agency & Authority Programs" are for the nine year period 2007 through 2015. Source: November 30, 2007 NYSERDA "letter report" at 3. Central Hudson's position on the treatment of SBC post-2011 is discussed in detail in this paper.

² Values for Agency and Authority "Fast Track" are for the eight and a half year period, July 2008 through 2015. Source: November 30, 2007 NYSERDA "letter report" at 5.

³ The Central Hudson proposed suite of DPS Staff Track and utility-led programs includes significant on-going funding for NYSERDA-led efficiency programs.

⁴ The DPS Staff "Fast Track" programs are a mix of NYSERDA-led and utility-led programs.

⁵ The Collaborative envisioned "utilities and other potential program administrators" as possible means of filling the "efficiency gap" it identified. Source: November 30, 2007 NYSERDA "letter report" at 6.

Introduction

This paper builds on work done previously by Department of Public Service Staff ("Staff") in the PSC's generic energy efficiency case and by a group of State agencies and authorities who have styled themselves the Clean Energy Collaborative ("Collaborative") and submitted a November 30, 2007 "letter report" in the PSC's generic energy efficiency case.

In this paper, Central Hudson seeks to build upon the strengths of the work done by Staff and the Collaborative, to combine the results of those efforts, and to supplement those efforts with an analysis of a way of closing the "efficiency gaps" left by those efforts that will call upon the strengths of all the parties who must all contribute to fulfilling the resource savings goals of Governor Spitzer's 15x15 Policy, be cost-effective, provide positive benefit/cost ratios, and, on an overall basis, be in the best interests of the State.

A. DPS Staff

Staff has proposed a suite of "fast track" programs that is weighted significantly more towards programs to be administered by NYSEDA than by distribution utilities. In addition, the Staff proposal explicitly addresses only a year and a half period (mid-2008 and calendar 2009). Staff provided its estimates of the TRC benefit cost values for its proposed fast track programs.

Although labeled as "fast track" programs, the Staff proposal is better understood as proposing a transition from today's energy efficiency situation. However, the Staff "fast track" proposal does not address how to achieve the longer-term, 2015 goals of the Governor's 15x15 Policy.⁶

The basic concept of a rapid transition from the approach of the last decade to a broader and more productive approach is a salutary initial step. However, Staff's presentation of programs addressing only a year and a half is limited, and Staff has not addressed how its proposal might achieve the long-term 15x15 electric savings goals. In effect, the Staff "fast track" leaves a multi-year "efficiency gap" looking forward from 2009.

