Report on Natural Gas Efficiency Goals

WORKING GROUP V

CASE 07-M-0548 – Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard

October 17, 2008

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I. Summary of Recommendations

Working Group V Draft Findings and Recommendations

1. The consensus of Working Group V is that, similar to the electric industry, there are real opportunities for cost effective natural gas energy efficiency programs to be implemented in New York, subject to customer impact and other considerations.

2. In determining a natural gas efficiency portfolio program, the Commission should rely upon the natural gas forecast contained in the State Energy Plan, updated as appropriate.

3. Natural gas efficiency standards should focus both on improving customer end-use efficiency and on total natural gas usage reduction. Working Group V recognizes the dynamic nature of developing efficiency standards and that, indeed, there may be compelling trends and related policies --- e.g. environmental, transportation, and economic development --- that increase gas usage in a cost-effective and overall energy efficient manner and which need to be balanced against broader statewide considerations.

4. Given that there is a range of possible natural gas efficiency targets depending on different variables, once the Commission establishes specific natural gas efficiency portfolio standards, the Commission should request the local gas distribution companies, NYSERDA, and any interested third parties to develop and submit to the Commission for its review and approval specific gas efficiency programs designed to achieve the Commission's standards.

5. Any natural gas efficiency portfolio standard program should be accompanied by a rigorous monitoring and evaluation effort, and should be coordinated with and included in the efforts of the working group already focusing on monitoring and evaluation of electricity efficiency programs.

6. This working group has developed a high level model which, although limited, can be used to evaluate different program mixes and funding levels and estimate how close a certain program mix and funding level may get the State to an identified target. More detailed projections of overall statewide savings should be developed as specific programs are identified for Commission approval.

7. This working group recommends that a process be established to periodically review natural gas efficiency program portfolios and assess how effective they have been and consider the impacts from all relevant factors such as new technology, market conditions etc.

8. At this starting point in the development of natural gas energy efficiency initiatives, programs need to be developed that recognize the diversity of the natural gas market place across the State, including geographical and customer mix differences.

9. Although this working group does not recommend inclusion of interruptible customers in natural gas efficiency programs at this time, in the longer run a cost-effective means to include them may be considered.

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II. Executive Summary

This Working Group was charged by the Administrative Law Judges (ALJs) in this proceeding with "reconciliation of the Updated Optimal Report results with ongoing natural gas efficiency programs, recommendations of statewide and utility-specific natural gas efficiency goals and targets, and identification of additional program proposals as appropriate." Consistent with this directive and with the limited time available to address such a broad array of issues, Working Group V has produced a collaborative document that strives to address our charge and to balance the concerns and interests of the varied parties to this Working Group.

Working Group V's Report contains nine specific findings and recommendations. Perhaps most importantly, the Working Group concluded that there are real opportunities for cost effective natural gas efficiency programs to be implemented in New York, subject to customer impact and other considerations, many of which are discussed in this Report.

The Working Group discussed the Optimal Report, both the 2006 version and the limited update commissioned by DPS Staff in 2008. The Group also discussed the various utility and NYSERDA efficiency programs, as well as contributions from non-jurisdictional entities toward natural gas efficiency.

The Working Group report does not recommend a statewide or utility-specific natural gas efficiency goal. Instead, the Working Group focused its discussion and analysis on three different approaches to setting a natural gas efficiency target. The first is reflected in the Optimal approach which relied upon an estimate of "maximum achievable" potential. The second approach mirrors the approach used to establish an efficiency target for electricity, namely total consumption. The third approach is one that would establish a target for reduction in use per customer, or some similar measure of energy intensity usage, rather than a reduction in forecasted demand. Especially with regard to the third approach, the Working Group did not have enough time to fully develop this idea. However, all three approaches are included, both in the interest of informing the decision makers about different options and also to encourage parties to consider and comment upon these approaches during the next stage of this process.

The Working Group has also developed an analytical tool, a model similar to what was done for electric efficiency targets, that will allow the Commission to identify the gap between what is currently being achieved through existing natural gas efficiency programs and what could theoretically be achieved with more spending. This model can also assist the

Commission in establishing an efficiency target by providing a means to compare different suites of programs based on therm savings per dollar spent.

The Working Group envisions that the next step, after comments on this report have been received and reviewed by the ALJs, and a Commission decision on the approach to be used is issued, will be filings made by potential program administrators regarding what programs could be used to meet an identified target. The Working Group recommends that the Commission encourage program filings that embrace the unique aspects of each service territory. The Group also recommends that there be a periodic analysis of progress in meeting the target and what changes may be necessary in light of dynamic forces such as economics, technology and fuel prices.

This Group has tried to ensure consistency with electric efficiency processes and standards to the extent possible and with the State Energy Planning process. This Working Group cautions that there are many forces at work when considering natural gas efficiency programs, not the least of which is electric efficiency programs that encourage switching to natural gas. From an all-fuels perspective, there are many reasons that increasing natural gas usage could benefit New York State.

III. Introduction

The consensus of Working Group V (WGV) is that, similar to the electric industry, there are real opportunities for cost effective natural gas energy efficiency programs to be implemented in New York, subject to customer impact and other considerations.

In seeking to establish an energy efficiency portfolio standard (EEPS) for natural gas usage, regulators and stakeholders need to understand some of the significant differences between the natural gas and electric power industries and how these differences may effect EEPS goals and program design. While it may seem self-evident to many, albeit not all stakeholders, that these industries are different, it may not be clear what those differences are. The significance of the differing characteristics, and how this may be relevant to the Commission's deliberations in establishing and implementing an EEPS for the use of natural gas, will be addressed herein.

This Report begins with a short primer on the natural gas industry in New York that reveals the industry's unique position in providing energy for public and private use. Wherever possible, this Report describes the differences between the natural gas industry and the electric power industry with adherence to the structure and policies the Commission adopted in its establishment of an EEPS for the electric power industry.

In discussing these differences, WGV means to underscore how, given the singular energy source review, the majority of members confidently support the establishment of a focused, aggressive, natural gas efficiency target – despite those differences, and despite the concern of many members about program costs and design. Many of those concerns are successfully resolved within this Report or the potential for resolution has been identified. However, some contributors remain unconvinced that resolution has been reached. A minority of members do not believe that large-scale, customer-funded gas efficiency programs should be implemented at this time.

Due to some of the material differences between the electric and gas industries, including the availability of reliable long-term data and the limited experience in operating gas efficiency programs in New York, the Commission may wish to consider somewhat different approaches in adopting targets, timetables, budgets and implementation strategies for natural gas efficiency measures.

1. New York's Natural Gas System

New York's natural gas system is made up of a system of underground pipes that transport gas throughout the State. Natural gas comes into New York from out-of-state production areas, mainly the Gulf of Mexico and Western Canada. Other production areas, such as the Rockies and various shale formations, are becoming increasingly important sources of gas for New York. There is also increasing amounts of New York State natural gas production, located mostly in the western part of the State. In-State gas production currently satisfies about 5% of the State's demand.[1] Except for environmental regulations, natural gas production is largely an unregulated industry. Pricing of natural gas is determined by market forces and can be very volatile.

The majority of natural gas enters New York on interstate pipelines, which are regulated by the Federal Energy Regulatory Commission (FERC). The entities that bring in the gas on these pipelines are called "shippers", and are mostly local gas distribution companies (LDCs) and energy marketers. Additionally, where customers perceive lower costs for delivery service than that provided from an LDC, some large customers have the ability to interconnect directly to interstate pipelines and bypass the LDC. The pipeline companies charge the shippers tariff rates for the transportation of gas. FERC has jurisdiction over these tariffs. Also, FERC has jurisdiction over the siting of these interstate pipelines, although local municipalities retain some permitting authority. New pipeline capacity gets built in New York when a pipeline company determines that there is a market that it could profitably serve, and it then applies to FERC for approval. New York State intervenes in FERC approval cases. While New York acts as the regulator for construction and operational safety, New York does not have direct control over which pipelines get built or where.

The LDCs contract for pipeline capacity with the interstate pipeline companies. The LDCs fill that capacity by purchasing gas from suppliers, either directly from producers or indirectly through gas marketers. There are hundreds of suppliers of natural gas, ranging in size from small to very large. New York LDCs purchase gas through a mixture of longer term (a few years perhaps) contracts, short term (monthly up to a couple of years) contracts, or spot (daily) purchases. This mix is designed to ensure that no one LDC is overly dependent on any one

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[1] A brief summary of natural gas industry facts for New York can be found at: http://www.aga.org/NR/rdonlyres/FC7169FF-0D30-49F3-BED9-B6231930BA72/0/0803NewYork.pdf.

supplier. The prices of all supply contracts are generally indexed to a reference price that changes monthly. Additionally, energy marketers and, in some cases, large transportation customers, also contract for capacity, as needed.

The LDCs also hedge their supply purchases both physically and financially. Typically, New York's LDCs hedge around two-thirds of their commodity purchase on an annual basis. A physical hedge is best represented by the natural gas storage facilities located both in the Northeast market area, including locations in New York State, and in the gas production areas. LDCs inject gas all summer into storage fields at what have traditionally been lower off-season prices, and then draw the gas out during winter to meet peak heating loads. A financial hedge is a contract between an LDC and a financial institution for the right to purchase gas in the future at a certain purchase price.

2. Some Distinctions between the Natural Gas and Electric Power Industries

a. Wholesale Markets

The wholesale markets for electricity and natural gas are very different. For electricity, there is a statewide wholesale market for both capacity and energy that the New York State Independent System Operator (NYISO) administers. A material reduction in electricity consumption within the State, even within geographic market zones, can impact wholesale electricity prices in New York, particularly during peak demand periods.

By contrast, there is no state administered wholesale market for natural gas. The wholesale gas market has a much wider geographic base that can be characterized as a regional or national market. This difference in market structure may raise issues about the extent to which gas efficiency programs impact wholesale gas prices and the benefits of such programs to non-participants. The vast majority of natural gas costs to the customer are derived from the commodity charge, which is passed through to the customer. The transmission and distribution charges that are recovered as a portion of the total costs are much smaller for gas than for electricity. This would tend to make rate impacts lower for gas efficiency programs than for electric efficiency programs, and, one could argue, that non-participants would be burdened less for gas programs as a result.

b. Interruptible Customers

Interruptible natural gas customers play a crucial role in maintaining the reliability of New York's natural gas distribution system. Many have dual fuel capability and

thus provide important load balancing functions by using capacity that is under-utilized by firm customers at warmer-than-peak-day temperatures. They provide significant margin contributions, thereby lowering rates to all firm customers, yet, because they can be interrupted, they allow the company to achieve these margins without increasing the size of its distribution system and upstream pipeline contracts which are designed to meet peak day conditions. An interruptible customer basically pays a lower rate for the delivery of gas in exchange for its willingness to be interrupted during periods of peak demand. Interruptible gas customers represent a significant portion of total natural gas consumption. The LDCs estimate that approximately 18% of their 2009 throughput will be delivered to interruptible customers. To date, gas utility efficiency programs have limited program eligibility and funding to firm customers.

c. Storage

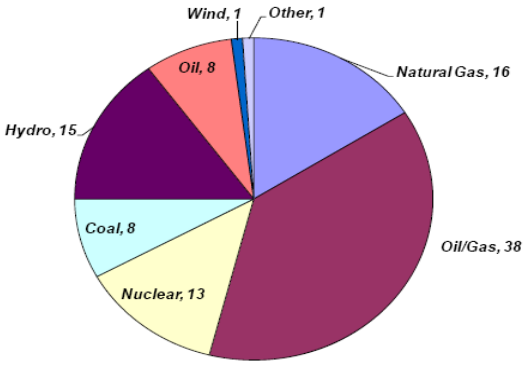
Natural gas can be stored, whereas electricity cannot. This might make programs that reduce peak usage more valuable for electricity than for natural gas.

d. Electric Generation

A larger and larger amount of New York's electricity is generated using natural gas. Indeed, primarily for environmental reasons, New York State has encouraged the increased use of natural gas for electric generation. The generation mix in New York State for 2008 is shown in the following chart:

CHART 1

NEW YORK ISO SYSTEM, 2008,
Percentage of Generating Capacity Mix



Source: New York ISO, "Power Trends 2008"

ICF, the NYSERDA contractor that produces the natural gas load forecast in the State Energy Plan, predicts that by 2030, 33% of all kWhs will be generated using natural gas, up from 29% in 2007.

Most electric generators are classified as "interruptible" natural gas customers. During the winter, when capacity is constrained due to weather and higher priority demand uses (e.g. heating), electric generators are often forced to rely more on the spot market and its commodity prices to obtain a fuel supply. In New York City during the winter, the spot market for natural gas delivered on the Transcontinental Gas Pipeline (Transco) can produce daily natural gas prices that are many times higher than in the production area (Henry Hub prices). Electric power generators that have dual fuel capability will switch to oil during these times. Other generators simply shut down since electric loads are much lower in the winter than during the summer in New York City.

e**. Geographic Scope**

Electricity is available to essentially all New York State consumers and businesses through the electric grid. However, significant parts of New York are not currently served by natural gas.

f**. Data Collection/Planning**

There is no ISO or central statewide agency for natural gas like there is for electricity. There is no comparable process to the New York ISO's comprehensive reliability planning process in which stakeholders and market participants are extensively involved in developing a long term plan and needs assessment for future electricity generating capacity and transmission. To the extent that central data collection and long term statewide planning does occur on natural gas issues, it appears to be done through the State Energy Plan process, not through an ISO-type organization. Indeed, the LDCs project "long-term" supply demand for only 3-5 years. Moreover, WGV learned that forecast data by gas customer class is not easily obtainable from the LDCs, in part because there is no uniformity of customer classification among the LDCs.

g. Program Experience

On the electric side, NYSERDA has been administering energy efficiency programs statewide for over ten years. The program experience targeting natural gas efficiency is more limited. The LDCs only recently began offering gas efficiency programs in New York in

the last couple of years, but NYSERDA's programs, although focused on electricity in general, utilize a whole building approach and have resulted in some natural gas savings. Most of the LDC programs have focused on residential customers and, in some instances, smaller commercial customers. This experience can be built upon and may, in fact, understate the natural gas efficiency potential as natural gas efficiency has not been the primary goal of these programs. Natural gas efficiency programs have been implemented by LDCs in other jurisdictions, including in New England by one of New York's LDCs. Hopefully, these programs can provide a great deal of knowledge and experience that New York can draw upon to develop more extensive and scaled up natural gas efficiency programs. At the present time, there is very limited experience in New York with respect to the design and implementation of gas efficiency programs tailored for large C/I customers.

IV. Discussion of Significant Policy Issues

These are the issues that WGV has discussed in developing a recommendation for a target for natural gas efficiency in New York State. WGV has considered this information in developing its recommendation. Some might argue that, from an all-fuels perspective, increased energy efficiency often can – and should – lead to increased natural gas consumption. The electric EEPS is focused, almost exclusively, on reducing electricity consumption (and, if successful, actually may result in increases to statewide gas consumption). When a gas efficiency target is adopted, perhaps the focus should be on improving the efficient consumption of gas, while being cognizant of the fact that increased gas consumption can reflect overall improved energy efficiency and also be beneficial to the State's economy. Some feel that, for many reasons, adoption of a single, fixed, percentage consumption reduction target may not be the optimal, or even an appropriate, focus of a natural gas EEPS.

NRDC/Pace Center for Energy and Climate Change (NRDC/Pace) offers that, similar to electric energy efficiency, the benefits of increasing natural gas efficiency include reduced greenhouse gases and other emissions, lower consumer bills, and increased economic development, reliability, and energy security. In addition, "[b]ecause gas supply is somewhat constrained and expected to remain so, reductions in demand can produce reductions in the market clearing commodity price, resulting in significant overall benefits to all gas consumers beyond those captured through reduced end-use customer usage."[2] The Public Service Commission (PSC) recognized these benefits in stating in the Order initiating this proceeding that, in addition to establishing a goal to reduce electricity consumption 15% below forecasted levels by 2015, "targets should also be established and programs designed to optimize the State's efficient use of natural gas."[3]

Other issues which need to be considered include: (a) consumption reductions on the electric side could result in a reduced need for new generating plants that would be located in New York, thereby resulting in likely environmental benefits; although any reduction in natural gas consumption will result in environmental benefits, some argue that it is not clear that

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[2] New York State Public Service Commission (PSC) Case No. 07-M-0548, Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard, Order Instituting Proceeding (issued May 16, 2007), at 13.

[3] Id. at 3.

consumption reductions on the gas side would result in environmental benefits occurring within the State that are comparable to those from reducing electricity usage; (b) at least for large C/I customers, gas prices typically comprise a considerably smaller percentage of overall energy costs than electricity prices; and (c) on the electric side, customers often can self-generate their supply; there is limited production of gas supplies by customers (and where such production occurs the efficiency gains as it relates to fuel loss is not as great as on site generated electricity since, as explained previously, natural gas deliveries to customers through utility services is, relative to electricity, very efficient to begin with).

The impact on total gas consumption from each of the following will be difficult or impossible to quantify, but will have a bearing on the reductions in natural gas consumption in New York State. While some clearly will result in increased natural gas usage, for others it is unclear what impact they will have. For example, if enough water heaters were converted to natural gas that an electric generation peaker unit was no longer needed, then the gas that would have fired that peaker will be saved and may offset the increased natural gas usage of all the water heaters.

1. Oil to Gas Conversions

Due to a wide margin between the price of natural gas and home heating oil at the present time, the number of requests from customers to LDCs for heating system conversions is currently very high. Some of the State's LDCs actively pursue conversion as a growth market, and have marketing budgets to accomplish this. In response to a data request from DPS Staff to the LDCs, it has been calculated that as of mid-September, a total of 10,533 customers were converted to natural gas service in 2008. In addition, another 48,286 had requested conversion; some of these have their conversions already scheduled while others have not yet been fully studied by the LDCs. According to the 2007 Five Year Book on the DPS Website, there were about 4,437,000 natural gas customers, but about 1.4 million of them were cooking-only customers who generally cannot use natural gas for space or water heating. This means about 3 million were heating customers. The number of customers already converted this year represents a 0.4% increase. If all of the customers who have requested conversion were actually converted, it would be an increase of about 1.6%. Although it is not clear that customer interest in conversion will remain at the current level, it appears that conversion is a significant component of load growth in New York State, in particular for Downstate New York.

There is an underlying issue of fuel diversity, meaning that encouraging reliance on one fuel over others creates a situation of potential problems if access to that fuel is interrupted for some reason. However, WGV assumes that issue is being handled in the State Energy Planning process. It should be noted that in the future, products such as biofuels or ultralow sulfur products could affect conversions to natural gas while renewable technologies could cause customers to convert away from natural gas to other fuels.

2. CHP

There is a growing market in New York State for combined heat and power applications (CHP, which is a form of distributed generation or DG) due to the relatively high costs of electricity in the State during peak load periods. These CHP units tend to run on natural gas with diesel fuel backup. CHP projects can help the reliability of the electricity system, especially in load pockets, but it is unclear whether they will cause increased use of natural gas. If CHP serves to displace natural gas burned at less efficient central electricity generating stations and on-site thermal applications, this may result in greater efficiencies on the natural gas system and environmental benefits, but the answer to that question is unknown at this time, especially since New York's electricity market is steadily growing. Where CHP projects displace non-gas sources of electricity and thermal generation (e.g., oil burning, hydro, wind or nuclear facilities), they likely would increase gas consumption. CHP may represent some potential for levelized load growth for natural gas distribution systems.