B. The Collaborative

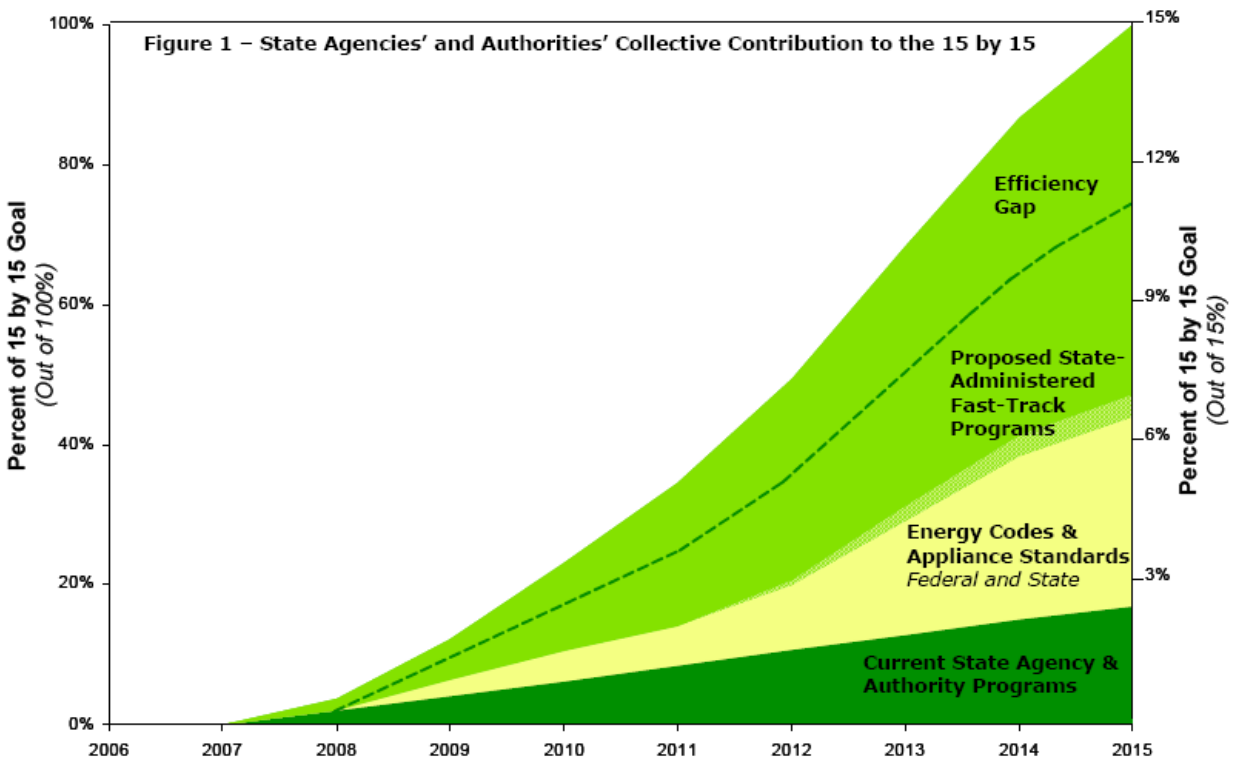
The Collaborative has taken a different approach, almost the opposite of that of Staff, and has proposed what amounts to collective volunteering for aggregated portions of the electric energy reductions ("wedges")⁷ required over the entire 2008-2015 period to reach the 15x15 electric targets. However, the Collaborative has not identified specific "contributions" by agency/authority, by year, or made specific agency by agency commitments, or provided any detail on any agency or authority

⁶ Staff has provided forecast savings and Total Resource Cost ("TRC") benefit cost ratios on a program by program basis for the mid-2008 through 2009 time period.

⁷ The use of "wedges," as originated in the carbon impact context by Dr. Sokolow, and as applied to the electric efficiency target "contributions" by many, including the Collaborative, provides a convenient metric.

programs, on required funding, or on benefit/cost ratios for any proposed programs for any portion of the time period the Collaborative chose to address. As a result, only high-level assessments of cost effectiveness may be made of the Collaborative proposal.

In addition, the work of the Collaborative does not achieve the 2015 target, and leaves an “efficiency gap” of varying amounts throughout the 2008-2015 time periods. The Collaborative’s proposals are summarized in Figure 1 to the November 30, 2007 NYSERDA “letter report.”⁸



⁸ Central Hudson had requested supporting information for the NYSERDA “letter report” in mid-December, but the requested information has not yet been provided. As a result, Central Hudson has been limited to what has been explicitly stated in the “letter report,” and has not been able to evaluate the basis for those statements.

C. Data Limitations

An absence of consistent data limits the precision of the Staff and Collaborative proposals, and it also limits any analysis that can be made at this time by Central Hudson. Ultimately, however, this does not impose a significant limitation on the reliability of Central Hudson's analyses.

This is because only the next few years of the 2008-2015 period can be seen with precision by anyone, and because energy efficiency market developments that are not foreseeable at this time can be expected. Accordingly, detailed analyses beyond three significant figures will not be reliable beyond the next few years in any event.⁹

It should also be noted that the work done by Staff and the Collaborative represents the individual efforts of those entities. The current proposals of both Staff¹⁰ and the Collaborative were not presented to any of the Working Groups for peer review in the context of the Public Service Commission's generic case, and those proposals have not been coordinated through the parties to the case as a whole.