The E Cubed Company, LLC, on behalf of the Joint Supporters[4] (E Cubed), points out that CHP issues and Micro-CHP are being addressed in greater detail by Working Group VIII. E Cubed also states that there can be general efficiency benefits and emissions benefits associated with CHP other than electricity peak load benefits.[5] E Cubed advocates a standard for CHP system efficiency of 60% based on Btus consumed vs. Btus useful output. E Cubed points out that a leading manufacturer of the new wave of Micro-CHP systems is based in

[4] The Joint Supporters is a voluntary association including CHP manufacturers (located in New York and elsewhere), CHP/Micro-CHP distributors, installers, operators, demand response providers and the National Association of Energy Services Companies (NAESCO).

[5] For more information on this subject, please refer to the report by Working Group VIII.

upstate New York and success for this manufacturer could lead to new jobs and economic development for New York State.

3. Electricity Efficiency Programs

Some electric efficiency programs encourage the conversion of applications such as water heating or clothes drying to natural gas from electricity. In end-use applications that require direct heat, natural gas is more efficient than electricity. Since the electricity to run a clothes dryer can be generated using natural gas, simply running the appliance on natural gas is more efficient because even the most efficient combined cycle power plant is less than 70% efficient (as compared to a simple cycle generating plant with efficiency of around 35%) and line losses in the transportation of the electricity range around 8-10% for distribution and transmission combined.[6] NYSERDA's EmPower program is one example of an electric efficiency program that promotes conversions of applications from electricity to natural gas. It should be noted that in Rochester Gas & Electric Company's (RG&E's) service territory, there is little gas-fired generation, and there is quite a bit of nuclear generation. Switching an appliance from electricity to natural gas in RG&E's service territory therefore may result in increased carbon footprint.

4. Transportation/Natural Gas Vehicles

Natural gas is also an alternative transportation fuel. Many energy industry experts, including T. Boone Pickens[7], have been calling for the increased use of natural gas as a transportation fuel. Since the largest single user of petroleum in this country is the transportation sector[8], switching vehicles to use of compressed natural gas (CNG) instead of gasoline could reduce our nation's dependence on foreign oil, but have a significant impact on the amount of gas consumed in the State.

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[6] For a summary description of site vs. source efficiencies, see page 15 of the Fall-Winter edition of naturalLiving at: http://www.yankeegas.com/yankeegascommon/pdfs/NLivingFinal_Fall2008.pdf.

[7] See http://www.pickensplan.com/theplan/.

[8] According to the federal Energy Information Administration, in the United States, in contrast to other regions of the world, about 2/3 of all oil use is for transportation. See http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/oil_market_basics/demand_text.htm#U.S.%20Consumption%20by%20sector

5. Regional Nature of Gas Markets

In the view of at least some members of WGV, this difference is significant for two reasons. First, unlike the impact of electric efficiency programs on wholesale market prices for electricity, some WGV members are skeptical that EPS-related gas consumption reductions in New York would have any noticeable impact on wholesale gas prices regionally or nationally. Secondly, these same parties contend that it is extremely unlikely that non-participants in gas efficiency programs would realize any economic benefits. Consequently, these members contend, gas efficiency programs likely would result in negative rate and bill impacts on non-participants, who could out-number program participants under many realistic scenarios.

Other WGV members strongly disagree. In its May 16, 2007 Order instituting this proceeding, the Commission stated that "because gas supply is somewhat constrained and expected to remain so, reductions in demand can produce reductions in the market clearing commodity price, resulting in significant overall benefits to all gas consumers beyond those captured through reduced end-use customer usage". These parties note that it has been estimated that the combined regional efforts of energy efficiency initiatives has the potential for material benefits on natural gas pricing. Successful efforts in New York combined with the efforts in other jurisdictions may result in meaningful reductions in natural gas prices.

6. Lack of Service

Electricity is available to essentially all New York State businesses and consumers through the grid. Significant parts of New York are not currently served by natural gas. Those customers may reduce both emissions and costs by converting from propane or oil to electricity, if it is uneconomic or impractical to extend gas services to those locations, depending on what fuel is used to generate the electricity they use. Partially due to its availability and relative ease of access, electricity is soon expected to become an effective substitute fuel for gasoline in the transportation sector.

7. Upstate/Downstate Disparity and the Uniqueness of Each Service Territory

In designing an energy efficiency program for New York State it is important to recognize the significant differences between upstate and downstate natural gas usage by residential customers. Available United States Census Bureau information will make these differences readily apparent.

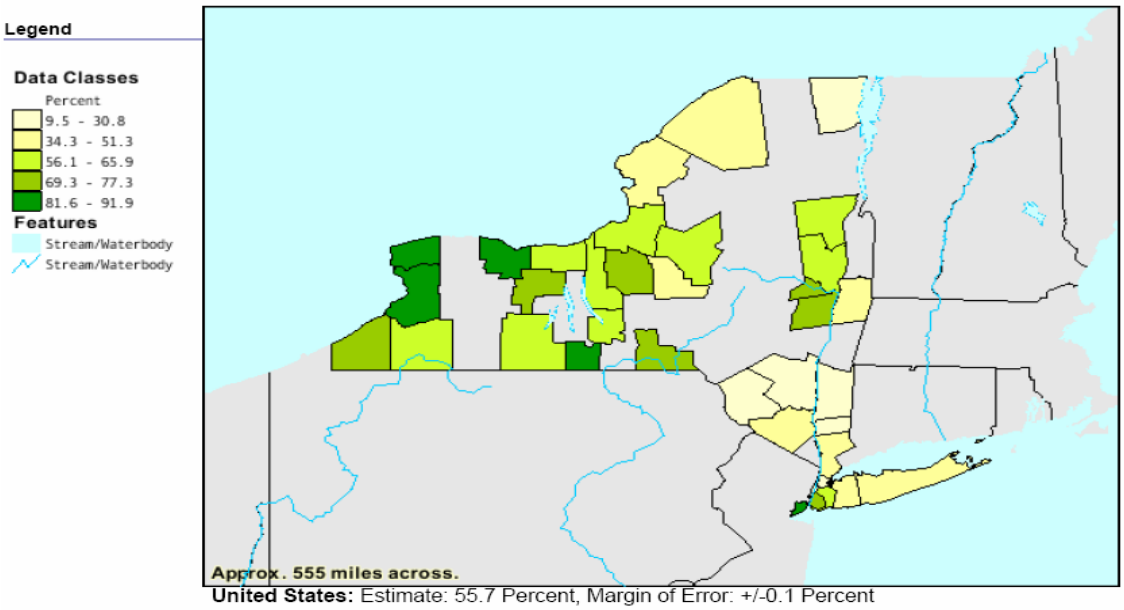
a. Percent of Occupied Housing Units with Gas as Principal Heating Fuel: 2007

The percentage of housing units that use natural gas as their primary heating source is much greater upstate as compared to downstate as the map below identifies.

M2505. Percent of Occupied Housing Units With Gas as Principal Heating Fuel: 2007
Universe: **Occupied housing units**
Data Set: **2007 American Community Survey 1-Year Estimates**
Survey: **American Community Survey**
New York by County

MAP 1:

NOTE. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see Survey Methodology.



United States: Estimate: 55.7 Percent, Margin of Error: +/-0.1 Percent

Source: U.S. Census Bureau, 2007 American Community Survey

This disparity can be further clarified when reviewing information available from the American Housing Surveys for the major metropolitan areas of New York State (Rochester, Buffalo, New York)[9].

The table below summarizes the information for each metropolitan area in total and as a percentage of households below poverty. A major distinction between upstate and New York City is that in the City there are more cooking-only customers and more customers are below poverty level.

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[9] The American Housing Survey's were conducted for the Rochester, Buffalo, and New York Metropolitan areas and are available at the following cites:

Rochester, 1999: http://www.census.gov/prod/2000pubs/h170-98-35.pdf

Buffalo, 2002: http://www.census.gov/prod/2003pubs/h170-02-44.pdf

New York, 2003: http://www.census.gov/prod/2004pubs/h170-03-53.pdf

TABLE 1:

	Main House Heating Fuel Piped Gas	% Customers Non-Heat Gas[10]
Rochester		
Total	72%	11%
Below Poverty	69%	15%
Buffalo		
Total	87%	5%
Below Poverty	84%	7%
New York, NY		
Total	39%	53%
Below Poverty	30%	67%

The disparity between owner occupied and renter occupied housing in upstate and downstate metropolitan areas is also significant.

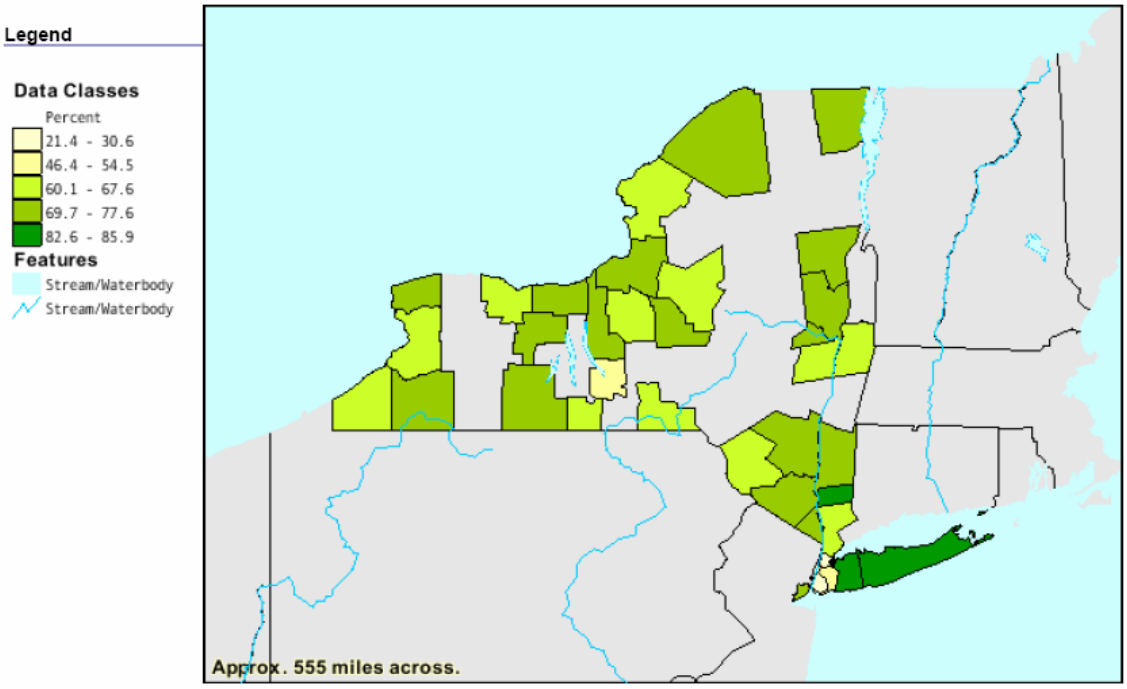
b. Percent of Occupied Housing Units that are Owner-Occupied: 2007

[10] This value was calculated by dividing the reported households "Using Each Fuel" for Piped Gas into the reported households using Piped Gas as the Main House Heating Fuels.

M2512. Percent of Occupied Housing Units That are Owner-Occupied: 2007
Universe: **Occupied housing units**
Data Set: **2007 American Community Survey 1-Year Estimates**
Survey: **American Community Survey**
New York by County

MAP 2:

NOTE. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see Survey Methodology.



United States: Estimate: 67.2 Percent, Margin of Error: +/-0.1 Percent

Source: U.S. Census Bureau, 2007 American Community Survey

The disparity between owner occupied and renter occupied housing in upstate and downstate metropolitan areas is also significant.

TABLE 2:

	Owner Occupied Housing Units	Renter Occupied Housing Units
Rochester		
Total	70%	30%
Below Poverty	37%	63%
Buffalo		
Total	68%	32%
Below Poverty	31%	69%
New York, NY		
Total	46%	54%
Below Poverty	16%	84%

While households below the poverty level have lower owner occupied units across the state, the proportion of low income owner occupied housing units is twice that in upstate versus downstate metropolitan areas.

The greater abundance of rental units downstate is further demonstrated by the significantly greater proportion of households that live in multi-family (greater than 4 unit) buildings in downstate metropolitan areas compared to upstate metropolitan areas.

TABLE 3:

	Households in 1-4 unit Structures and Mobile Homes	Households in Greater than 1-4 unit Structures
Rochester		
Total	90%	10%
Below Poverty	82%	18%
Buffalo		
Total	92%	8%
Below Poverty	81%	19%
New York, NY		
Total	55%	45%
Below Poverty	32%	68%

This disparity in types of housing units between upstate and downstate influences that type of heating equipment that is utilized between upstate and downstate. In New York City there is a large percentage of households who heat with steam or hot water in their homes, as opposed to upstate where forced air is dominant.

TABLE 4:

	Household Main Heating Equipment - Forced Air	Household Main Heating Equipment – Steam or Hot Water
Rochester		
Total	77%	16%
Below Poverty	67%	21%
Buffalo		
Total	73%	22%
Below Poverty	66%	23%
New York, NY		
Total	20%	75%
Below Poverty	15%	76%

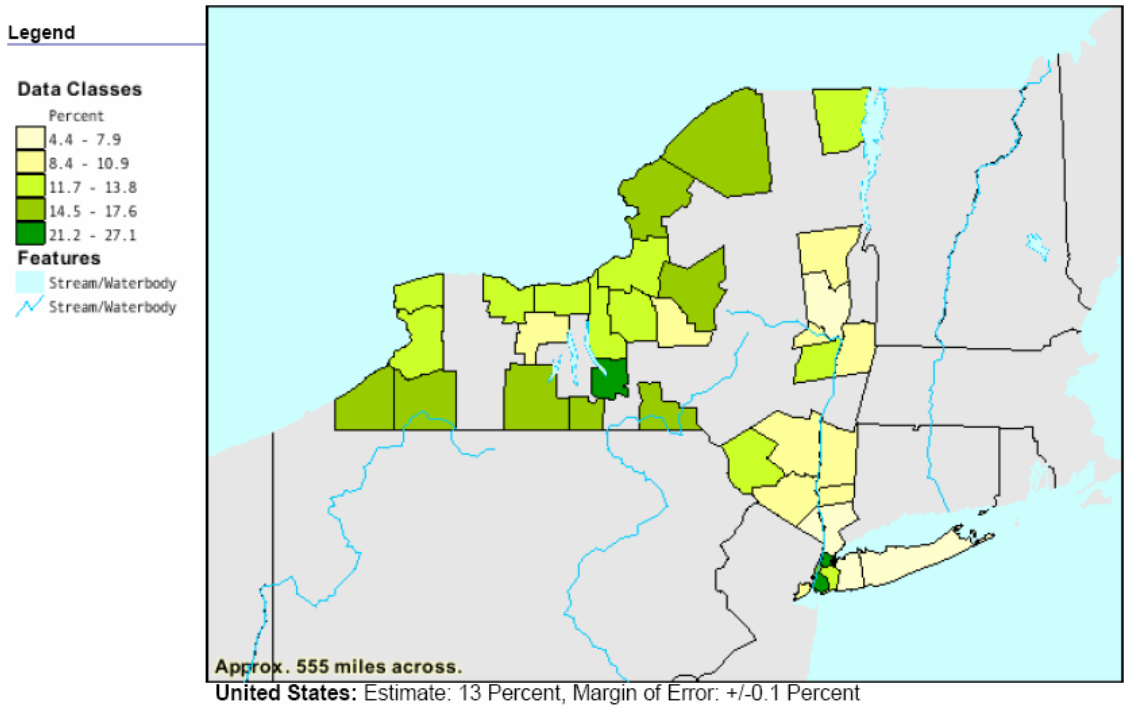
The rate of poverty of households also varies across the state.

c. Percent of People Below Poverty Level in the Past 12 Months (For Whom Poverty Status is Determined): 2007

M1701. Percent of People Below Poverty Level in the Past 12 Months (For Whom Poverty Status is Determined): 2007
Universe: **Population for whom poverty status is determined**
Data Set: **2007 American Community Survey 1-Year Estimates**
Survey: **American Community Survey**
New York by County

NOTE. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see Survey Methodology.

MAP 3:



United States: Estimate: 13 Percent, Margin of Error: +/-0.1 Percent

Source: U.S. Census Bureau, 2007 American Community Survey

Other large differences between upstate and downstate are the median household income, total bill paid for gas, and the percentage of households that include heat in rent payments also varies widely between upstate and downstate. In New York City, half of households pay for their heating bill as part of their rent and their annual cost is lower due to the fact that the majority live in multifamily structures.

TABLE 5:

	Median Household Income	Annual Cost Paid for Piped Gas	Piped Gas Bill as a Percent of Median Income	Piped Gas Included in Rent
Rochester				
Total	$41,512	$900	2%	15%
Below Poverty	6,444	$936	15%	32%
Buffalo				
Total	$38,683	$1,032	3%	9%
Below Poverty	$6,460	$1,032	16%	22%
New York, NY				
Total	$44,334	$504	1%	40%
Below Poverty	$5,596	$312	6%	50%

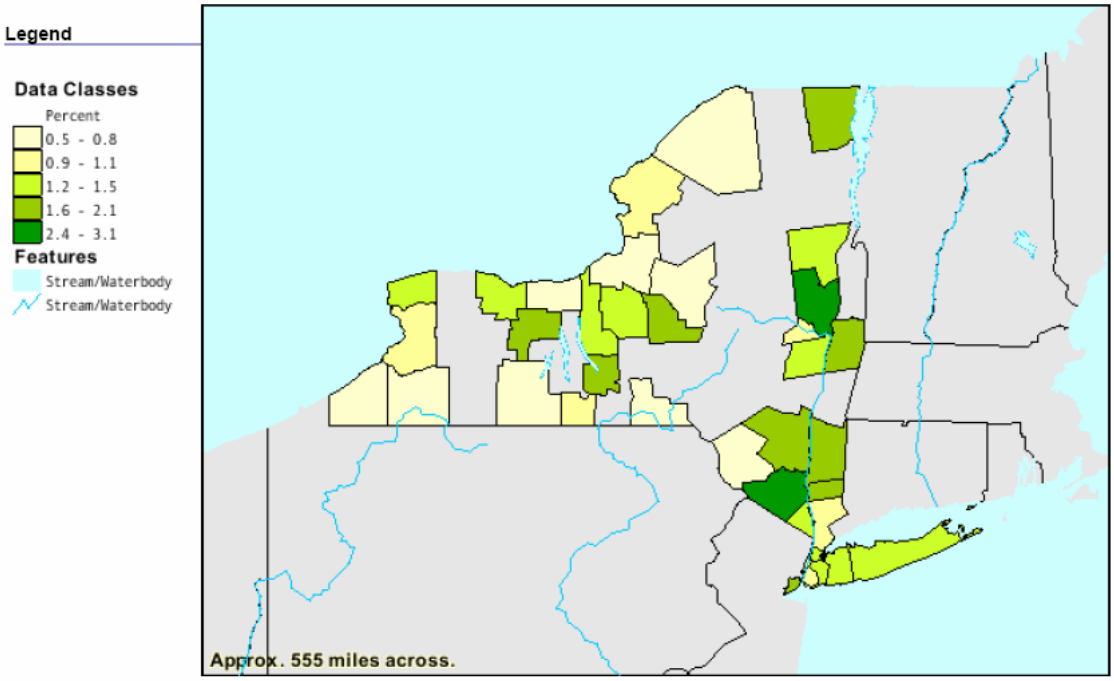
The age of the housing stock can also vary widely across the state. As identified in the map below homes built in 2005 or later can be twice as prevalent on a percentage basis in downstate and more rural counties as in upstate or more urban counties.

d. Percent of Housing Units That Were Built in 2005 or Later: 2007

M2502. Percent of Housing Units That Were Built in 2005 or Later: 2007
Universe: **Total housing units**
Data Set: **2007 American Community Survey 1-Year Estimates**
Survey: **American Community Survey**
New York by County

MAP 4:

NOTE. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see Survey Methodology.



United States: Estimate: 3.3 Percent, Margin of Error: +/-0.1 Percent

Source: U.S. Census Bureau, 2007 American Community Survey

The age of the housing stock can also vary widely across the State. As identified in the map above, homes built in 2005 or later can be twice as prevalent in downstate and more rural counties as in upstate or more urban counties. Older housing stock is also more likely to be found in urban and upstate and urban counties than in downstate and more rural counties.

It is important to mention another large difference regarding the type of homes that are being built downstate. In Long Island, the homes that are being built tend to be custom homes and are rather large, sometimes in excess of 10,000 square feet. On Staten Island, Brooklyn, and Queens, new homes tend to be built on smaller pieces of land and are usually townhouses and 3-4 unit multifamily structures. The focus is also on building affordable/low income housing, specifically in Brooklyn to serve the less affluent population living in the City.

It is also important to note that currently the new construction market is experiencing a major decline which is not anticipated to improve anytime soon. According to a

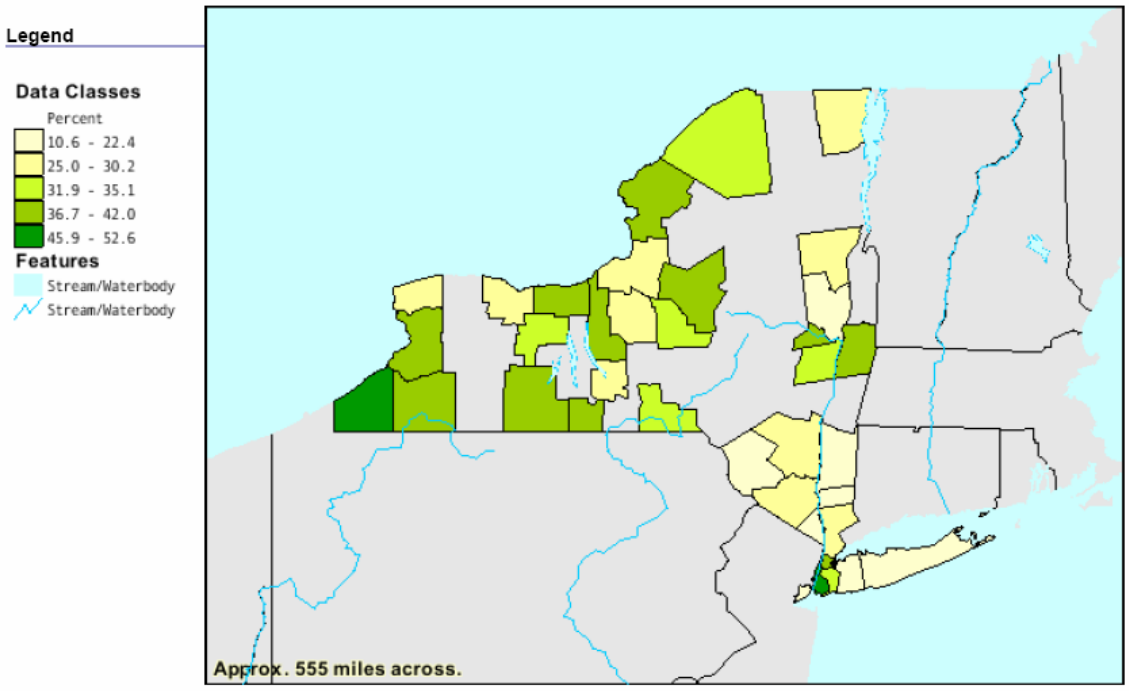
CNN article featured on September 18, 2008,[11] Northeast construction fell by 14.5% while nationwide it is down 33.1% from a year ago. On October 1, 2008, the New York Times quoted Scott A. Singer[12], Executive Vice President of Singer & Bassuk, a real estate finance and brokerage firm, as saying "Lenders are now taking a very hard look at each particular project to assess its viability in the context of a softening of demand. There's no question that there'll be a significant slowdown in new construction starts, immediately." According to the Long Island Builder Institute, the prediction is that the new construction market may improve sometime in the middle of 2009.

e. Percent of Housing Units That Were Built in 1939 or Earlier: 2007

M2503. Percent of Housing Units That Were Built in 1939 or Earlier: 2007
Universe: **Total housing units**
Data Set: **2007 American Community Survey 1-Year Estimates**
Survey: **American Community Survey**
New York by County

MAP 5:

NOTE. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see Survey Methodology.



United States: Estimate: 14.5 Percent, Margin of Error: +/-0.1 Percent

Source: U.S. Census Bureau, 2007 American Community Survey

[11] New home construction at 17-year low: The building rate falls more than expected – to 6.2% - in August, while building permits fall nearly 9%, CNN, September 18, 2008.

[12] Failed Deals Replace Boom in New York Real Estate, New York Times, September 30, 2008.

The age of housing units occupied by customers with income below poverty compared to the average customer can also vary significantly by region.

TABLE 6:

	Median Year Occupied Unit Built
Rochester	
Total	1959
Below Poverty	1948
Buffalo	
Total	1951
Below Poverty	1934
New York, NY	
Total	1950
Below Poverty	1946

Obviously, the older the homes the more likely that significant gains in improving the building envelope can be achieved. Also, it is probably more important to focus on improving existing structures in certain locations than it is to focus on new builds, both in terms of total energy savings and social and environmental justice.

Due to the wide disparity in housing infrastructure and other factors between upstate and downstate New York, effective natural gas energy efficiency initiatives need to be tailored in a manner that best fits the targeted region and utility service territory.

Additionally, there are differences in customer mix between upstate and downstate, and even between gas utility service territories. For instance, there is a higher concentration of large C/I customers upstate than downstate, particularly in the manufacturing sector. This sector is confronted with extraordinary economic challenges and has been declining in the State, partially in response to noncompetitive energy prices compared to those in effect in other states and countries. Care must be taken to ensure that the proposed adoption of a gas EEPS is not detrimental to this important sector.

V. Development of a forecast of annual natural gas demand through 2020 for all sectors except electric generation[13]

WGV has limited its analysis to the firm customer sector and only those that are not electric generators. While in the longer term, interruptible customers may be included in natural gas efficiency programs, they are not being included here for reasons explained later. Also, efficiency at generating plants that use natural gas could save a lot of natural gas, but WGV has focused on end-use customer efficiency due to time and other constraints.

WGV discussed the various sources of forecast data for natural gas load. These include the federal Energy Information Administration (EIA), New York's LDCs, and the forecast produced by Energy and Environmental Analysis, Inc. (EEA) for the Optimal 2006 statewide potential study.[14] Each has its merits and disadvantages.

In June 2008, the EIA released supplemental tables to support its Annual Energy Outlook (AEO), including a forecast of natural gas consumption by sector and region through 2030 for all customers, including interruptible. The Middle Atlantic sector contains New York, New Jersey and Pennsylvania. Since this forecast is not specific to New York, adapting it to our needs would require making assumptions about the relationships between the three states in the region. The product would probably be less reliable than other forecasts, which themselves may not be accurate.

Every year as part of Staff's annual Winter Supply Review (WSR), the LDCs provide a five year forecast of load for peak day, winter season, and full year. The forecast is generally performed by regression analysis on historical usage data. This data is considered confidential by the LDCs. The projections are broken out between sales and transportation customers[15] and also between firm and interruptible customers. LDCs do not procure peak day capacity for interruptible customers because at such times all interruptible customers are assumed to be off the system.

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[13] For the purposes of this report, natural gas load for electric generation is not being considered.

[14] EEA was taken over by ICF, who is currently under contract with NYSERDA to produce quarterly energy demand forecasts, and is also producing the energy demand forecasts being used in the State Energy Plan update.

[15] Transportation customers are those whose commodity is supplied by an energy marketer instead of by the LDC. Sales customers are those who obtain their commodity from the LDC.

The EEA/ICF forecast produces a load forecast by sector for New York State and includes firm and interruptible customers. It goes out through 2026 for a total of 20 years including 2007. (The forecast is being updated by ICF as part of the State Energy Plan update but will not be available prior to publication of this report – it will be included in any future updates by WGV.) ICF uses an econometric model which incorporates such factors as the impact of expected prices and local production, among others, and updates the forecast quarterly.

WGV discussed the pros and cons of using each of the above forecasts for determining expected natural gas demand through 2020[16] and reached consensus on using the ICF forecast for the following reasons:

1. The ICF forecast is specific to New York State;
2. The ICF forecast accommodates differences in the upstate and downstate economy;
3. The ICF forecast is updated more frequently than others;
4. The length of the ICF forecast lies between the relatively short five years of the LDCs and the much longer EIA forecast through 2030;
5. The ICF forecast was compared to the five year LDCs winter supply review forecast and the two forecasts were closely aligned for the first five years; and
6. Coordination with the State Energy Plan forecast will eliminate confusion.

The ICF September 2008 forecast for residential, commercial, and industrial loads is as follows:[17]

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[16] The year 2020 was chosen as the end point of the forecast because confidence in longer forecasts is slim. Some members of the working group lack confidence in any forecast of gas consumption longer than 3-5 years, particularly in light of possible developments in the transportation sector (e.g., compressed natural gas vehicles).

[17] The ICF September 2008 forecast assumed a national four pollutant (4-P) policy which includes SOx, NOx, Hg, and CO2. The State Energy Plan forecast will assume a national three pollutant forecast (3-P) policy which includes Sox, NOx, and Hg and excludes a national CO2 policy but includes the Regional Greenhouse Gas Initiative. It is not clear how this difference in assumptions may change the demand forecast for natural gas.

TABLE 7:

Year	Total Demand, Bcf
2007	868
2008	845
2009	863
2010	865
2011	862
2012	870
2013	874
2014	879
2015	891
2016	902
2017	898
2018	901
2019	905
2020	912

Based on this total demand forecast, it is expected that the total demand will increase by five percent from 2007 through 2020, going from 868 Bcf in 2007 to 912 Bcf in 2020.

While the parties to WGV have agreed that this forecast will be used, there was also discussion about the impact on natural gas load of such things as conversions of heating customers from other fuels, increased use of natural gas for electric generation and vehicles, electric efficiency programs that encourage switching to natural gas appliances. These issues will be discussed below. To the extent that performance of natural gas efficiency programs is determined in the future by comparison with the data in the table above, it must be considered in concert with the impact of the modifying forces discussed in this report.

VI. List of all existing efficiency programs that save natural gas (including those targeted at electricity primarily)

a. Existing NYSERDA Administered Programs

The System Benefits Charge (SBC) Program administered by NYSERDA as the New York Energy $mart^{SM} Program, was initiated in 1998 by order of the PSC and has included three funding cycles. The New York Energy $mart^{SM} Program portfolio consists of initiatives promoting energy efficiency, including both permanent efficiency reductions as well as callable demand management, facilitating renewable energy infrastructure development; providing energy services to low-income New Yorkers and conducting research, development and demonstration of promising new products and technologies. The Program is currently in its third funding cycle which runs through June 2011.

NYSERDA employs differing strategies in order to successfully pursue these diverse activities, such as:

- Market transformation strategies develop markets by increasing demand and permanently changing energy-related decision-making; while also changing the supply and service delivery protocols of retailers, manufacturers, builders, developers, architects, engineers and contractors. Creating an energy efficiency "ethic" is critical if New Yorkers are to make energy efficiency a priority – making decisions based on life-cycle economic benefits and costs, and sustainable environmental stewardship. Market transformation programs also promote the development of the energy efficiency supply and services infrastructure through training, education, certification, and other means.

- Energy efficiency services identify energy savings opportunities and install energy-efficient products and technologies in small homes, multifamily buildings, commercial buildings, industrial plants and other facilities.

- Low-income services make energy bills more affordable for low-income households by installing energy efficiency improvements and by disseminating energy tips, education and information to homeowners, building owners and operators, and contractors.

- Research, Development and Demonstration (RD&D) programs develop alternative energy resources and technologies, deploy distributed generation and combined heat and power systems, develop and test new technologies and products, and collect and evaluate data for use in environmental analysis and in support of policy decision making.

NYSERDA's program portfolio is designed to achieve deep, cost-effective energy savings through the use of a fuel-integrated whole building approach which maximizes the number of measures implemented per customer contact and thereby avoids lost opportunities.

Treating the whole building as a system also enables air quality, air flow, system sizing, health and safety issues associated with energy consuming equipment and products to be properly addressed during the performance of energy efficiency services. Due to this comprehensive program approach, natural gas savings are realized in addition to electricity savings. Incidental natural gas savings are also realized through the installation of certain electric measures, such as ENERGY STAR® clothes washers that use less water and require less drying time or air handling system improvements that optimize the delivery of air for heating and cooling.

Additionally, NYSERDA currently administer gas efficiency funds on behalf of Consolidated Edison Company of New York (Con Edison), National Fuel Gas and National Grid (upstate). These programs are discussed in Section XX of this report, however are also noted here due to the interrelationship these programs have with the existing SBC-electric programs. In each of these instances NYSERDA integrates the gas efficiency funding with the existing SBC-electric funding to achieve a greater level of electric and natural gas savings than otherwise would be achieved. For example, the standard Multifamily Performance Program (SBC-funded) requires participating buildings to achieve a minimum of 20% reduction in energy use. When combined with Con Edison gas efficiency dollars in that service territory, the program then requires that participating buildings achieve a minimum target of 25% reduction in energy use. Also for example, the standard statewide Assisted Home Performance with Energy Star Program provides up to a 50% subsidy on the cost-effective work scope (up to $5,000). In the National Grid (upstate) service territory, NYSERDA uses gas efficiency dollars to allow for up to 75% subsidy when higher efficient gas equipment is installed (up to $6,000). Through EmPower New York℠, low-income households that would otherwise receive only electric reduction measures, and possibly minimal gas measures, can receive a more comprehensive scope of services, by utilizing the gas efficiency funds in these three utility service territories, increasing their savings from about $100 annually to more than $500 annually, on average. In service territories where no parallel gas funding has been implemented, these supplemental offerings are not available to customers.

Gas Savings from SBC programs

WGV recognizes that certain quantities of natural gas, fuel oil, propane and wood are saved as a result of the programs that NYSERDA has been administering through the SBC for the last decade. The costs of these programs have been collected over the years through a

surcharge on the electric distribution bill of most electric customers of the State's investor-owned utilities (some customers are exempt from paying SBC surcharges). Many of the NYSERDA programs, such as EmPower or Home Performance with ENERGY STAR, are whole-building programs that include improvements to the building shell which result in savings of heating fuel.

There is a question of equity that has been posed to WGV. Namely, on a prospective basis, should a portion of the SBC charges collected from natural gas customers go toward the existing NYSERDA programs in an amount equal to the proportion of the natural gas savings?

According to the New York Energy $mart^{SM} Program Evaluation and Status Report for the year ending December 31, 2007 (2007 Status Report), cumulative program benefits from installed measures equal 3,060 GWh of electricity through year-end 2007 and 4,660,000 MMBtu of fuel savings including natural gas and heating oil.[18] According to an e-mail from NYSERDA to Staff, the natural gas portion of the fuel savings is 3,717,166 MMBtu, with the rest of the fuel savings being from oil, wood, or other sources. However, the SBC programs do not represent all of the efficiency programs in the State. There are currently five LDCs which offer natural gas efficiency programs, which are National Fuel Gas, Con Edison, and the three National Grid LDCs. The upstate National Grid program at the present time is directed at low income customers[19] and is administered by NYSERDA. Con Edison's current efficiency program is also administered by NYSERDA. The total budget for these two programs is $16.7 million excluding marketing expenditures. National Fuel Gas Distribution Corp.'s (NFG) current program has four components: a low income program, a residential appliance rebate program, a C/I program, and a marketing program. The low income and C&I programs are administered by NYSERDA for a total budget of $4.1 million. Together, NYSERDA runs an

[18] See Table ES-4 on page ES-6.

[19] On September 17, 2008, the Commission approved an expansion of upstate National Grid's efficiency program, to begin in October 2008, although the low income component remained virtually unchanged. Four new programs were added: Residential High Efficiency Heating and Water Heating; Commercial High Efficiency Heating and Water Heating; Residential Energy Star Products; and Residential Internet Audit Program and E-Commerce Sales. The total budget will be $4.89 million for the eight month interim period.

additional $20.8 million of programs which are paid for by natural gas customers. Customers are receiving incidental electric benefits from those programs

In addition, the two downstate National Grid LDCs administer gas efficiency programs. While these programs are not identical to NYSERDA's, there are some similarities. The programs are made up of the following elements: low income; residential weatherization; residential high efficiency heating and water heating; residential audit/home performance; residential Energy Star products; residential energy analysis and building practices; commercial energy efficiency; economic redevelopment; commercial high efficiency heating; multifamily; building practices and demonstration; and commercial energy analysis. Missing from this mix are some elements of NYSERDA's portfolio which are focused on electricity use and certain whole-building approaches. These programs also result in incidental electricity savings.

The SBC programs are going to be greatly expanded due to Commission action in this case, but it is unclear at this time what the expanded programs will be. At the same time, natural gas utilities likely will be expanding their offerings, as can be seen by recent Commission action, which arguably may serve to provide both electric and natural gas savings to customers, like the SBC programs. The members of WGV generally agree that, in the future, natural gas efficiency programs will be administered by many entities, including NYSERDA, the LDCs and third parties. In addition, the members of WGV generally envision a future where funding for natural gas efficiency programs received from gas ratepayers would be used to fund programs sponsored by many different administrators, not just LDCs, similar to electricity SBC program funding in the future.

Some members of WGV believe that it would be an administratively difficult task to try to implement a mechanism to determine what benefits electric customers have received from natural gas customers and what benefits natural gas customers have received from electric customers, and then calculate how much money is owed to whom. For example, National Fuel Gas serves a territory which is also served by more than one electric utility, so it would have to then divide up the money between different electric utilities. On Long Island, the electric utility is LIPA, who doesn't collect the SBC surcharge or participate in SBC programs.