Electric Targets and Wedges

⁹ An explicit set of input assumptions that are consistent across all working groups and seeks to put all analyses on the basis of a common set of assumptions has not yet been developed or provided to the parties to the Public Service Commission generic efficiency case, if one exists.

¹⁰ An earlier Staff proposal had been reviewed by the parties to the PSC Generic Case at a workshop called for that purpose.

Working Group 3 of the PSC's generic energy efficiency case, in its final report, endorsed the estimate by DPS Staff of the 2015 energy efficiency savings of about 27,500 GWh required to meet the 15x 15 electricity goal.¹¹ Accordingly, it is assumed for purposes of this paper that 27,540 GWh of savings represents the electric target.

For purposes of this paper, Central Hudson has accepted the wedge for "Energy Codes and Appliance Standards" defined by the Collaborative for the entire period 2008 through 2015.¹² Central Hudson has also accepted the wedge for forecasted "contributions" from "Current State Agency & Authority Programs," but only through 2011.¹³

On this basis, the task becomes one of developing a strategy for evaluating a wedge or wedges for the unassigned portion of the graph, through 2011, and to propose what to do from 2012 on, to reach the 15x15 target.

¹¹ See WG3 Report at 9.

http://www.dps.state.ny.us/07M0548/workgroups/WG3_Final_Report.pdf

¹² The cost-effectiveness of this "wedge" is very high, implying that further efforts should be made to optimize the savings produced from this category. The wedge for "Energy Codes and Appliance Standards" has been calculated on a linear basis to approach the "estimated 8,250 GWh of annual electricity savings by 2015" quoted by the Collaborative.

¹³ Due to the absence of responses to Central Hudson's requests for supporting data from the Collaborative, it has not been possible for Central Hudson to quantify the effect of the Collaborative's assumption that the SBC will continue at current levels subsequent to 2011.

A Matter of Perspective

Virtually every program proposed for large-scale implementation will probably have a TRC value of at least 1.0, indicating that, based on the limited benefits recognized in the Commission's formulation of the TRC test, the program is socially beneficial.¹⁴ The existence of pervasive social benefits, despite a relatively limited "test" for determining benefits, implies that the benefits should be maximized as soon as possible and, correspondingly, that programs should be ramped up aggressively, so as to produce maximal social benefits as soon as possible. Thus, rather than the somewhat concave shape forecasted by the Collaborative, Central Hudson believes that a straight line is more appropriate.¹⁵

A related factor is that a significant objective of the 15x15 Policy and the EPS program is to attempt to change the way that society looks at energy consumption and energy efficiency. Because a period of years is generally required to change social values, strong and repeated efforts must be taken to start and maintain momentum for the needed transition in thinking.

¹⁴ It can be anticipated that some programs may have benefit cost ratios of less than one, but be deemed socially desirable in consideration of factors not incorporated into the Public Service Commission's TRC formulation. Central Hudson assumes that any such programs will be relatively small in size compared to the overall goals.

¹⁵ In addition, a number of energy efficiency programs are expected to have favorable benefit cost results from the perspective of the individual consumer. This also implies that more aggressive, front-end loading of program implementation is desirable.

However, there are only limited data available as to the actual "achievable potential" for energy efficiency in New York. While a study done for NYSERDA some years ago that relies upon even older data exists, that study is most reliable in relation to the potentials for energy efficiency for the time period studied, but not necessarily the "achievable potential" under today's and tomorrow's conditions.

Although it cannot be reasonably assumed that infinite "achievable" potential exists, or that every area of the State shares exactly the same degree of achievable potential, it is entirely reasonable to start an aggressive statewide efficiency effort now, because the benefit/cost ratios are greater than unity and because it is socially desirable to change the way that people think about consuming, and even more importantly, saving energy.

Central Hudson's Analyses

A. Defining the Efficiency Gaps for this Study

As noted above, for purposes of this paper Central Hudson has accepted the "contributions" for "Energy Codes and Appliance Standards" defined by the Collaborative for the entire period 2008 through 2015, and the forecasted "contributions" from "Current State Agency & Authority Programs," but only through 2011.