Based on the foregoing discussion, the members of WGV generally agree, except as noted below, that there is not sufficient subsidy to one industry's customers from the other to merit taking action, and taking any action regarding past program spending would be very

difficult from an administrative perspective. Further, for SBC programs that target electric measures only, the thermal savings are incidental to the programs paid for by electric customers since all electric SBC customers are eligible to participate in NYSERDA's programs on a fuel blind basis. For SBC whole-building programs thermal savings are achieved through measures targeting thermal savings as well as incidental savings realized through electric measures. There is currently no mechanism to charge heating oil, propane or wood heating customers, charging separately for gas programs would amount to double charging gas customers resulting in a subsidy of other heating fuels. However, NYSERDSA is currently in negotiations to receive funding to support oil-heat efficiency, and will continue to seek funds for t his purpose.

NRDC/Pace states, and NYSERDA concurs, that the issue is more important as a matter of policy on a prospective basis, because we expect substantially larger budgets for both gas and electric programs throughout the State. In addition, according to NRDC/Pace, past gas savings from electric programs have been limited, since NYSERDA's focus has been electric savings. With redesigned, integrated, fuel-neutral programs, the portion of savings is likely to change substantially for certain programs. For example, Home Performance with ENERGY STAR would obtain much larger gas benefits with funding available for fuel-neutral delivery.

NRDC/Pace states that the most effective and customer-focused approach to efficiency is the offering of integrated, multi-fuel programs, wherever appropriate. To do this, program funding should come from both gas and electric ratepayers. Consistent with traditional ratemaking precedent, NRDC/Pace believes that the most appropriate approach is for investments in these programs to be shared by electric and gas ratepayers in proportion to the benefits that accrue to the electric and gas systems, respectively. NRDC/Pace believes that this is administratively very simple, and would ensure that there are no cross-subsidies between the two groups of ratepayers.

According to NRDC/Pace, all programs must track verified savings for each fuel, which will be necessary for many reasons, not least of which is to compare progress against goals set by the PSC and for internal management and quality control. Therefore, the benefits accruing to each system will be routinely tracked and reported, based on approved electric and gas avoided costs and the impacts for each energy system. In general, these figures should be fairly consistent with initial planning assumptions which can be used to set initial budgets. If, over time, the share of benefits is determined to differ substantially from initial assumptions, the

PSC can true-up the contribution from the differing funding sources, as appropriate. Alternatively, according to NRDC/Pace, fuel-neutral programs may establish gas and electric budgets up front and manage the programs to ensure equity. For example, this might result in a modification of incentives or delivery practices for some measures to ensure that programs are managed to budget allocations by fuel. This practice would be consistent with the way programs are currently managed to their budgets to maintain cross-class equity between low income, residential, and C/I customers.

b. Existing LDC Programs

Several LDCs currently offer natural gas efficiency programs that were approved by the Commission prior to the 6/23 EEPS Order. As mentioned above, many of these are administered by NYSERDA. National Grid offers a low income weatherization program in the Niagara Mohawk service territory, which is administered by NYSERDA. National Fuel Gas offers two programs which are administered by NYSERDA, a low income weatherization program and another program aimed at small commercial and industrial customers (i.e., consuming less than 12,000 Mcf per year). In addition, NFG offers a residential high-efficiency appliance rebate program. Con Edison offers a full suite of programs, all administered by NYSERDA, and the programs are broadly targeted at the Residential, Low Income, and C/I sectors. Programs include the Multifamily Performance Program, Gas Efficiency Performance Program, Home Performance with ENERGY STAR, ENERGY STAR Homes, EmPower New York, Technical Assistance, High Performance Buildings, Enhanced Commercial Industrial Performance Program, and the New York Energy Smart Loan Fund. National Grid's two downstate LDCs, KEDNY and KEDLI, offer a full suite of programs which they administer themselves. It includes on the residential side: low income weatherization; rebate programs for weatherization, high efficiency heating, high efficiency water heating, and Energy Star products; Energy Star homes; audit/home performance; energy analysis (Internet audit); and building practices. On the commercial side, it includes: a rebate program for efficient appliances and other measures; an economic redevelopment program; commercial high efficiency heating; commercial energy efficiency program; multifamily energy efficiency program; building practices and demonstrations; and commercial energy analysis (Internet audit).

It should be noted that on September 17, 2008, the Commission approved modifications to National Grid's upstate program to include, in addition to the low income

weatherization, a rebate program for residential high-efficiency space and water heating and controls, a commercial high-efficiency space and water heating program, a residential Energy Star products program, and a residential Internet audit program and E-Commerce Sales. The expanded program began on October 1. In addition, the Commission ruled that Con Edison's NYSERDA-administered program would continue for another year, with the addition of the fast track program discussed below and that Con Edison and NYSERDA should discuss how to create a more comprehensive and substantially better funded portfolio to be effective in 2009.

For both NFG's and National Grid's upstate program, the Commission approved a cost recovery methodology whereby only customers in the classes eligible to participate in the programs are required to fund the programs. Some WGV members believe that this approach is appropriate, and that cost allocation related to energy efficiency generally should follow cost causation principles, to the extent practicable. Additionally, those same members contend that it is extremely important that the Commission recognize that there are material differences between (i) small commercial customers and (ii) large C/I customers. Those differences impact program design and implementation, and also should be reflected in cost allocation and cost recovery.

c. Fast Track LDC Programs

In the 6/23 EEPS Order, the Commission directed the utilities and NYSERDA to file fast track programs. The Commission said that it identified $16.8 million for utility-administered gas programs that would receive expedited approval if they met certain conditions. The Commission listed several factors it had taken into consideration:

- The selection of fast track programs is designed not to foreclose longer-term decisions regarding which entities will administer certain major programs.

- The Commission focused on programs that score well above 1.0 in the Total Resource Cost test, but said that lower-TRC programs will receive full consideration in the next series of filings.

- The question of whether a definitive target should be established for low-income customers for the EEPS as a whole requires further development in the next phase of this proceeding.

Gas utilities serving more than 14,000 customers were authorized to establish surcharges to collect revenue to cover the costs set forth in the Appendix to the Order. The Commission only included one natural gas efficiency program in the fast track group: a residential efficient gas equipment program. The description was as follows:

> "This program will promote efficient furnaces, boilers, water heaters, clothes washers, solar hot water technology, and hot water conservation measures. Three mechanisms will be used to promote these measures: 1) rebates for retail sale of efficient gas products, 2) marketing training for heating contractors and plumbers, and rebates to these trade allies for efficient gas equipment they sell, and 3) discounted sales of low-flow showerheads, faucet aerators and tank wraps via the Internet and mail order."

The Commission also ruled that for those utilities without existing gas efficiency programs, the cost of the residential efficient gas equipment program should be recovered solely from residential customers.

As mentioned earlier, three utilities were already offering such programs prior to the 6/23 Order: NFG and two National Grid companies (KeySpan Energy Delivery New York and KeySpan Energy Delivery Long Island). The Commission found that no changes were necessary to NFG's program, but that KEDNY and KEDLI had to increase funding for their programs. All other LDCs had to institute programs, and filings were received on August 22, 2008 as directed by the Commission, including proposed tariff leaves to implement the new surcharge. The tariff leaves became effective on October 1, 2008, although the program filings will not be acted on by the Commission until after the SAPA comment period expires for each.

The funding split for the LDCs was as follows: (estimated savings from each LDC are captured in the fast track wedge in the wedge analysis in Appendix A)

TABLE 8:

Utility	Allocation Factor	Fast Track Dollars
Central Hudson	1.83%	$307,501
Con Edison	25.45%	$4,272,679
Corning	0.89%	$148,647
NYSEG	6.21%	$1,043,319
National Grid	11.67%	$1,959,811
O&R	2.78%	$467,019
RG&E	5.96%	$1,000,540
KEDLI	13.76%	$2,310,180
KEDNY	20.49%	$3,440,325
NFG	10.35%	$1,737,770
St. Lawrence	0.62%	$103,766
Total	100.00%	$16,791,557

d. Codes & Standards

In its March 25 filing in this proceeding,[20] Staff included updated tables which showed the potential savings available from upgrades to building codes and enhanced appliance standards. The updated tables included significant savings through strict enforcement of existing and future building code requirements, and were developed in conjunction with Steve Nadel of the American Council for an Energy Efficient Economy (ACEEE). Savings are also expected from new state equipment efficiency standards, implementation of the new state Energy Code likely to be approved in 2008, and new code enhancements expected to be adopted in 2010 and take effect in 2011. Staff stated on March 25 that potential impacts from these areas have long lead times associated with them, and that, working with NYSERDA and the Department of State as well as other interested parties, strategies could be developed for gaining the maximum contributions from codes and standards.

There was some concern that the ICF load forecast already contained some assumed savings from codes and standards, and that including ACEEE's analysis would tend to

[20] Case 07-M-0548, March 2008 DPS Staff Report on Recommendations for the EEPS Proceeding, filed on March 25, 2008.

double-count such savings. In addition, the Optimal study and update made certain assumptions about savings from codes and standards as well. After consultation with ICF, ACEEE, and Optimal, WGV obtained an updated codes and standards savings forecast from ACEEE, and it has been incorporated to our analysis (Please refer to Appendix B for more detail). WGV acknowledges that much work remains to be done on this subject and that all members do not agree on what has been included in the calculation.

e. NYPA/LIPA

The New York Power Authority (NYPA) and the Long Island Power Authority (LIPA) administer electric energy efficiency programs for their customers. However, many of these programs involve improvements to building envelopes, and therefore result in natural gas savings. We have received data from NYPA to be included in our analysis here. We have estimated natural gas savings from LIPA programs due to time constraints, but we may be able to update this information in the future.

VII. Development of a Target and How It Can Be Met

1. Results of 2006 Optimal Energy Study on Natural Gas Energy Efficiency Potential

In 2006, Optimal Energy completed a study, commissioned by NYSERDA, which examined the natural gas energy efficiency potential in New York State over a period of ten years (2007 – 2016). The study assumed a five year program delivery period and five additional years of continued program impact. The study evaluated "the potential to reduce gas consumption using existing and emerging efficiency technologies and practices, with the overall goal to lower end-use natural gas requirements in residential, commercial, and industrial facilities."[21]

Optimal concluded that New York could reduce its natural gas consumption by 28.3% below forecasted load for 2016 if the total potential cost-effective natural gas efficiency savings (or "economic potential") is realized.[22] Economic potential refers to the total technical natural gas efficiency potential over the planning period from all measures that are cost effective. Economic potential does not take into account market barriers and costs of market intervention, or customer rate and bill impacts.[23] This figure corresponds to a 282,000 dekatherm (MDth) reduction in the State's annual natural gas requirements. If all this economic potential were captured, New York's natural gas load would decrease an average of 2.1% per year. However,

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[21] Optimal Energy, Inc., "Natural Gas Energy Efficiency Resource Development Potential in New York", prepared for the New York State Energy Research and Development Authority, October 31, 2006, p. E-1.

[22] Optimal considered market driven/lost opportunity and discretionary market events. Market driven/lost opportunity market events include new construction, major renovation, and natural turnover of existing energy-using equipment. Discretionary market events include retrofit and application of supplemental measures.

[23] Id. at E-2

Optimal cautions that it would be a mistake to confuse economic potential with other types of potential analysis. That economic potential is not program or achievable potential, and therefore it should not be assumed that 100% of efficiency resources statewide could be realized through policy or program initiatives. Further, it cautions that doing so would be a misuse of the study.[24] The economic potential, as upper bound estimate of efficiency opportunities often used to inform other analyses, serves as basis for Optimal's estimate of maximum "achievable potential" and its " program scenario" analysis.

Optimal also estimated the "maximum achievable potential" over the 10-year period to be an 18% reduction in natural gas consumption by 2016.[25] Maximum achievable potential refers to the maximum portion of the economic potential savings that would be accomplished with an aggressive, fully funded (paying 100% of the costs of all economic efficiency measures) and well implemented program.[26] In theory, the achievable potential takes into account market barriers and experience with penetration rates. The estimated maximum achievable potential reflects a total reduction of 184,000 MDth, or 65% of the estimated economic potential. A reduction of this amount would result in a decline in New York's average annual natural gas consumption of approximately 1.1% by the tenth year. This estimate was not derived from a detailed, bottom-up analysis at the measure level. Rather, it was based on past experience and professional judgment considering typical penetration rates and other studies that

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[24] Id. At 2-2.

[25] During a teleconference held on September 5, 2008, Phil Mosenthal of Optimal specifically stated the achievable estimate was not originally intended to be part of the study.

[26] To realize the maximum achievable potential, programs would be required to deliver for a full ten year period and pay 100% of the incremental cost of the measure plus an additional 30% in excess of the measure cost to fund program delivery.

explicitly estimated both maximum achievable and economic potential. NRDC/Pace point out that often studies have estimated even higher portions of economic potential as achievable, so this estimate could be considered somewhat conservative.

Optimal also analyzed a specific "program scenario" under which expenditures on natural gas efficiency programs assumed an $80 million per year funding level.[27] This scenario assumed that programs would run for 5 years, from 2007 through 2011 and also included five years of continued program impacts until 2016. Optimal's analysis concluded this program mix would reduce natural gas consumption by 1.5% below forecasted load for 2016. This reflects the total impact in 2016, including all savings from prior years. This approach corresponds to annual savings of 15,204 MDth by 2016.[28][29] At the request of the New York State Department of Public Service**,** Optimal updated its analysis of this program scenario in January 2008 to assume delivery of these efficiency programs for a 10-year period (2008 – 2017) funded at an additional $80 million per year or $400 million of incremental funding over the ten year period. Optimal's updated analysis resulted in estimated savings of 2.8% of the gas forecast usage in 2017, corresponding to gas savings by year 10 of 28,200 MDth and $1.4 billion in estimated net benefits. The Program Scenario target of an average $80 million per year spending was selected to be an illustrative example of what could be done. As Optimal points out in the conclusion to

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[27] The funding level of $80 million per year was selected because it was approximately 0.75% of the 2004 sales of natural gas utilities which is comparable funding to the SBC1 level of 0.76% of electric sales.

[28] The analysis included all firm and non-firm sales and transportation customers.

[29] Residential, commercial, and industrial sectors funding allocation was proportional to their statewide level of gas consumption. Fifty percent of the residential spending was allocated specifically to low income customers.

its update to DPS Staff[30], different program mixes would produce different results. Neither NYSERDA, NY DPS, nor any other stakeholders involved in the study endorsed this funding level as a recommended or optimal amount.

TABLE 9: Total Resource Economic Impacts for Ten-Year Program Delivery Scenario (Present Value 2008$)[31]

	Total Resource Net Benefits ($Million)									
	Program Years					Post-program Market Effect Years				
Cumulative net benefits (benefits minus costs, present worth 2005$)	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Residential New construction	8	20	34	48	64	80	98	115	133	151
Small Heating and DHW	13	35	60	87	118	151	187	221	251	276
Low Income Weatherization	7	14	20	26	31	37	42	47	51	56
C&I New construction	2	7	17	30	46	62	77	93	108	124
C&I Existing construction	56	116	184	259	344	425	504	579	653	727
Food Service and Processing	0	2	5	10	16	23	31	39	50	63
Total Programs	**87**	**194**	**319**	**460**	**619**	**779**	**938**	**1,094**	**1,246**	**1,396**
Cumulative Benefit/Cost Ratio	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Residential New construction	2.83	2.78	2.73	2.68	2.64	2.65	2.66	2.66	2.66	2.65
Small Heating and DHW	2.01	2.08	2.12	2.14	2.17	2.20	2.22	2.24	2.26	2.28
Low Income Weatherization	1.52	1.49	1.49	1.48	1.48	1.49	1.49	1.49	1.49	1.49
C&I New construction	1.32	1.56	1.75	1.87	1.95	2.01	2.05	2.09	2.12	2.15
C&I Existing construction	2.11	2.11	2.14	2.16	2.19	2.23	2.25	2.27	2.28	2.30
Food Service and Processing	1.03	1.28	1.51	1.65	1.76	1.87	1.95	2.00	2.05	2.08
Total Programs	**1.96**	**2.00**	**2.04**	**2.07**	**2.10**	**2.14**	**2.16**	**2.18**	**2.20**	**2.22**

- The 2006 NYSERDA study did not directly estimate the achievable potential. It was estimated to be approximately 65% of the economic potential.

2. Discussion of Gas Savings Scenarios

New York Utility Experience -National Grid NY/LI (former KeySpan) Gas Efficiency Program

The Commission's July 18, 2007 Order Authorized Brooklyn Union Gas Company d/b/a KeySpan Energy Delivery New York and KeySpan Gas East Corp. d/b/a KeySpan Energy Delivery Long Island to implement Interim Gas Efficiency Programs,[32] based

[30] Optimal Energy, Inc., Memorandum to NYSDPS Staff, dated January 28, 2008, Page 9 – "It is likely that higher savings than estimated here could be captured with this limited budget by focusing primarily on lower cost measures and strategies.

[31] This table was included as part of the January 28, 2008 New York State Natural Gas Efficiency Program Assessment Update performed by Optimal, page 8.

on National Grid's experience implementing programs in New England for the last 20 years.

During the last 20 years, more than 4.7 million National Grid customer projects have been completed in New England saving more than $3.6 billion in energy costs and 26 billion kilowatt hours of electricity, enough to power 3 million homes for one year as well as saving 650 million therms of natural gas, enough to heat 500,000 homes for one year. The programs have reduced greenhouse gas emissions in New England by 18.3 million tons, the equivalent of removing 2.3 million cars from the road. The Company's efforts and commitment to this endeavor have yielded a 60% participation rate in the programs among National Grid's 1.7 million New England customers, saving them more than $250 million on an annual basis.

Under July 18, 2007 Commission's Order, fifteen programs were approved and were in effect on August 1, 2008, serving Low Income, Residential and C/I as well as Multifamily customers. Table 10 shows the list of gas energy efficiency programs. The total Program budget for New York was $10 million and $5 million for Long Island. New York budget allocation was as follows: 51% for C/I and Multifamily Programs, 29% for Low income, and 20% for Residential Programs. The Long Island budget allocation was as follows: 40% for C/I and Multifamily Programs; 30% for Low income and 30% for Residential Programs.

TABLE 10: – Gas Energy Efficiency Programs in KEDNY and KEDLI

Residential	**Multifamily and C&I**
Weatherization	Comm. Energy Efficiency Program
High Efficiency Heating	Economic Redevelopment
High Efficiency Water Heating	Comm. High Efficiency Heating
Energy Audit/Home Performance	Multifamily
Energy Star Products	Building Practices & Demo
Energy Star Homes	Energy Analysis: Internet Audit
Low Income	

On December 21, 2007 an Order Adopting Gas Rate Plans for KeySpan Energy Delivery New York and KeySpan Energy Delivery Long Island was issued, which allowed the

[32] See Case 06-G-1185, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of The Brooklyn Union Gas Company d/b/a KeySpan Energy Delivery New York for Gas Service, and Case 06-G-1186, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of KeySpan Gas East Corporation d/b/a KeySpan Energy Delivery Long Island for Gas Service, Order Authorizing Interim Gas Energy Efficiency Programs and Related Deferrals, issued July 18, 2007.

Company to implement a $30 million gas efficiency program in downstate New York. The Order stated the following:

> "It is proposed that annual program budget levels for the next five years increase from current interim budget levels. This would amount initially to an increase from $10 million to $20 million annually for KEDNY and from $5 million to $10 million annually for KEDLI. Interim program costs incurred in 2007 would apply toward the $20 and $10 million figures in rate year one (2008). The new, higher budget amounts and deferred interim program costs incurred in 2007 would be recovered starting January 1, 2008 via a surcharge of $1.68¢/therm delivered for KEDNY and 1.24¢/therm delivered for KEDLI. Program costs actually incurred and amounts surcharged would be subject to reconciliation." [33]

2nd Quarter Results

Year-to-date performance and annual goals for participation, savings and spending in New York City and Long Island are indicated in Tables 11 and 12 respectively. Please note that the data represents the Company's experience since program inception in September 2007, and therefore reflect the ramping up of new programs and delay in reaching agreement on proposed program changes. The Company is engaging in extensive customer outreach, advertising, training and collaborative efforts in order to accelerate savings and participation in New York. Between January and June 2008, outreach and training events reached a total of over 47,000 individuals. Direct mail and other forms of advertising are increasing customer awareness about program offerings. Finally, new and ongoing collaborations include those associated with the EEPS proceeding, a multifamily program collaboration with NYSERDA, and PlaNYC efforts.

[33] Case 06-G-1185, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of The Brooklyn Union Gas Company d/b/a KeySpan Energy Delivery New York for Gas Service, and Case 06-G-1186, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of KeySpan Gas East Corporation d/b/a KeySpan Energy Delivery Long Island for Gas Service, Order Adopting Gas Rate Plans for KeySpan Energy Delivery New York and KeySpan Energy Delivery Long Island, issued December 21, 2007, page 7.

TABLE 11: KeySpan Energy Delivery New York (KEDNY)

	Residential	Low Income	Commercial & Industrial	Total
Participants Year-to-Date [34]	2,934	839	3,880	**3,880**
Annual Participant Goal [35]	11,110	1,754	4,556	**17,420**
Therm Savings Year-to-Date [6]	38,077	283,582	299,813	**621,472**
Annual Therm Savings Goal [7]	911,400	592,852	2,818,314	**4,322,566**
Spending Year-to-Date [6]	$1,151,602	$2,270,840	$572,416	**$3,994,858**
Annual Budget [7]	$3,768,829	$5,882,354	$9,682,153	**$20,000,000**

TABLE 12: KeySpan Energy Delivery Long Island (KEDLI)

	Residential	Low Income	Commercial & Industrial	Total
Participants Year-to-Date [6]	3,251	358	37	**3,646**
Annual Participant Goal [7]	8,400	878	1,972	**11,250**
Therm Savings Year-to-Date [6]	98,778	121,004	127,113	**346,895**
Annual Therm Savings Goal [7]	706,300	296,764	1,368,219	**2,371,283**
Spending Year-to-Date [6]	$817,787	$1,058,654	$317,868	**$2,194,309**
Annual Budget [7]	$3,005,017	$2,941,116	$3,720,534	**$10,000,000**

National Fuel Gas Conservation Incentive Program Review

National Fuel's currently effective conservation incentive program is summarized below:

- Filed in Base Rate Case on January 29, 2007
- Approved by the Commission on an Expedited Basis - September 20, 2007
- Program Start Date December 1, 2007
- Approved Budget of $10.8 M
- Program Elements
  - Low Income Usage Reduction Program
  - Appliance Rebates
    - Residential

[34] As of June 30, 2008, including Sept-Dec 2007.

[35] Sept 1, 2007 through Dec 31, 2008.

- Small Non Residential (< 12,000 Mcf Per Year)

– Outreach and Education

The Company's 2nd quarterly report was filed with Staff in August 2008. Based on an extrapolation of data from the first year of operation of the program the Company estimated the annual impact of its program for use in the wedge analysis in the table below. It should be noted that the estimated outreach impact was not included in the wedge analysis provided in the WG V report.

TABLE 13:

	Residential Rebates	LIURP	Commercial Rebates	General Outreach
Participants as of June 30, 2008	8,248	232	4	482,775
Estimated Annualized Participants	16,496	650	8	482,775
Total Estimated Annual Mcf Savings before Adjustments/2	208,424	32,500	2,186	482,775
Total Estimated Annual % Savings before Adjustments	0.4%	0.06%	0.005%	0.9%
Total Estimated Annual Mcf Savings after Adjustments /3	180,297	31,897	1,976	434,498
Total Estimated Annual % Savings after Adjustments	0.3%	0.06%	0.005%	0.8%

/1 Estimates provided for discussion purposes only based on extrapolating ½ a year of program results to an annual basis.
/2 Based on Annual Estimated Participants multiplied by deemed savings amounts.
After one year of operation the Company plans on testing deemed savings to actual savings per participant.
/3 Adjustments include free ridership and snapback estimates.

The estimated annual % savings data is for each customer class. For example, the 0.3% savings estimate is the percentage savings for the residential class. Adding the 0.3% savings for rebates to the 0.06% savings for LIURP provides a total savings impact estimate for the residential class of 0.36%. Further adding the estimate of outreach savings of 0.8% of the

residential class results in a total savings estimate for the residential class of 1.16% (1.16%= 0.36% + 0.8%). For the small non-residential class, annual savings based on an extrapolation of program results to date resulted in a 0.005% savings for this class of customer. The Company anticipates that non-residential customer activity in the second year of the program will increase significantly. Based on a full expenditure of rebate funds budgeted for the small non-residential class it is expected that annual savings for this class will be approximately 0.25%. As the footnote above emphasizes, these values are preliminary estimates based on a half year operation of the program. It is anticipated that these estimates will change as the program progresses and more data regarding the changes in customer consumption is gathered. The residential class represents approximately 50% of the throughput on the Company's system and the small non-residential class of customer represents approximately 25% of the Company's total throughput on its system. Applying these savings estimate to total Company throughput yields an annual savings estimate on total Company throughput of approximately 0.7% with outreach savings and approximately 0.3% annually excluding the outreach savings estimate.

NYSERDA Gas Efficiency Program Experience

As noted in Section X of this report, the New York Energy Smart Program Portfolio, administered by NYSERDA, includes a number of programs designed to achieve deep, cost-effective energy savings through a fuel-integrated whole building approach.

This program design recognizes that HVAC, envelope and industrial systems generally involve the use of heating and cooling, often in the same system. In order to be objective and effective, customer decisions about the costs and impacts of energy efficiency measures requires an integrated approach. Additionally, service providers such as architecture and engineering firms, energy service companies, construction firms, HVAC contractors, builders, and supply houses generally provide integrated services and address all energy sources. Each of these market players is involved in the same integrated decisions as the end-use customer.

NYSERDA's has had the opportunity to collaborate with Con Edison, National Fuel Gas, and National Grid through the administration of a number of targeted gas-efficiency programs. This experience has required a level of coordination between NYSERDA and each utility to ensure that the program portfolio and design, including incentive levels, are customized to the extent possible, to meet the diverse needs of the customers in each region.

In NYSERDA's experience, integrated electric and gas funding improves program delivery, increases the penetration of both electric and gas energy efficiency, reduces ratepayer costs, and reduces confusion created by splintered programs. Effective program delivery strategies recognize that customers and marketplace services providers operate and serve whole buildings with simultaneous, integrated electric and gas efficiency potential. This approach results in more cost-effective programs that minimize lost opportunities for efficiency of both energy sources.

Summary information for the NYSERDA-administered programs in each utility area is provided below:

Con Edison

- Pilot program initiated in 2004, as part of three year rate plan (Case 03-G-1671 and Case 03-S-1672) ~$5 million over a three year period. This phase included a Gas Efficiency Study conducted by Optimal Energy Inc for the Con Edison territory. (Additionally, NYSERDA worked with Optimal to expand this study to assess statewide potential, which is the study referenced earlier in this report.)

- Program expanded in 2007 to a $14 million program for one year period

- September 2008 PSC Order extended current program for an additional year at $14 million with an additional $420,000 provided for enhanced MV&E. Order requires Con Edison to collaborate with NYSERDA to develop a program plan for submission March 2009 for a $24 million program portfolio to be implemented 2009-2010.

TABLE 14:

NYSERDA Administered Program Portfolio in Con Edison territory

Low-Income Residential (50%)	**Residential (25%)**
EmPower New York	Energy Star Homes
Assisted Home Performance with Energy Star	Home Performance with Energy Star
MultiFamily Performance Program	Multifamily Performance Program
Gas Efficiency Performance Program	Gas Efficiency Performance Program
Assisted Energy Star Homes	
Commercial/Industrial (25%)	
Flex Tech/Technical Assistance	
High Performance Buildings	
Enhanced Commercial/Industrial Performance Program	
New York Energy Smart Loan Fund	

TABLE 15:

Con Edison Cumulative Gas Efficiency Program Accomplishments through June 30, 2008[36]

	Residential and Low-income Programs	Commercial Programs
Number of Projects	144	129
Number of Participants[1]	10,712	129
Installed Therm Savings (Annual)	114,457	1,402,438
Third-party Verified Therm Savings[2]	29,908	287,669
Contracted Therm Savings (Annual)[3]	982,782	1,758,551
Contracted Annual Bill Savings[4]	$1,719,869	$2,681,790
Contracted Environmental Benefits[5]		
CO_2 (Annual Tons)	5,749	15,688
SO_2 (")	Negligible	Negligible
NOx (")	5	9
Contracted Life Cycle Customer Savings[6]	$21,603,444	$33,686,241
Contracted Life Cycle Avoided Costs[7]	$15,697,575	$31,361,198

Notes:

1. Residential and low-income participants are dwelling units.
2. These savings have been verified as installed by NYSERDA's third-party Measurement and Verification evaluation contractor. As projects are analyzed on an on-going basis following completion, the evaluation lags behind contracted and installed savings. Residential savings have decreased over last quarter due to the installation of a cogeneration system.
3. Contracted therm savings are inclusive of installed therms.
4. Contracted therm savings were estimated at $17.50 per dekatherm for residential customers and $15.25 per dekatherm for commercial customers.
5. Estimated annual emissions reductions are based on 0.0585 tons of CO_2 per dekatherm.
6. Amounts are based on an average measure life of 15 years, 3% discount rate, and $17.50 and $15.26 per dekatherm for residential and commercial, respectively.
7. Amounts are based on avoided costs from Table 3.5, Total Avoided Gas Costs (2005 $/Dt), Downstate (NYC), pg. 3-17, updated for 2007 $/Dt, found in Natural Gas Energy Efficiency Resource Development Potential in New York by Optimal Energy, Inc., October 2006.

National Grid (formerly Niagara Mohawk)

- Program initiated in 2005, $5 million over 2 year period
- Program expanded in 2007 to $5 million for 1 year period
- September 2008 Order continued program for an additional 8 month period

[36] Installed therm savings are reported for all completed or substantially completed residential projects (consistent with SBC reporting). These savings are preliminary pending verification by NYSERDA's Measurement and Verification contractor; however, these projects have been inspected and verified by NYSERDA's implementation contractors. Completed commercial projects have been independently verified and the savings are reflected in the Installed Therm Savings field.

TABLE 16:

NYSERDA Administered Program Portfolio in National Grid (upstate) Service Territory

Residential Low Income (100%)
EmPower New York (50%)
Assisted Home Performance with Energy Star (50%)

Program Exeperience to Date

			Annual Gas Savings			**Annual Electric Savings**	
	# of participants	**National Grid**	**Therms**	**$$**	**NYSERDA**	**KWh**	**$$**
EmPower	1,009[1]	$2,150,000	309,474	$275,432	$346,142	1,252,240	$136,494
	431[2]	$854,264	114,668	$114,668	$266,588	439,151	$52,698
	1,440	**$3,004,264**	**424,142**	**$390,100**	**$612,730**	**1,691,391**	**$189,192**
Assisted Home Performance	558 [1]	$2,122,800	395,804	$352,265	$93,719	422,297	$47,801
	249 [2]	$1,081,663	140,571	$140,571	$91,486	128,071	$15,369
	807	**$3,204,463**	**536,374**	**$492,836**	**$185,205**	**550,368**	**$63,170**
TOTAL	**2,247**	**$6,208,728**	**960,516**	**$882,936**	**$797,935**	**2,241,758**	**$252,363**

Notes:
1. Data from Gas Efficiency Program I
2. Data from Gas Efficiency Program II as of June 30, 2008.

National Fuel Gas

The following summary is provided solely for the NYSERDA-Administered portion of National Fuel Gas' Conservation Incentive Program. The Program was initiated in 2007 at $4.34 million for a one year period.

TABLE 17:

NYSERDA Administered Program Portfolio in National Fuel Gas Service Territory

Residential Low Income (68%)[1]	**Small Commercial (32%)**[1]
EmPower New York	Small Non-Residential Rebate administered through NYSERDA Existing Facilities Program

			Annual Gas Savings			Annual Electric Savings	
	# of participants[2]	**National Fuel**	**Therms**	**$$**[3]	**NYSERDA**	**KWh**	**$$**
EmPower	97	$269,064	38,720	$52,272	$60,846	62,803	$8,164
Existing Facilities	8	$53,984	20,635	$30,757	n/a	n/a	n/a

[1] #Percentages are based on funding administered by NYSERDA only and do not represent the percentages for NFG's Conservation Incentive Program as a whole.
[2] of Households represents completed as of June 30, 2008. An additional 135 households were in progress as of that date.
[3] Therm cost savings are based on National Fuel Utility Prices for January 2008 posted by the Public Service Commission minus the delivery service charge. ($1.35 for EmPower and $1.09 for Existing Facilities Program)

The NYSERDA Program Scenario utilized by WGV in the model expands upon the experience noted above for these specific programs and includes additional program offerings that would integrate gas efficiency with electric efficiency efforts.

3. Approaches to Goal Setting

WGV has discussed three potential approaches to goal setting, which are discussed in more detail here. The first is the adoption of the Optimal Study maximum achievable potential, which is being called the 18% Scenario. The second is the use of the Gap Analysis Model, which has been developed by WGV. The third would address a different measure of efficiency than a statewide target; instead, the target would be based on use per customer or another similar measure, and it is called the Alternative Scenario.

1. Optimal Study - Maximum Achievable Potential - 18% Scenario

On October 6, 2008, NRDC/Pace submitted to WGV a summary of a potential natural gas energy efficiency program scenario developed by Optimal Energy, Inc. which is designed to achieve the maximum achievable potential estimated by Optimal and noted in the 2006 Optimal Study. A description of this additional update from Optimal is provided below.

The 2006 NY Gas Efficiency Potential Study performed by Optimal Energy considered a "Program Scenario" with a limited $80 million per year statewide budget. While this funding limit restricted the analysis to a fraction of the full achievable potential, the portfolio of programs recommended was intended to be a comprehensive set of programs that would address all major efficiency markets - with one exception (discussed below) - that would serve as a platform from which NYSERDA or utilities could build on to much higher spending levels and deeper savings, if directed to do so by the Commission. Some members WGV believe there are numerous considerations that should be taken into account first.

While the initial intent was to recommend a comprehensive set of programs, the ultimate portfolio analyzed excluded residential, non-low-income existing retrofit opportunities (replacement at time of failure of heaters and water heaters are included in the Equipment Program). In particular, Optimal had envisioned including a "Home Energy Performance" program, which would be similar to NYSERDA's existing program for electric efficiency, but delivered in an integrated, fuel-neutral fashion, with greater focus on gas savings.[37] Because of the $80 million/yr. limit, and the agreed upon allocation of funds between low income, residential non-low-income and C&I, however, Optimal was not able to include this program for lack of funds. However, with additional funds, it would be an important and appropriate program to include in a portfolio.[38]

Given the above, Optimal believes that the most appropriate portfolio of programs for an 18% scenario would be very similar, if not identical, to that described in the 2006 Study

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[37] While NYSERDA does claim gas savings from its electric SBC home energy performance program, its primary focus and the bulk of its spending are associated with electric efficiency because of its funding source and electric SBC mandate. With substantial additional gas funding, this program could be expanded dramatically, and also focus more directly on some of the gas opportunities that are currently a lower priority for NYSERDA.

[38] Because of the nature of integrating gas and electric services, and the current activity of NYSERDA's electric SBC Residential New Construction and Home Performance Programs, Optimal was not able to simply scale both programs back sufficiently to meet budget constraints. This is because if you add gas incentives to a program, at a minimum you have to cover all the incentives for those participants already planned for under the electric SBC plans. As a result, the only way to include Home Performance would have been to assume tiny gas incentives, resulting either in ineffective gas efficiency efforts or a major cross-subsidization from electric ratepayers to gas efficiency efforts.

with the addition of a Home Performance program addressing existing non-low-income residential retrofit opportunities. Evidence shows that customers highly prefer single comprehensive services and that they are most effective. Most residential and small C/I customers view their energy problems as a whole, and divisions by fuel, measure, etc. are artificial to them. Programs that address only discrete measures often are frustrating for such customers, unable to achieve deep, comprehensive savings, and cause significant transaction costs to participants and program administrators.[39] As a result, we strongly recommend integrated, or at a minimum well coordinated, multi-fuel, multi-end use programs that address most major customer groups or markets.

Program Descriptions for 18% Scenario

The following program portfolio was analyzed for the Program Scenario, and with one addition below, also recommended for the 18% Maximum Achievable Scenario.

Residential Programs

- New Construction

This program would be an expansion of NYSERDA's and LIPA's existing Energy Star Labeled Homes Programs. It would promote the construction of high performance homes, with the long-term goal of transforming the market to one in which most new homes are built at least as efficiently as the current Energy Star standard. It includes the following strategies:

- Marketing assistance to builders of efficient homes
- Technical assistance and training to builders and their subcontractors
- Energy Star certification of qualified homes
- Financial incentives to builders — expanded beyond current incentive offerings to generate greater participation statewide and greater penetration of gas efficiency measures (currently, incentives are limited based on the electric benefits).

[39] Note, certain exceptions do exist, particularly related to products purchased at the retail level and programs focused on upstream (distributor or manufacturer) market channels, such as CFL programs.

- Low Income

This retrofit program is designed to improve energy affordability for low-income customers by improving the efficiency of housing units. The program will address the numerous and significant barriers in this sector with the following strategies:

- Direct installation of all cost-effective energy measures at no cost to the owner or occupant of the building.
- Comprehensive personalized customer education and counseling.

Commercial and Industrial Programs

Multiple Intervenors point out that, for certain purposes of this report, small C/I customers and large C/I customers have been grouped together. In reality, the needs and optimal efficiency program design for those two groups of customers are very different. For instance, for many large C/I customers, the "low hanging fruit" of efficiency projects already have been undertaken, principally because it was cost-effective to do so. The focus of these customers' efficiency efforts – most of which are self-funded – relates to projects that are specific or unique to their processes, industries, and/or facilities. In contrast, many efficiency projects targeted at small C/I customers differ very little from comparable projects offered to residential customers. To date, many of the State's gas utilities offer gas C/I efficiency programs that are targeted primarily, if not exclusively, at small C/I customers. There currently is a paucity of experience in New York regarding the administration of large scale gas efficiency programs targeted at large C/I customers. Accordingly, in designing C/I efficiency programs, care must be taken to identify the targeted group of customers, and to reflect such targeting, and the resulting cost incurrence, in cost allocation and recovery methodologies.