B. Filling the Gaps

1. Conceptually

Central Hudson believes that the efficiency gap should be filled with a combination of Staff "fast track" and utility-led programs. The Staff "fast track" programs should be extrapolated based on information that has been developed by Staff for the mid-2008 through 2009 time period.¹⁶ The relative proportions of the various programs should be based on the forecast benefit/cost ratios as determined by Staff and Central Hudson, respectively, for the fast track and utility-led programs.

The lack of responses from the Collaborative to information requested in mid-December has precluded any evaluation of the cost-effectiveness of the "State-Administered Fast-Track" portion of the Collaborative's proposal on a program-by-program basis.

2. Utility-Led Programs

Market data developed by Central Hudson in mid-2007 indicate that there is sufficient achievable potential in its territory to achieve 77,000 MWh in savings and avoid 25MW in peak load growth (40% of the forecasted peak growth) over the next three years. That market data led Central Hudson to design a suite of programs that it filed with the PSC in September

¹⁶ Reference should be made to the assumptions and exceptions presented in Appendix 1.

2007. Those programs represent current, nationally-recognized best practices for utility-led resource acquisition programs. They form the core of the utility statewide programs developed for the present paper.

For purposes of this paper, Central Hudson has assumed that similar levels of resource savings achievability through utility-led programs, in relation to electric energy use, exist on average everywhere in the State.¹⁷ This assumption has been made to evaluate whether utility-led programs have the potential to fill the GWh "efficiency gaps" left in the prior Staff and Collaborative studies based on consideration of program by program TRC benefit/cost results. Accordingly, the Central Hudson programs were scaled up on an energy ratio basis, assuming that Central Hudson represents three percent of statewide energy use.

It should be noted that the suite of utility-led programs mesh well with the suite of Staff-proposed "fast track" programs, in that there is little redundancy in targeted markets although there are some overlaps. Also, the Staff "fast track" programs are predominantly NYSERDA-led, with just two programs denominated as utility-led.

¹⁷ While an assumption is necessary due to current data limitations, as studies of achievable potential are completed, improved data should become available by the end of 2010 to facilitate the mid-course reevaluation that has been proposed in this paper to take place in 2011.

In addition, as part of the Proposed Utility Statewide Programs, Central Hudson has added a statewide agriculture program, a statewide residential home audit program, and a statewide large C&I program. When extending the forecasts beyond 2010, the forecast 2010 savings levels per program were kept constant, and costs were inflated by 3% per year after 2010.

3. Staff Fast Track Programs

The DPS Staff has proposed a mix of NYSERDA-led and utility-led programs as a transition from the current ratepayer funding of energy efficiency programs through the SBC.

Central Hudson evaluated an expansion of the Staff "fast track" programs to cover the entire period mid-2008 through 2015, as opposed to the mid-2008 through 2009 period addressed by Staff. For this purpose, Staff's 2009 program-by-program costs and benefits were extrapolated from 2009 through 2015, with costs inflated by 3% annually.¹⁸ Like the above analysis of utility-led programs, this analysis provided a quantification of costs and the amount of GWh savings the Staff "fast track" programs might produce if continued over the mid-2008 through 2015 period.

By proposing to extrapolate the Staff "fast track" programs, with adjustments discussed subsequently, Central

¹⁸ Reference should also be made to detailed assumptions set forth in the Appendix.

Hudson is proposing to continue a substantial level of funding for NYSERDA-led programs through 2011. This approach will be subject to re-evaluation in the 2011 re-evaluation process discussed later in this paper.

4. Melding the Programs

With the above information, and the TRC-based benefit cost information provided previously by Staff for its "fast track" programs and developed previously by Central Hudson for its programs, it was possible to select the more beneficial programs from the Central Hudson/Staff suite of programs for mid-2008 through 2011.¹⁹

The changes made in melding the programs may be seen by comparing the following tables, showing pre- and post-meld programs, program costs, and GWh savings. The pre-meld tables reflect 2008 through 2010 savings and costs from Utility-led Programs and 2008 through 2009 savings and cost from Staff Fast Track programs. The post-meld programs reflect the scale up and extrapolation of program savings and costs to a consistent 2015 end point.