- New construction

This program would be an expansion of NYSERDA and LIPA's C&I programs that target this market. The construction of high performance business facilities would be promoted, with the long term goal of transforming markets such that most new buildings take advantage of appropriate high efficiency equipment and design. Ultimately, it would seek to "lock in" these savings through improved NY building codes, and will address improved training and compliance with existing and future codes. It will achieve this through the following strategies;

- Marketing and outreach to design professionals, vendors, contractors, developers, builders, lenders, and building owners and occupants.
- Technical and design assistance and training to design professionals, vendors, contractors, developers, builders, and building owners and occupants on program features, technical information and code compliance.
- Financial incentives to design professionals to cover incremental design and analysis costs.
- Financial incentives to developers, builders, or building owners or occupants to defray the incremental costs of high efficiency equipment and design.
- Facilitation services to coordinate efficiency efforts, identify opportunities, and overcome unique barriers of specific market segments *(e.g.,* NYCHA)

- Existing Construction

This program would be an extension of the NYSERDA and LIPA programs that currently target the existing C&I market. It would promote high efficiency equipment and systems in existing business facilities, both at the time of planned investments (lost opportunity or market-driven measures) as well as time-discretionary (retrofits) early replacement of aging but still functioning equipment and systems. The program will use the following strategies:

- Marketing and outreach to design professionals, vendors, contractors, ESCOs and customer to engage with relevant market actors throughout the specification, design and installation process.
- Technical assistance to design professionals, vendors, contractors, ESCOs, and consumer to assist in analyzing efficiency opportunities and educating decision makers about the technical and financial aspects of efficiency.
- Financial incentives similar to the current incentive offerings for electric efficiency measures to consumers and service providers to defray the first costs of adopting efficient strategies.
- Customized marketing and facilitation services for specifically targeted market sub-segments to overcome unique barriers.

- Food Service

This program promotes the sale and purchase of efficient cooking and other equipment related to commercial kitchens and small industrial food processing facilities. Its long-term goal is to transform markets so that currently deployable high efficiency equipment becomes the market standard, and ultimately the Federal minimum standards under EISA. The program will use the following strategies:

- Incentives for the sale or purchase of efficient equipment —to consumers, retailers, distributors, and/or manufacturers.
- Consumer marketing campaign on the benefits of efficiency, and the non-energy benefits of promoted products, as well as where they are sold and the financial incentives being offered.
- Extensive outreach, marketing, training, cooperative services and engagement with all relevant market actors including equipment distributors, retailers, trade associations, manufacturers, kitchen designers, equipment leasing agents and customers.
- Point of purchase and cooperative advertising with equipment vendors and leasing agents, as appropriate.

Cross Sectoral Programs

- Small Heating and Water Heating

This cross-sectoral market transformation program promotes the sale and purchase of efficient small (*i.e.*, residential and small commercial) heating and water heating equipment. Its long-term goal is to transform the market to on in which high efficiency equipment becomes the market standard, and ultimately minimum Federal Standards under EISA. It will accomplish this through the following strategies:

- Incentives for the sale and purchase of qualifying efficient equipment
- Consumer marketing campaigns on the benefits of efficiency and products and vendors available
- Extensive outreach and marketing of program services to HVAC distributors, contractor and retailers who sell targeted equipment
- Sales training for contractors and retail sales staff
- Technical training for contractors on how to install efficient gas heating equipment.

Additional Residential Program for 18% Scenario

- Home Performance with Energy Star Existing Home Program

This program is an extension of NYSERDA's and LIPA's existing home programs offered under the electric SBC program. It will significantly expand the current offering by allowing it to reach significantly more homes, and to more fully address gas efficiency opportunities that are now only an ancillary focus of the program and performed with limited funds. The following strategies are:

- Marketing and outreach to homeowners, contractors and builders to ensure they are aware of the program and know how to participate, and how to find and select a contractor.
- Training of contractors and builders in efficient existing home retrofit practices, including use of blower-door-guided-air-sealing, duct sealing, proper insulation techniques, moisture issues, venting, indoor air quality, etc.
- Consumer referrals to contractors.
- Financial incentives to consumers for whole house efficiency treatment, possibly combined with financing services and financial incentives to contractors and builders to defray training costs.
- Direct contractor installation of efficiency improvements.

Target Savings, Costs & Cost-Benefit Figures

As stated in the 2006 NY Gas Potential Study by Optimal Energy (p. 2-39), estimated maximum achievable potential is 18% of forecast load by year 10. Estimated costs are an additional 30% over and above the measure costs. This is based on the economic potential and professional judgment about typical ratios of the two.

An "18% in 10 Years" scenario would result in the following target savings, costs and cost-benefit figures for 2018:

	Savings (Thousand Decatherms)	Cumulative NPV Costs ($000s)	Average Annual Costs (NPV) ($000s)	NPV Benefits ($000s)	NPV Net benefits ($000s)	B/C Ratio
18% in 10 Years Scenario	185,008	$ 6,001	$ 600	$ 28,809	$ 22,808	4.80

Notes:

1 Savings based on forecast statewide load of 977 billion cubic foot in 2018 (EEA 2006) for building use only. Does not include any gas used for generation, but does include sales to non-firm end use customers.
2 All dollars expressed in 2008 dollars. Inflated from 2005 assuming average annual 3% inflation.
3 Costs assume 100% of measure costs are covered by programs. In actuality, these savings could likely be captured at lower ratepayer cost (although societal costs would not change based on participant vs. ratepayer shares of contributions).
4 Average annual NPV costs are similar to what average annual program costs would be. However, these are based on total societal costs of measures and program costs, and do not reflect actual ramp up of programs, nor consider that many programs could offer much lower incentives than full measure cost. Therefore, likely actual average annual program budgets would be lower than these figures.
5 Benefits are based on share of benefits of economic potential from 2007-2016. Therefore, any difference in real terms between avoided costs for this period and for 2009-2018 are not accounted for.
6 Price effects are ignored in the above figures. It is likely that price effects would substantially increase benefits, perhaps doubling them or more. For example, the modeling of price effects for the $80million/yr program scenario estimated savings from price effects that roughly equaled program costs.

While several members feel t hat the Optimal study provides a reasonable basis for establishing statewide gas efficiency targets, there is no consensus among the members of WGV as to what extent the Optimal study results (specifically the 18% achievable potential) should be used as a guide for setting a statewide target. The original analysis conducted by Optimal focused on two areas: The economic potential of all cost effective natural gas energy savings measures and one sample program scenario produced under a given set of constraints. As described above, the economic potential of 28.3% of load does not take into account market barriers or program implementation costs and the program scenario outlined by Optimal focused on long term market transformation and not on what programs may produce the highest level of savings over the next five to ten years.

The additional update provided by Optimal on October 6, 2008, outlined a program scenario that could be used to attain the maximum achievable potential but some members of WGV feel there are several issues to explore before this information is considered for statewide goal setting purposes. Areas that require further discussion and analysis include the annual cost to achieve the 18% target and reliance on one program to significantly increase the total savings achieved. As noted previously, in order to realize the 18% savings level, programs would be required to pay 100% of the incremental cost of the measure plus an additional 30% to fund program delivery. In addition, reliance on a residential retrofit program to achieve significant savings given the current economic climate seems questionable to some parties and should be examined more fully. However, several parties point out that Optimal itself considers these budget estimates to be very conservative.

2. Gap Analysis Model

In their July 3, 2008 Ruling in this proceeding, the ALJs outlined the tasks of WGV as the following:

> "reconciliation of the updated Optimal Report results with ongoing natural gas efficiency programs, recommendation of statewide and utility-specific natural gas efficiency goals and targets, and identification of additional program proposals as appropriate"

In order to develop a statewide natural gas efficiency target, DPS Staff, with input from the other parties to WGV, has developed an analysis tool, which we are calling the model. Not all of the WGV members agree that this is the right approach, but there have not been other tools proposed at this point. The purpose of the model is to provide a way to compare different suites of programs based on a comparison of a simple measure, therms per dollar. WGV was not able to compare program suites being administered by various entities on the basis of their TRC test results because there are many differences currently in the assumptions used during TRC calculation among the various LDCs and NYSERDA. Given time, those differences could be overcome, and consistent assumptions could be applied across the board.

There are several existing suites of programs: one each at KEDNY/KEDLI, NFG, and Con Edison, another described in the Optimal study, one in the revised Optimal scenario described in this report, and one proposed by NYSERDA. Each suite of programs has an associated total cost, including administration, marketing, and evaluation expenses, and each

suite of programs has an estimated savings goal. It is important to note that the model has three variables, so that you can vary any two to produce results for the third.

The following are the steps in the model:

1. The first step calculates firm, non-electric generation natural gas demand by year through 2020. This is done by using the most recent load forecast developed by ICF for non-generation load and then applying a factor of 82% (based on data provided by LDCs) to strip out the estimated interruptible load.

2. The next step determines what efficiency programs are already in place, and how much natural gas they will be saving each year. Any natural gas savings from efficiency programs in place prior to January 2007 are considered to be already incorporated in the load forecast. A wedge chart is created, and each of the sources of savings is assigned a wedge. The wedges at this point include codes and standards, non-jurisdictional authorities, and the fast track programs. In addition, as mentioned above, several of the LDCs have existing natural gas efficiency programs. In 2020, the load is projected to be about 748 Bcf, and these existing programs are expected to save about 42 Bcf by 2020, or about 5.5% of load.

3. The next step is to make an assumption about the allocation of funds to efficiency programs targeted at each class of customers, namely low income, market rate residential, and C/I. We have used two assumptions in this report. The first would apportion 20% of funds to low income, 40% to market rate residential, and 40% to C/I. The second would increase the low income funding to 30% and reduce the market rate residential to 30%, while maintaining C/I spending at 40%. Some members advocate that C/I spending be further disaggregated into small C/I and large C/I to account for the numerous material differences between those two market segments.

4. The next step of the model is to calculate a therms per dollar (TPD) value for each of the suite of programs listed above.

5. Once the TPD is calculated, an assumption must be made about how much money can be spent statewide. Using that dollar figure and multiplying it by the TPD for each suite, you can then compare how much natural gas can be saved using each suite of programs at a set amount of money.

6. Using the results of the previous step, wedge charts can be drawn, which show how close to a predetermined target each suite of programs will get and at what cost.

The purpose of this model is to provide an analysis similar to what was done for electric efficiency targets, and to identify the gap between what is currently being achieved and what could theoretically be achieved with more spending. It is possible that it could potentially

be used on an ongoing basis to determine how the gap is being filled. Based on the model, the following matrix of results was developed. The first column specifies a spending amount, the second an allocation factor, and the third a range of possible efficiency targets, based on low, medium, and high goals. A low goal would be based on a suite of programs with lower TPD scores, and a high goal would be based on a suite with a high TPD score. (Please refer to Appendix A for more detail)

TABLE 18:

Statewide Spending	Allocation Factor	Possible Efficiency Targets	Total Bill Impact[40]
$80 million	20% Low Income 40% Market Rate Residential 40% Commercial	Low 8.81% Medium 11.37% High 13.10%	0.93% 1.00% 1.05%
	30% Low Income 30% Market Rate Residential 40% Commercial	Low 8.79% Medium 11.04% High 12.98%	0.93% 0.99% 1.05%
$120 million	20% Low Income 40% Market Rate Residential 40% Commercial	Low 9.67% Medium 13.51% High 16.10%	1.40% 1.50% 1.57%
$160 million	20% Low Income 40% Market Rate Residential 40% Commercial	Low 10.52% Medium 15.65% High 19.11%	1.86% 2.01% 2.10%

Definitions: The Low Target is based on a suite of programs identified as KeySpan Low, the Medium Target is based on the Optimal original suite of programs, and the High Target is based on the NYSERDA 90 Day filing suite of natural gas efficiency programs. Please refer to Appendix A for more information on these program suites.

Some caveats:

1. This analysis is, at its core, a ratio analysis based on various sets of program assumptions applied to changing budgets and assumes scalability of those ratios to the various budget assumptions. For example, additional natural gas efficiency in the future may be more expensive to obtain than the initial programs. Based on the time constraint of WGV, this was the only analysis that WGV could develop on a timely basis. Had time not been as large of a constraint, a more detailed program-by-program analysis and impact may have been developed. As programs are recommended and reviewed for Commission approval, more detailed savings projections based on actual program specifics should be developed.
2. It is assumed in this analysis that all of the suites of programs could be ramped up to accommodate the higher levels of funding. This may or may not be true.
3. The Commission said in the 6/23 Order that 20% of residential program costs should be directed to low income customers in the fast track

[40] For delivery bill rate impacts, please refer to Appendix A.

filings.[41] However, the Commission also said that this issue should be examined in the next phase of the proceeding. We have included a 30% low income scenario as Census Data indicates that approximately 30% of the State's residents had an income of about 200% of the federal poverty standard, which roughly equates to 60% of State median income. This is a standard used for eligibility for a number of benefit programs, including NYSERDA's EmPower low income weatherization program.

4. Although the Commission has addressed the ability of utilities to recover lost revenues due to efficiency programs, we have not attempted to include those here. Some parties say that this will not be an issue when utilities' revenues are decoupled pursuant to the Commission's Order of April 20, 2007.
5. The model assumes the same ability of all program administrators to capture the savings they claim they will achieve.
6. Based upon the program scenario, multifamily programs are classified as either residential or commercial by different administrators.
7. The load forecast being used herein is the same load forecast being used for the State Energy Planning process, which is expected to be updated shortly after the submission of this report.
8. Many parts of this analysis will be changing over the next few months, so that an updating process may be beneficial.
9. Data on codes and standards was taken from work done by ACEEE for Staff and included in Staff's 3/25 filing in this proceeding.
10. Where possible, we have attempted to remain consistent with the approach used on the electric side.

Please refer to Appendix A for detailed spreadsheets on the model.

A rough calculation of bill impacts indicates the following. In 2007, the total operating revenues of the natural gas utilities in New York State was about $9 billion, according to the annual report data. Therefore, a $40 million statewide program would result in bill increases of about 0.4%. A natural gas efficiency program costing $160 million would result in bill increases of four times that, or about 1.6%. Annual firm natural gas load is expected to increase from about 709 Bcf in 2007 to about 745 Bcf in 2020, or a total increase of about 5%. This would be an average annual growth of about 0.3%. An efficiency program aimed at saving 5% of 2020 load would offset expected growth, although it must be cautioned that the factors listed above, such as increased use of CHP or natural gas as a transportation fuel, may serve to cause growth to increase more than expected. Based on the chart above, expenditures of about

[41] Case 07-M-0548, Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard, Order Establishing Energy Efficiency Porfolio Standard and Approving Programs, issued June 23, 2008; page 40.

$80 million, or roughly 1% of total natural gas bills, should result in a range of savings from about 9% to about 13%.

To compare to expenditures on the electric side, SBC III annual expenditures are about $180 million, and total electric fast track and jurisdictional gap expenditures are about $330 million. These two added together total about $510 million, which is roughly 2.7% of annual total electric revenues from investor owned utilities and ESCOs of about $19 billion.

3. Alternative Scenario

There are many aspects of natural gas load that make it significantly different than electricity, as described above. For many applications, it is desirable from an overall efficiency perspective (considering all fuels) to encourage increased natural gas usage, such as switching water heaters from electricity to natural gas. For this reason, establishing an overall usage reduction target becomes very complicated.

A better approach may be to establish a reduction in use per customer. For residential customers, this is somewhat easy to do. You have an estimate of the number of customers the utility has and how much natural gas they are using every year. After calculating what their current use per customer is, a goal could be set to reduce that number by some percentage every year or by some percentage by some target year. New customer usage would have to be as efficient, or more so, than existing customer usage. In this way, the efficient use of all fuels would be the goal, not just reduced usage of natural gas.

This approach is much more difficult for C/I customers, as they are not as uniform as residential heating customers. On a service class by service class basis, a use per customer figure could be established, or you would have to develop several groups of customers based on their natural gas load within each service classification. This is an issue that could be further developed more given more time.

Many members of WGV feel that not all natural gas efficiency programs are applicable to every utility's service territory. For example, a multifamily program which is crucial in the New York City area is not important at all in rural areas of the State. When program administrators are developing their proposals, they should consider these differences and tailor appropriate programs to the customer classes in these territories. We present the three approaches outlined above as various ways to set a natural gas efficiency target, without an endorsement from WGV as to which is best.

VIII. Special Groups of Gas Customers

Cost allocation Issues

Regarding larger C/I customers, some issues need consideration. First, some parties state that the PSC should not be authorizing efficiency-related expenditures in the tens of million of dollars (or more) without clear decisions on how costs should be allocated and recovered. Second, there are concerns about interclass equity in cost allocation for gas efficiency programs. Some members contend that allocation should follow cost causation, and that: (a) residential customers should fund residential efficiency programs; (b) small C/I customers should fund efficiency programs targeted at small C/I customers; and (c) large C/I customers should fund efficiency programs targeted at large C/I customers. In this regard, the distinction between small and large C/I customers is very important – large C/I customers should not be forced to fund efficiency programs that primarily – if not exclusively – are targeted at small C/I customers. Third, there is a concern that EPS surcharge collections may vary from expenditures, raising the possibility of inter-regional subsidies. This is not an issue if LDCs continue to match recoveries and expenditures by service territory, as is currently being done; however this becomes more complicated when there are multiple program administrators. Fourth is the issue of intraclass equity, which has several aspects:

1. A volumetric charge, if adopted and applied broadly, recovers a disproportionate amount from high load factor customers, typically larger C&I customers. This is ameliorated somewhat if costs are allocated to a service class based on cost causation and then a specific amount was recovered from that class volumetrically.
2. Many large C&I customers have spent significant sums of money implementing efficiency projects already, and are angered when they are forced to subsidize the efficiency efforts of others, some of whom may be their less efficient competitors.

One approach to address this issue it the direct funding approach, which also addresses concerns by larger C&I customers that their present efficiency needs often are unique to their facilities (e.g., process-related, industry-related, facility-related) and do not fall neatly into cookie-cutter type programs. One approach to efficiency programs for larger C&I customers could include a direct-funding approach with a cap, or ceiling, on the amount of EPS surcharges that can be imposed on an individual customer within a 12-month period, and could "bank" individual customers' EPS surcharges and accord them the first opportunity to recoup

them, on a dollar-for-dollar basis, to fund their own efficiency projects. Alternatively, the Commission could adopt a competitive solicitation approach.[42]

Non-Firm (Interruptible and Temperature Controlled) Customers

Interruptible customers are very important to the reliability of a number of New York's natural gas distribution systems. Interruptible service is defined by the American Gas Association as "low priority service offered to customers under schedules or contracts which anticipate and permit interruption on short notice, generally in peak-load seasons, by reason of the claim of firm service customers and higher priority users. Gas is available at any time of the year if the supply is sufficient and the supply system is adequate.[43] In general non firm (or non core) customers generally consist of Interruptible, Temperature Controlled (TC) and Power Generation classes. (TC customers get interrupted when the ambient air temperature goes below a predetermined level.) Basically, in New York State, an interruptible customer pays a lower rate for the delivery of their gas on the LDC system in exchange for the willingness to be interrupted during periods of peak load. (There are also interruptible sales customers, but LDCs do not discount gas supply, nor do they mark it up, the customer pays what it cost the LDC.) These customers are larger customers. Almost all of them have dual fuel capability and thus provide important load balancing functions by using capacity that is under utilized by firm customers at warmer than design day temperatures. They provide significant margin contributions, thereby lowering rates to all firm customers, and because they can be interrupted, they allow the company to achieve these margins without increasing the size of its distribution system and upstream pipeline contracts which are designed to meet peak day conditions. Not all LDCs have interruptible customers, but they are crucially important in the downstate area. The LDCs estimate in their winter supply review filings that approximately 18% of their 2009 throughput will be delivered to interruptible customers.

Customers served under non firm tariffs in most cases pay a market based rate competitive with their alternate fuel. Margin revenues contributed by these customers are treated

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[42] For more information, please refer to comments filed on October 15, 2007 by Multiple Intervenors regarding the fast track programs in this case.

[43] American Gas Association; Natural Gas glossary; see http://www.aga.org/Kc/aboutnaturalgas/glossary/default.htm?id={6EC7604A-70E0-4508-A990-41D3AC4C21B9}

differently by different utilities depending on the terms of each utility's rate agreement. Some LDCs return all of the non-firm revenues back to the firm customers via an adjustment to gas costs. Other LDCs may have sharing mechanisms above certain imputed levels while others may retain all of these revenues above an imputed level.

Regardless of each utility's rate treatment of non firm margins, because non firm customers are priced vs. alternate fuels it is generally recognized that introducing various surcharges on top of their rates could make their rates non competitive vs. alternate fuels. In addition, rate imputations are made without taking into account any surcharges. Because of this, simply introducing an SBC to fund energy efficient programs for these customers creates several problems. If there is an imputation the utility is denied its ability to make the margins imputed in its rate case. If the money is flowed back to firm customers it reduces the amount the firm customers receive. In that case firm customers essentially fund the SBC for non firm customers. It is expected that all LDCs will have a revenue decoupling mechanism (RDM) in place within the next few years. If gas efficiency programs are offered to interruptible customers, it will be imperative that these RDMs reflect appropriate assumptions about how much revenue will be received from interruptible customers in order to establish rates.

Other unintended results could be that the introduction of an involuntary SBC to large non firm customers who may have operations in multiple states could be a contributing factor to these customers switching operations to other states that do not have such a surcharge.

Notwithstanding the above issues it is generally recognized that non firm customers because of their size possess great potential for energy efficiency gains and improving economic development. For these reasons, it is important to research the above mentioned obstacles and find ways for non-firm customers to participate in EEPS programs if they so choose. Some suggestions to date have included on-bill financing, or some type of opt-in program for LDC, NYSERDA, or third party energy efficiency initiatives. Furthermore, the encouragement of energy efficiency message should be integrated into the utility marketing and area development message of its non-firm customers.

WGV recommends that, at this time, interruptible customers not be included in natural gas efficiency programs, but that this issue should be reexamined once the On-Bill Financing Working Group concludes its work.

Some LDCs have significant numbers of cooking only customers who live in large apartment buildings and have no individual heating or hot water systems to convert. For these reasons, these customers cannot take advantage of natural gas efficiency programs, and, similar to the cost causation principles expressed above for large customers, these customers should be exempted from paying an efficiency surcharge.

Residential Customer Sub-Sets

According to the New York State Office of Mental Retardation and Developmental Disability (OMRDD), there are currently 36,000 disabled individuals living in ORMDD or not-for-profit private agency administered residential homes, totaling approximately 7,500 community residences across New York State. Uniform State guidance for the architects and builders who apply the LEED standard may help move the State efficiency goal forward further and faster. The possible need for additional residential disabled population housing, including clients of both OMRDD and the Office of Mental Health (OMH), must be addressed in the near future, and an efficiency standard for that housing should be folded into that planning. It is estimated that 1 in 150 births now results in a child later diagnosed with a form of autism. Natural gas efficiency programs targeted at agency administered residential homes can be very helpful, both in reducing costs to serve this population, but also to achieving a natural gas efficiency target.

It should be noted that these programs can be funded by means other than ratepayer contributions. It is possible that the Dormitory Authority of New York (DASNY) may raise private investor funds that can support energy efficiency efforts at disabled community housing. DASNY's equipment leasing program may have relevance to a residential disabled customer class pilot program. Additionally, funds may be obtained from the Department of Environmental Conservation's (DEC) violator penalties, which could be placed in an Energy Efficiency Benefit Fund, or from Regional Greenhouse Gas Initiative (RGGI) proceeds.

IX. Program Filings by Aministrators

In the 6/23 Order, the Commission envisioned a world in which efficiency programs would be administered not only by NYSERDA and utilities, but also by third parties. The Commission said the following on page 51: "We find that NYSERDA and utilities should be engaged as program administrators, and that the program design and resource acquisition processes should also be constructed to include opportunities for independent administrators that are capable of administering and delivering programs and that can be held accountable for results." WGV generally agrees that natural gas efficiency programs should be administered by both LDCs and NYSERDA, and that there is ample opportunity for independent administrators.

To assist in uniformity of review of proposed programs, the Commission also established a set of criteria by which proposals for program administrations would be evaluated in Appendix 3 of the 6/23 Order. In order to ensure consistency, WGV asserts that process should continue, and has adapted Appendix 3 of the 6/23 Order to natural gas efficiency programs.

Natural Gas Efficiency Program Selection Criteria

In the 6/23 Order, the Commission listed in Appendix 3 a set of screening metrics to be applied to electric efficiency proposals. We amend that listing here for use in comparing natural gas efficiency proposals.

Screening Metrics: Minimum to be Filed

For each program:

1. Total Resource Cost Test's Benefit-Cost Ratio:
   The benefits calculated in the TRC Test are the avoided supply costs, including the commodity costs and the interstate pipeline capacity costs. The program costs are those paid by the program administrator and participants. To the extent practical, the filing should include the total cost and associated commodity and capacity savings for each measure contained with the program.
2. Natural Gas Rate Impact:
   This metric provides the percentage increase in current delivery and overall rates associated with a particular program. The results should be provided on a levelized basis assuming a) the program continues to expand and extends through 2020 and b) the

program functions only for as long as proposed by its sponsor. The rate impact effect of avoided distribution costs should be clearly presented. Thus, rate impacts should be presented both with and without avoided distribution costs.

3. Natural Gas Rate Impact per Dt Saved:

   This metric provides the levelized rate impact per Dt saved, stated separately for delivery and overall rates, assuming a) the program continues to expand and extends through 2020 and b) the program functions only for as long as proposed by its sponsor.

4. Dt Saved in 2020:

   This metric reflects the amount of Dts saved in 2020 assuming a) the program continues to expand and extends through 2015 and b) the program functions only for as long as proposed by its sponsor.

5. Number of Participants as a Percentage of the Number of Customers in the Class as of 2015

6. Natural Gas Rate Impact as of the Year 2020:

   This metric reflects the percentage increase in rates caused by the suite of programs, assuming that it remains in place through 2020.

Appendix A

Spreadsheets in Support of Model

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

DEMAND FORECAST

SOURCE: LDC FILINGS

ERIN HOGAN

	NYS LDC Winter Supply Review				Using ICF 10/1/2008				
	Demand in Bcf				Total Bcf Demand[1]	Estimated Firm Demand	Estimated Firm Target		
Year	Firm	Non-Firm	Total[1]	% Firm		84%	5%	10%	15%
2007					868	726.9	36.35	72.69	109.04
2008					845	707.7	35.38	70.77	106.15
2009	681.1	152.5	813.3	84%	863	722.7	36.14	72.27	108.41
2010	687.3	152.7	819.5	84%	865	724.4	36.22	72.44	108.66
2011	693.1	152.8	825.2	84%	862	721.9	36.10	72.19	108.29
2012	698.8	153.0	831.0	84%	870	728.6	36.43	72.86	109.29
2013	701.4	153.0	833.6	84%	874	732.0	36.60	73.20	109.79
2014					879	736.1	36.81	73.61	110.42
2015					891	746.2	37.31	74.62	111.93
2016					902	755.4	37.77	75.54	113.31
2017					898	752.1	37.60	75.21	112.81
2018					901	754.6	37.73	75.46	113.19
2019					905	757.9	37.90	75.79	113.69
2020					912	763.8	38.19	76.38	114.57

NOTE 1: Firm and non-firm load, excluding generation.

NOTE 2: WSR forecasts are done on a November 1 to October 31 basis, therefore Staff assumed the 2008-2009 WSR forecast is approximately calendar year 2009.

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

LDC DATA

LDC	CALENDAR YEAR 2007						
	Total Operating Revenue	Firm Residential Margin	Firm Commercial & Industrial Margin	Total Residential Customers	Total Commercial & Industrial Customers	Firm Residential Throughput	Firm Commercial & Industrial Throughput
	($)	($)	($)			(dth)	(dth)
Central Hudson	$ 165,750,000	$ 29,433,623	$ 16,030,278	62,605	10,561	5,223,606	6,051,208
Con Edison	$ 1,788,377,000	$ 404,387,086	$ 175,538,118	940,672	118,810	63,696,634	46,879,684
Corning	$ 23,926,000	6,122,911	2,685,984	13,574	1,101	1,722,700	2,422,031
Orange & Rockland	$ 267,159,000	$ 57,912,757	$ 19,624,266	114,657	11,453	13,981,796	6,149,838
KEDLI[2]	$ 1,438,200,000	$ 270,438,123	$ 113,040,982	478,619	55,799	50,084,737	26,653,959
KEDNY[2]	$ 2,371,643,000	$ 485,945,256	$ 93,939,067	1,133,377	44,718	90,127,677	26,217,331
National Fuel	$ 1,159,337,000	$ 195,234,204	$ 59,555,661	479,576	34,081	51,550,571	41,429,080
National Grid	$ 885,061,000	$ 176,986,515	$ 64,450,563	525,846	45,682	51,269,699	45,631,925
NYSEG	$ 470,317,000	$ 92,863,151	$ 38,868,885	225,749	26,786	23,635,140	26,874,781
RG&E	$ 421,487,000	$ 94,112,579	$ 26,553,346	273,882	22,589	27,244,390	23,609,310
St. Lawrence	$ 47,831,000	$ 5,222,528.0	$ 6,564,634.0	13,780	1,657	1,616,320	8,066,738
	$ 9,039,088,000	$ 1,818,658,734	$ 616,851,785	4,262,336	373,237	380,153,269	259,985,885
						59.4%	40.6%

	Firm Margin	Firm Throughput	Rate
	($)	(dth)	($/dth)
Lost Revenue Rate	$ 2,435,510,518	640,139,153	$ 3.80

Note 1: Multifamily margin, customers and throughput are counted in the residential categories, however some LDCs consider multifamily EE programs as commercial in nature.

Note 2: Due to system limitations, KEDLI & KEDNY dollars are reported as total revenue, so DPS Staff estimated the margin based on the last rate filing.

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

EXISTING ENERGY EFFICIENCY PROGRAM SUMMARY

SOURCE: HOGAN/NEVILLE STEVE NADEL LDC FILINGS LDC/NYSERDA FILINGS

YEAR	SBC III	AUTHORITIES	CODES/STRDS	FAST TRACK		EXISTING LDC/NYSERDA TOTAL		TOTAL	
	(Bcf)	(Bcf)	(Bcf)	(Bcf)	($)	(Bcf)	($)	(Bcf)	($)
2007	0	-	0	0.00	$ -	-	$ 5,250,000	-	$ 5,250,000
2008	0.659	0.7	0	0.00	$ -	0.90	$ 47,064,858	2.2	$ 47,064,858
2009	1.318	1.3	0.30	1.18	$ 7,363,644	2.49	$ 66,943,247	6.6	$ 74,306,891
2010	1.977	2.0	0.66	2.36	$ 7,442,648	2.49	$ -	9.5	$ 7,442,648
2011	2.636	2.6	2.62	3.54	$ 7,563,001	2.49	$ -	13.9	$ 7,563,001
2012	2.636	3.3	5.23	3.54	$ -	2.49	$ -	17.2	$ -
2013	2.636	4.0	8.27	3.54	$ -	2.49	$ -	20.9	$ -
2014	2.636	4.6	11.47	3.54	$ -	2.49	$ -	24.8	$ -
2015	2.636	5.3	14.85	3.54	$ -	2.49	$ -	28.8	$ -
2016	2.636	5.8	19.28	3.54	$ -	2.49	$ -	33.8	$ -
2017	2.636	6.4	23.71	3.54	$ -	2.49	$ -	38.8	$ -
2018	2.636	7.0	28.13	3.54	$ -	2.49	$ -	43.9	$ -
2019	2.636	7.8	32.56	3.54	$ -	2.49	$ -	49.0	$ -
2020	2.636	8.5	36.99	3.54	$ -	2.49	$ -	54.2	$ -
Percent of Firm Demand Saved in 2020	0.35%	1.12%	4.84%	0.46%		0.33%		7.09%	

Lost Revenues per Year $ 4,602,996 @ 2010 $ 6,212,648

Only for the purpose of setting a statewide goal, assume SBC III and fast track funding will end 2011 and existing LDC/NYSERDA administered programs end 2009.

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

STATEWIDE FUNDING ALLOCATION

STATEWIDE FUNDING **$ 80,000,000**

SERVICE TERRITORY	2007 FIRM LOAD	ALLOCATION	LDC/NYSERDA FUNDING PER SERVICE TERRITORY	EXISTING FUNDING AT 2010	INCREMENTAL FUNDING REQUIRED TO SCALE SERVICE TERRITORY FUNDING UP TO STATEWIDE FUNDING	TOTAL STATEWIDE FUNDING
Central Hudson	11,274,814	1.76%	$ 1,409,045	$ 307,501	$ 1,101,544	
Con Edison	110,576,318	17.27%	$ 13,819,035	$ 28,272,679	$ -	
Corning	4,144,731	0.65%	$ 517,979	$ 148,647	$ 369,332	
Orange & Rockland	20,131,634	3.14%	$ 2,515,907	$ 467,019	$ 2,048,888	
KEDLI	76,738,696	11.99%	$ 9,590,252	$ 10,815,103	$ -	
KEDNY	116,345,008	18.17%	$ 14,539,965	$ 21,262,254	$ -	
National Fuel	92,979,651	14.52%	$ 11,619,930	$ 7,400,000	$ 4,219,930	
National Grid	96,901,623	15.14%	$ 12,110,070	$ 1,959,811	$ 10,150,259	
NYSEG	50,509,921	7.89%	$ 6,312,368	$ 1,043,319	$ 5,269,049	
RG&E	50,853,699	7.94%	$ 6,355,331	$ 1,000,540	$ 5,354,791	
St. Lawrence	9,683,058	1.51%	$ 1,210,119	$ 103,766	$ 1,106,353	
Total	640,139,153		**$ 80,000,000**	**$ 72,780,639**	$ 29,620,146	**$ 102,400,785**

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

STATEWIDE FUNDING ALLOCATION

STATEWIDE FUNDING **$ 120,000,000**

SERVICE TERRITORY	2007 FIRM LOAD	ALLOCATION	LDC/NYSERDA FUNDING PER SERVICE TERRITORY	EXISTING FUNDING AT 2010	INCREMENTAL FUNDING REQUIRED TO SCALE SERVICE TERRITORY FUNDING UP TO STATEWIDE FUNDING	TOTAL STATEWIDE FUNDING
Central Hudson	11,274,814	1.76%	$ 2,113,568	$ 307,501	$ 1,806,067	
Con Edison	110,576,318	17.27%	$ 20,728,553	$ 28,272,679	$ -	
Corning	4,144,731	0.65%	$ 776,968	$ 148,647	$ 628,321	
Orange & Rockland	20,131,634	3.14%	$ 3,773,861	$ 467,019	$ 3,306,842	
KEDLI	76,738,696	11.99%	$ 14,385,378	$ 10,815,103	$ 3,570,275	
KEDNY	116,345,008	18.17%	$ 21,809,947	$ 21,262,254	$ 547,693	
National Fuel	92,979,651	14.52%	$ 17,429,895	$ 7,400,000	$ 10,029,895	
National Grid	96,901,623	15.14%	$ 18,165,105	$ 1,959,811	$ 16,205,294	
NYSEG	50,509,921	7.89%	$ 9,468,551	$ 1,043,319	$ 8,425,232	
RG&E	50,853,699	7.94%	$ 9,532,996	$ 1,000,540	$ 8,532,456	
St. Lawrence	9,683,058	1.51%	$ 1,815,179	$ 103,766	$ 1,711,413	
Total	640,139,153		**$ 120,000,000**	**$ 72,780,639**	$ 54,763,487	**$ 127,544,126**

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

STATEWIDE FUNDING ALLOCATION

STATEWIDE FUNDING **$ 160,000,000**

SERVICE TERRITORY	2007 FIRM LOAD	ALLOCATION	LDC/NYSERDA FUNDING PER SERVICE TERRITORY	EXISTING FUNDING AT 2010	INCREMENTAL FUNDING REQUIRED TO SCALE SERVICE TERRITORY FUNDING UP TO STATEWIDE FUNDING	TOTAL STATEWIDE FUNDING
Central Hudson	11,274,814	1.76%	$ 2,818,091	$ 307,501	$ 2,510,590	
Con Edison	110,576,318	17.27%	$ 27,638,070	$ 28,272,679	$ -	
Corning	4,144,731	0.65%	$ 1,035,958	$ 148,647	$ 887,311	
Orange & Rockland	20,131,634	3.14%	$ 5,031,815	$ 467,019	$ 4,564,796	
KEDLI	76,738,696	11.99%	$ 19,180,504	$ 10,815,103	$ 8,365,401	
KEDNY	116,345,008	18.17%	$ 29,079,929	$ 21,262,254	$ 7,817,675	
National Fuel	92,979,651	14.52%	$ 23,239,860	$ 7,400,000	$ 15,839,860	
National Grid	96,901,623	15.14%	$ 24,220,140	$ 1,959,811	$ 22,260,329	
NYSEG	50,509,921	7.89%	$ 12,624,735	$ 1,043,319	$ 11,581,416	
RG&E	50,853,699	7.94%	$ 12,710,661	$ 1,000,540	$ 11,710,121	
St. Lawrence	9,683,058	1.51%	$ 2,420,238	$ 103,766	$ 2,316,472	
Total	640,139,153		**$ 160,000,000**	**$ 72,780,639**	$ 87,853,970	**$ 160,634,609**

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

LOW SUITE PROVIDED BY KEYSPAN

Total		$	80,000,000
Residential	39.4%	$	31,508,829
Low Income	20.0%	$	16,000,000
Commercial	40.6%	$	32,491,171