¹⁹ A listing of the adjustments made is set forth in the Appendix.

Utility-led Programs

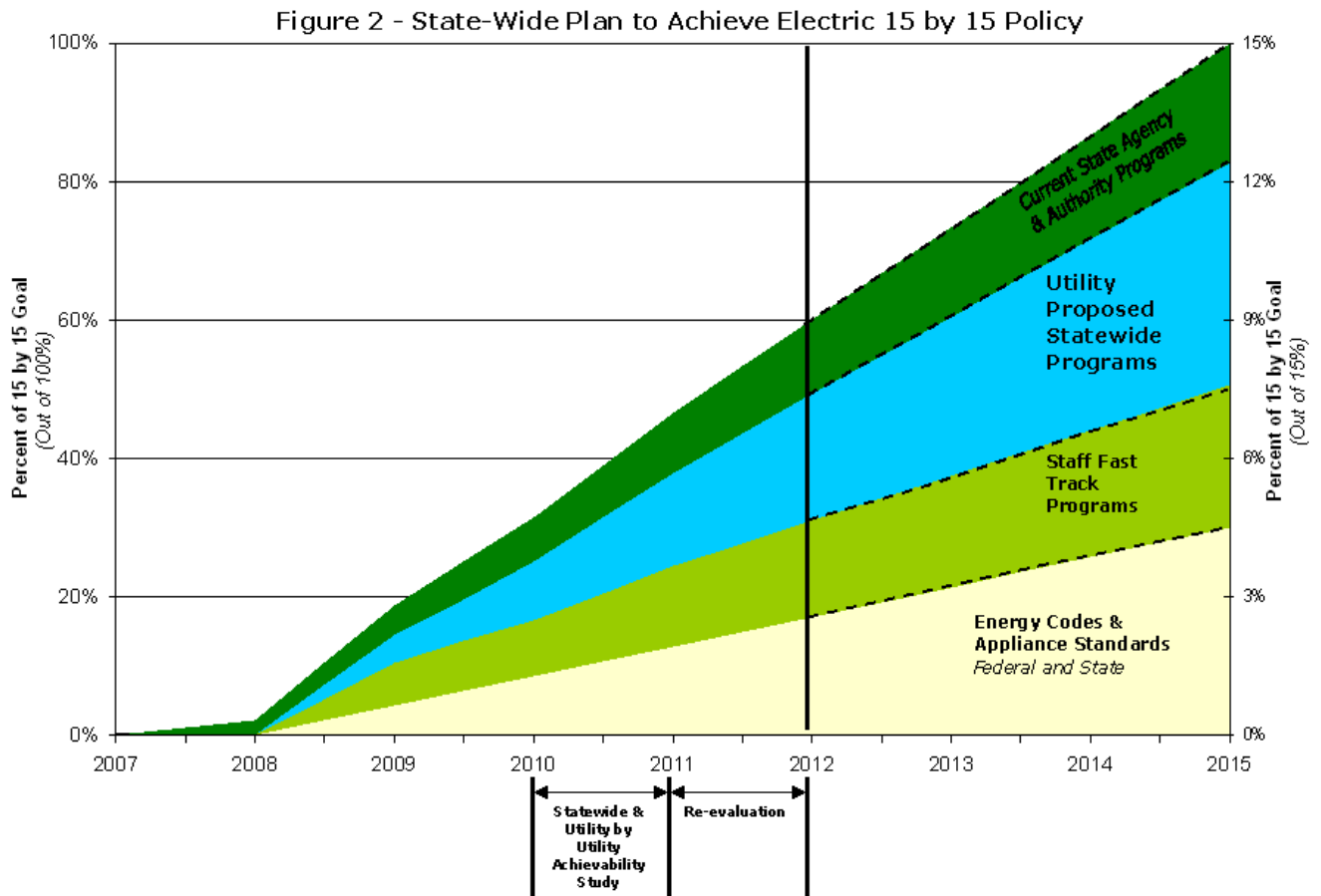
Statewide Utility-led Programs	Pre-Meld Cumulative Annual 2010 Savings, GWh	Pre-Meld Cumulative 2010 Costs, (MM\$)	Post-Meld Cumulative Annual 2015 Savings, GWh	Post-Meld Cumulative 2015 Costs, (MM\$)
Appliance Programs	19.5	\$23.84	41.7	\$44.92
Lighting Programs	257.0	\$44.73	393.7	\$62.74
HVAC Programs	171.8	\$93.06	540.0	\$277.60
Small Commercial Programs	700.0	\$112.00	3,033.3	\$485.33
Low-Income Programs	74.8	\$118.17	253.1	\$415.28
Agriculture	18.0	\$5.40	100.0	\$30.00
Residential Home Audits	56.0	\$42.56	255.0	\$193.80
Large C&I	1,020.0	\$163.20	4,270.0	\$683.20
Initial Start-up, Marketing & Outreach ²⁰		\$170.0		\$170.00
Total	2,317.1	\$772.96	8,886.8	\$2,362.87

²⁰ Initial Start-up, Marketing & Public Outreach represents three-year costs spread over all Utility-led programs. This estimate could be overstated if statewide implementation produces economies of scale.

Staff Fast Track Programs

Staff Fast Track Program	Pre-Meld Cumulative Annual 2009 Savings, GWh	Pre-Meld Cumulative 2009 Costs, (MM\$)	Post-Meld Cumulative Annual 2015 Savings, GWh	Post-Meld Cumulative 2015 Costs, (MM\$)
New Construction Expansion	7.4	\$14.44	18.5	\$38.87
Energy Star HVAC	11.0	\$8.53	45.7	\$38.02
CFL Expansion	389.9	\$7.37	909.7	\$33.75
CFL Fixture Expansion	61.5	\$9.16	142.1	\$47.40
Low-income EmPowerNY Expansion	23.6	\$15.31	129.8	\$83.33
Low-income WAP Expansion	8.4	\$41.18	42.0	\$224.06
Multi-family	28.2	\$45.22	108.6	\$189.27
New (C&I) Construction Expansion	144.9	\$36.51	708.2	\$193.27
Flex Tech Expansion	44.5	\$5.40	620.0	\$68.25
Flex Tech Industrial Processes	157.5	\$37.80	945.0	\$205.69
Small C&I	235.5	\$52.67	Not included	Not included
Commercial Sector Focus	49.5	\$19.95	142.5	\$62.42
Existing Commercial	349.5	\$59.15	1,847.1	\$340.64
Total	1,511.4	\$352.69	5,659.3	\$1,524.99

With this information, it becomes feasible to fill the efficiency gap through 2015 in two steps, with a set of programs that are desirable from a benefit/cost perspective, as shown in Figure 2:



The cumulative annual savings in 2015 shown in Figure 2 for statewide NYSERDA-led programs included in the Staff fast track programs are 5,659 GWh (at an estimated cost of \$1,525 million), and the cumulative annual shown in 2015 for the utility-led statewide programs are 8,887 GWh (at an estimated cost of \$2,363 million). The melded programs produce 14,546 GWh saved at a

cost of \$3,888 million (which equates to \$0.27 million per GWh). This compares to the Collaborative "letter report" which states the programs proposed by the Collaborative for incremental funding to state agencies and authorities may save 7,380 GWh at a cost of \$3,114 million (which equates to \$0.42 million per GWh).

Proposed Two-Step Process: From
Now through 2011, and from 2012 through 2015

Forecasting energy efficiency markets accurately through 2015 is not feasible. There are too many significant economic, technological, and social factors subject to large variability to expect that forecasts made today can reasonably be expected to represent reality that far into the future. Therefore, a mid-course correction function must be built into the process.

Central Hudson has assumed, and recommends, that a re-evaluation of the entire energy efficiency design and delivery system will take place in calendar year 2011.²¹ This re-evaluation will be informed by a statewide and utility-by-utility service area investigation of "achievable potential" in

²¹ Unlike the Collaborative, Central Hudson has not assumed the continuation of SBC funding beyond 2011. The post-2011 future of the SBC should be decided as part of the 2011 re-evaluation.

2010, based on the most current data available in 2010, also recommended by Central Hudson.²²

Conversely, the best information available today does provide a "best guess" as to the post-2011 future, and, accordingly, for purposes of providing the most reasonable degree of assurance that can be provided today as to achievement of the 15x15 goals, the pre-2012 trajectories have been extrapolated to the 2012 through 2015 time period in Figure 2.

Additional Observations

Achieving the 15 by 15 goals will require persuading millions of New Yorkers on the benefits of energy efficiency, as applied to each of their own, individual situations and circumstances, in millions of separate retail transactions. The utilities' expertise in energy retailing will increase the choices open to consumers through utility-designed programs and through utility marketing of programs designed by NYSERDA and other participating entities.

Utilities should profit from marketing, selling, and supporting their own programs and programs designed by NYSERDA and others.²³ Cost recovery is not adequate to sustain a viable

²² A study of the achievable potential for the O&R area has recently been directed by the PSC.

²³ Utilities' should be able to successfully retail the Staff "fast track" programs denominated as NYSERDA-lead, as well as programs denominated as utility-lead.

business organization that is committed to this important, long-term social goal.

Development and implementation of methods that are consistent and reliable for evaluating the savings produced by public and private sector energy efficiency programs is important to demark progress in achieving the electric targets and to assure the public that programs funded through taxes or utility rates have been efficiently conducted.

APPENDICES

Appendix 1

List of Adjustments to Staff Fast Track and Scaled-up Utility Programs

- Funding for all Lighting Programs ends in 2011 due to Federal lighting standards going in place in 2012. It is assumed that all savings from these programs will end when funding ends. A persistence of 99.5% is used for CFLs for the Utility-led Statewide Program.
- New Construction Expansion (Residential) is reduced by half in funds. These funds are transferred to the Flex Tech Expansion program. New Construction Expansion (Residential) is the second worst performing program on a \$/GWh saved basis and it is assumed with new Energy Codes & Standards being approved, less money will be needed to make new homes more energy efficient. Flex Tech Expansion is a top five program on a \$/GWh saved basis and can expand quicker with more funding.
- The Staff Small C&I program has been eliminated and all funds have been transferred into the Utility-led Statewide Small Commercial Program. The Utility-led Statewide Small Commercial Program is not scaled-up on the 3% Central Hudson load level basis as in the other programs. Instead, achievable annual goals for the Utility-led Small Commercial Program have been presented.
- After 2010, the Utility-led Statewide HVAC Program and Staff's Energy Star HVAC programs decreases by 10% each year in funding and savings until 2015 due to saturation and new standards. Both HVAC programs have moderately high \$/GWh saved values.
- After 2012, the Staff's New Construction Expansion (C&I) Program decreases by 10% each year in funding and savings until 2015 due to new standards.

- Funding to Staff's Multifamily program has been reduced by 10% in 2008 to 2010, but increased back to original 2009 levels (\$22.61 million plus 3% inflation) in 2011 to 2015. Staff's Multifamily program has one of the highest \$/GWh values.
- Staff's Commercial Sector Focus program has been reduced by 50% in 2009 through 2015. This program had the highest cost per GWh saved of all commercial programs.
- Utility Statewide Appliance Program will end in 2012. State & Federal standards will begin to take effect around the end of 2012. Additionally, this program has a high \$/GWh saved value. It is assumed that all savings from these programs will end when funding ends.
- Funding for all Low-Income programs has remained the same.
- Achievable levels for the Utility-led Statewide Agriculture, Residential Home Audit, and Large C&I programs have been presented.