Program Name	Target Sector	ANNUAL DOLLARS	ANNUAL SAVINGS (th)	SAVINGS PER DOLLAR	Allocation of Dollars to Programs	Program Funding	Estimated Savings (th)
		A	B	C=B/A	D	E	F=CxE
ENERGY STAR Homes	Residential - Gas	$367,130	49,320	0.134339	4.7%	$ 1,476,269	198,321.11
High Efficiency Heating & Water Heating Rebate (combined)	Residential - Gas	$3,767,764	415,090	0.110169	48.1%	$ 15,150,590	1,669,122.22
Insulation & Air Sealing	Residential - Gas	$2,251,348	264,960	0.117689	28.7%	$ 9,052,917	1,065,433.09
Energy Star Products	Residential - Gas	$100,000	12,112	0.121122	1.3%	$ 402,111	48,704.48
	Residential - Gas	$1,349,613	11880	0.008803	17.2%	$ 5,426,942	47,770.78
Low-Income	Low-Income - Gas	$8,837,266	694,058	0.078538	100%	$ 16,000,000	1,256,602.95
C&I and Multifamily High Efficiency Heating Rebate	Commercial - Gas	$1,512,994	429,840	0.284099	11.7%	$ 3,807,235	1,081,631.37
C&I Building Practices & Demonstrations	Commercial - Gas	$849,913	192,088	0.226009	6.6%	$ 2,138,685	483,361.69
Multi-Family & C&I Energy Efficiency (combined)	Commercial - Gas	$10,549,075	2,121,381	0.201096	81.7%	$ 26,545,251	5,338,154.28
TOTAL		$ 29,585,103	4,190,729			$ 80,000,000	**11,189,102** th

Based on 2009 budget year; excludes Residential Builing practices & demonstration program

1.09 Bcf

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

LOW SUITE PROVIDED BY KEYSPAN

Total		$	120,000,000
Residential	39.4%	$	47,263,243
Low Income	20.0%	$	24,000,000
Commercial	40.6%	$	48,736,757

Program Name	Target Sector	ANNUAL DOLLARS	ANNUAL SAVINGS (th)	SAVINGS PER DOLLAR	Allocation of Dollars to Programs	Program Funding	Estimated Savings (th)
		A	B	C=B/A	D	E	F=CxE
ENERGY STAR Homes	Residential - Gas	$367,130	49,320	0.134339	4.7%	$ 2,214,403	297,481.66
High Efficiency Heating & Water Heating Rebate (combined)	Residential - Gas	$3,767,764	415,090	0.110169	48.1%	$ 22,725,886	2,503,683.33
Insulation & Air Sealing	Residential - Gas	$2,251,348	264,960	0.117689	28.7%	$ 13,579,376	1,598,149.64
Energy Star Products	Residential - Gas	$100,000	12,112	0.121122	1.3%	$ 603,166	73,056.72
	Residential - Gas	$1,349,613	11880	0.008803	17.2%	$ 8,140,412	71,656.17
Low-Income	Low-Income - Gas	$8,837,266	694,058	0.078538	100%	$ 24,000,000	1,884,904.42
C&I and Multifamily High Efficiency Heating Rebate	Commercial - Gas	$1,512,994	429,840	0.284099	11.7%	$ 5,710,852	1,622,447.05
C&I Building Practices & Demonstrations	Commercial - Gas	$849,913	192,088	0.226009	6.6%	$ 3,208,028	725,042.53
Multi-Family & C&I Energy Efficiency (combined)	Commercial - Gas	$10,549,075	2,121,381	0.201096	81.7%	$ 39,817,876	8,007,231.41
TOTAL		$ 29,585,103	4,190,729			$ 120,000,000	**16,783,653** th

Based on 2009 budget year; excludes Residential Builing practices & demonstration program

1.64 Bcf

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

LOW SUITE PROVIDED BY KEYSPAN

Total		$	160,000,000
Residential	39.4%	$	63,017,658
Low Income	20.0%	$	32,000,000
Commercial	40.6%	$	64,982,342

Program Name	Target Sector	ANNUAL DOLLARS	ANNUAL SAVINGS (th)	SAVINGS PER DOLLAR	Allocation of Dollars to Programs	Program Funding	Estimated Savings (th)
		A	B	C=B/A	D	E	F=CxE
ENERGY STAR Homes	Residential - Gas	$367,130	49,320	0.134339	4.7%	$ 2,952,537	396,642.21
High Efficiency Heating & Water Heating Rebate (combined)	Residential - Gas	$3,767,764	415,090	0.110169	48.1%	$ 30,301,181	3,338,244.44
Insulation & Air Sealing	Residential - Gas	$2,251,348	264,960	0.117689	28.7%	$ 18,105,835	2,130,866.19
Energy Star Products	Residential - Gas	$100,000	12,112	0.121122	1.3%	$ 804,222	97,408.96
	Residential - Gas	$1,349,613	11880	0.008803	17.2%	$ 10,853,883	95,541.55
Low-Income	Low-Income - Gas	$8,837,266	694,058	0.078538	100%	$ 32,000,000	2,513,205.90
C&I and Multifamily High Efficiency Heating Rebate	Commercial - Gas	$1,512,994	429,840	0.284099	11.7%	$ 7,614,469	2,163,262.74
C&I Building Practices & Demonstrations	Commercial - Gas	$849,913	192,088	0.226009	6.6%	$ 4,277,371	966,723.37
Multi-Family & C&I Energy Efficiency (combined)	Commercial - Gas	$10,549,075	2,121,381	0.201096	81.7%	$ 53,090,502	10,676,308.55
TOTAL		$ 29,585,103	4,190,729			$ 160,000,000	**22,378,204** th

Based on 2009 budget year; excludes Residential Builing practices & demonstration program

2.18 Bcf

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

MEDIUM SUITE - OPTIMAL $80 MILLION PROGRAM SCENARIO

Total		$	80,000,000
Residential	39.4%	$	31,508,829
Low Income	20.0%	$	16,000,000
Commercial	40.6%	$	32,491,171

Program Name	Target Sector	ANNUAL DOLLARS	ANNUAL SAVINGS (th)	SAVINGS PER DOLLAR	Allocation of Dollars to Programs	Program Funding	Estimated Savings (th)
		A	B	C=B/A	D	E	F=CxE
Residential	Residential - Gas	$ 15,829,000	5,797,636	0.366267	100.0%	$ 31,508,829	11,540,636.31
Low Income	Low-Income - Gas	$ 15,791,700	1,520,000	0.096253	100.0%	$ 16,000,000	1,540,049.52
Commercial	Commercial - Gas	$ 47,415,400	21,636,909	0.456327	100.0%	$ 32,491,171	14,826,586.21
TOTAL		$ 79,036,100	28,954,545			$ 80,000,000	27,907,272.04 therms

2.72 Bcf

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

MEDIUM SUITE - OPTIMAL $80 MILLION PROGRAM SCENARIO

Total		$	120,000,000
Residential	39.4%	$	47,263,243
Low Income	20.0%	$	24,000,000
Commercial	40.6%	$	48,736,757

Program Name	Target Sector	ANNUAL DOLLARS	ANNUAL SAVINGS (th)	SAVINGS PER DOLLAR	Allocation of Dollars to Programs	Program Funding	Estimated Savings (th)
		A	B	C=B/A	D	E	F=CxE
Residential	Residential - Gas	$ 15,829,000	5,797,636	0.366267	100.0%	$ 47,263,243	17,310,954.46
Low Income	Low-Income - Gas	$ 15,791,700	1,520,000	0.096253	100.0%	$ 24,000,000	2,310,074.28
Commercial	Commercial - Gas	$ 47,415,400	21,636,909	0.456327	100.0%	$ 48,736,757	22,239,879.31
TOTAL		$ 79,036,100	28,954,545			$ 120,000,000	41,860,908.05 therms

4.08 Bcf

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

MEDIUM SUITE - OPTIMAL $80 MILLION PROGRAM SCENARIO

Total		$	160,000,000
Residential	39.4%	$	63,017,658
Low Income	20.0%	$	32,000,000
Commercial	40.6%	$	64,982,342

Program Name	Target Sector	ANNUAL DOLLARS	ANNUAL SAVINGS (th)	SAVINGS PER DOLLAR	Allocation of Dollars to Programs	Program Funding	Estimated Savings (th)	
		A	B	C=B/A	D	E	F=CxE	
Residential	Residential - Gas	$ 15,829,000	5,797,636	0.366267	100.0%	$ 63,017,658	23,081,272.61	
Low Income	Low-Income - Gas	$ 15,791,700	1,520,000	0.096253	100.0%	$ 32,000,000	3,080,099.04	
Commercial	Commercial - Gas	$ 47,415,400	21,636,909	0.456327	100.0%	$ 64,982,342	29,653,172.42	
TOTAL		$ 79,036,100	28,954,545			$ 160,000,000	55,814,544.07	therms

5.45 Bcf

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

HIGH SUITE - NYSERDA 90 FILING: Gas Efficency Programs Coordinated with SBC -Electric

Total		$	80,000,000
Residential	39.4%	$	31,508,829
Low Income	20.0%	$	16,000,000
Commercial	40.6%	$	32,491,171

Program Name	Target Sector	ANNUAL DOLLARS	ANNUAL SAVINGS (MMBTU)	ANNUAL SAVINGS (th)	DOLLAR PER THERM	THERM SAVINGS PER DOLLAR	Allocation of Dollars to Programs	Program Funding	Estimated Savings (th)
Res Energy Star Homes	Residential - Gas	$9,132,576	302,656	3,026,563	$3.02	0.331403	24.6%	$ 7,739,180	2,564,787.60
Green Homes	Residential - Gas	$2,282,652	11763	117,633	$19.40	0.051534	6.14%	$ 1,934,378	99,685.51
Home Performance with Energy Star	Residential - Gas	$16,346,591	231,323	2,313,227	$7.07	0.141511	44.0%	$ 13,852,521	1,960,287.76
Multifamily Performance Program	Residential - Gas	$9,420,000	202,722	2,027,220	$4.65	0.215204	25.3%	$ 7,982,750	1,717,918.36
Assisted Home Performance with Energy Star	Low-Income - Gas	$18,454,502	147,398	1,473,980	$12.52	0.079871	42.9%	$ 6,869,631	548,684.43
EmPower New York	Low-Income - Gas	$10,397,727	91,440	914,400	$11.37	0.087942	24.2%	$ 3,870,521	340,382.53
Multifamily Performance Program - LI	Low-Income - Gas	$14,130,000	206,218	2,062,180	$6.85	0.145943	32.9%	$ 5,259,848	767,640.03
Advanced Burners	Commercial - Gas	$2,272,727	200,000	2,000,000	$1.14	0.880000	8.7%	$ 2,830,775	2,491,082.28
Existing Facilities	Commercial - Gas	$3,965,909	350,000	3,500,000	$1.13	0.882521	15.2%	$ 4,939,703	4,359,394.00
Flex Tech Expansion	Commercial - Gas	$997,348	219,402	2,194,023	$0.45	2.199856	3.8%	$ 1,242,239	2,732,746.33
Industrial Process and Efficiency	Commercial - Gas	$11,769,318	1,150,765	11,507,650	$1.02	0.977767	45.1%	$ 14,659,170	14,333,251.52
Institutional Block RFP (Bidding Program)	Commercial - Gas	$969,000	70000	700,000	$1.38	0.722394	3.71%	$ 1,206,929	871,878.80
Loan Fund	Commercial - Gas	$538,200	90854	908,540	$0.59	1.688109	2.06%	$ 670,350	1,131,623.95
New Construction	Commercial - Gas	$4,209,848	381914	3,819,140	$1.10	0.907192	16.14%	$ 5,243,539	4,756,896.00
Solar Thermal	Commercial - Gas	$227,273	420	4,200	$54.11	0.018480	0.87%	$ 283,078	5,231.27
Waste Energy Recovery	Commercial - Gas	$1,136,364	40000	400,000	$2.84	0.352000	4.36%	$ 1,415,388	498,216.46
TOTAL		$106,250,036	3,696,876	36,968,757	$2.87	0.347941		$ 80,000,000	**39,179,707** therms

*these are fully loaded annual budgets which include 5% for MV&E

3.82 Bcf

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

HIGH SUITE - NYSERDA 90 FILING: Gas Efficency Programs Coordinated with SBC -Electric

Total		$	120,000,000
Residential	39.4%	$	47,263,243
Low Income	20.0%	$	24,000,000
Commercial	40.6%	$	48,736,757

Program Name	Target Sector	ANNUAL DOLLARS	ANNUAL SAVINGS (MMBTU)	ANNUAL SAVINGS (th)	DOLLAR PER THERM	THERM SAVINGS PER DOLLAR	Allocation of Dollars to Programs	Program Funding	Estimated Savings (th)
Res Energy Star Homes	Residential - Gas	$9,132,576	302,656	3,026,563	$3.02	0.331403	24.6%	$ 11,608,769	3,847,181.40
Green Homes	Residential - Gas	$2,282,652	11763	117,633	$19.40	0.051534	6.14%	$ 2,901,566	149,528.27
Home Performance with Energy Star	Residential - Gas	$16,346,591	231,323	2,313,227	$7.07	0.141511	44.0%	$ 20,778,782	2,940,431.65
Multifamily Performance Program	Residential - Gas	$9,420,000	202,722	2,027,220	$4.65	0.215204	25.3%	$ 11,974,125	2,576,877.54
Assisted Home Performance with Energy Star	Low-Income - Gas	$18,454,502	147,398	1,473,980	$12.52	0.079871	42.9%	$ 10,304,446	823,026.64
EmPower New York	Low-Income - Gas	$10,397,727	91,440	914,400	$11.37	0.087942	24.2%	$ 5,805,782	510,573.79
Multifamily Performance Program - LI	Low-Income - Gas	$14,130,000	206,218	2,062,180	$6.85	0.145943	32.9%	$ 7,889,772	1,151,460.05
Advanced Burners	Commercial - Gas	$2,272,727	200,000	2,000,000	$1.14	0.880000	8.7%	$ 4,246,163	3,736,623.42
Existing Facilities	Commercial - Gas	$3,965,909	350,000	3,500,000	$1.13	0.882521	15.2%	$ 7,409,554	6,539,090.99
Flex Tech Expansion	Commercial - Gas	$997,348	219,402	2,194,023	$0.45	2.199856	3.8%	$ 1,863,358	4,099,119.49
Industrial Process and Efficiency	Commercial - Gas	$11,769,318	1,150,765	11,507,650	$1.02	0.977767	45.1%	$ 21,988,755	21,499,877.28
Institutional Block RFP (Bidding Program)	Commercial - Gas	$969,000	70000	700,000	$1.38	0.722394	3.71%	$ 1,810,394	1,307,818.20
Loan Fund	Commercial - Gas	$538,200	90854	908,540	$0.59	1.688109	2.06%	$ 1,005,525	1,697,435.92
New Construction	Commercial - Gas	$4,209,848	381914	3,819,140	$1.10	0.907192	16.14%	$ 7,865,309	7,135,343.99
Solar Thermal	Commercial - Gas	$227,273	420	4,200	$54.11	0.018480	0.87%	$ 424,616	7,846.91
Waste Energy Recovery	Commercial - Gas	$1,136,364	40000	400,000	$2.84	0.352000	4.36%	$ 2,123,081	747,324.68
TOTAL		$106,250,036	3,696,876	36,968,757	$2.87	0.347941		$ 120,000,000	**58,769,560** therms

*these are fully loaded annual budgets which include 5% for MV&E

5.73 Bcf

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

HIGH SUITE - NYSERDA 90 FILING: Gas Efficency Programs Coordinated with SBC -Electric

Total		$	160,000,000
Residential	39.4%	$	63,017,658
Low Income	20.0%	$	32,000,000
Commercial	40.6%	$	64,982,342

Program Name	Target Sector	ANNUAL DOLLARS	ANNUAL SAVINGS (MMBTU)	ANNUAL SAVINGS (th)	DOLLAR PER THERM	THERM SAVINGS PER DOLLAR	Allocation of Dollars to Programs	Program Funding	Estimated Savings (th)
Res Energy Star Homes	Residential - Gas	$9,132,576	302,656	3,026,563	$3.02	0.331403	24.6%	$ 15,478,359	5,129,575.20
Green Homes	Residential - Gas	$2,282,652	11763	117,633	$19.40	0.051534	6.14%	$ 3,868,755	199,371.02
Home Performance with Energy Star	Residential - Gas	$16,346,591	231,323	2,313,227	$7.07	0.141511	44.0%	$ 27,705,043	3,920,575.53
Multifamily Performance Program	Residential - Gas	$9,420,000	202,722	2,027,220	$4.65	0.215204	25.3%	$ 15,965,500	3,435,836.72
Assisted Home Performance with Energy Star	Low-Income - Gas	$18,454,502	147,398	1,473,980	$12.52	0.079871	42.9%	$ 13,739,261	1,097,368.85
EmPower New York	Low-Income - Gas	$10,397,727	91,440	914,400	$11.37	0.087942	24.2%	$ 7,741,043	680,765.06
Multifamily Performance Program - LI	Low-Income - Gas	$14,130,000	206,218	2,062,180	$6.85	0.145943	32.9%	$ 10,519,696	1,535,280.06
Advanced Burners	Commercial - Gas	$2,272,727	200,000	2,000,000	$1.14	0.880000	8.7%	$ 5,661,551	4,982,164.57
Existing Facilities	Commercial - Gas	$3,965,909	350,000	3,500,000	$1.13	0.882521	15.2%	$ 9,879,406	8,718,787.99
Flex Tech Expansion	Commercial - Gas	$997,348	219,402	2,194,023	$0.45	2.199856	3.8%	$ 2,484,477	5,465,492.65
Industrial Process and Efficiency	Commercial - Gas	$11,769,318	1,150,765	11,507,650	$1.02	0.977767	45.1%	$ 29,318,340	28,666,503.03
Institutional Block RFP (Bidding Program)	Commercial - Gas	$969,000	70000	700,000	$1.38	0.722394	3.71%	$ 2,413,859	1,743,757.60
Loan Fund	Commercial - Gas	$538,200	90854	908,540	$0.59	1.688109	2.06%	$ 1,340,700	2,263,247.90
New Construction	Commercial - Gas	$4,209,848	381914	3,819,140	$1.10	0.907192	16.14%	$ 10,487,079	9,513,791.99
Solar Thermal	Commercial - Gas	$227,273	420	4,200	$54.11	0.018480	0.87%	$ 566,155	10,462.55
Waste Energy Recovery	Commercial - Gas	$1,136,364	40000	400,000	$2.84	0.352000	4.36%	$ 2,830,775	996,432.91
TOTAL		$106,250,036	3,696,876	36,968,757	$2.87	0.347941		$ 160,000,000	**78,359,414** therms

*these are fully loaded annual budgets which include 5% for MV&E

7.64 Bcf

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

STATEWIDE SUITE SUMMARY

Bcf

Year	LDC/NYSERDA ADMIN 80,000,000			LDC/NYSERDA ADMIN 120,000,000			LDC/NYSERDA ADMIN 160,000,000		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
2007	-	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-	-
2009	1.09	2.7	3.82	1.64	4.1	5.73	2.18	5.4	7.64
2010	2.18	5.4	7.64	3.27	8.2	11.47	4.37	10.9	15.29
2011	3.27	8.2	11.47	4.91	12.3	17.20	6.55	16.3	22.93
2012	4.37	10.9	15.29	6.55	16.3	22.93	8.73	21.8	30.58
2013	5.46	13.6	19.11	8.19	20.4	28.67	10.92	27.2	38.22
2014	6.55	16.3	22.93	9.82	24.5	34.40	13.10	32.7	45.87
2015	7.64	19.1	26.76	11.46	28.6	40.14	15.28	38.1	53.51
2016	8.73	21.8	30.58	13.10	32.7	45.87	17.47	43.6	61.16
2017	9.82	24.5	34.40	14.74	36.8	51.60	19.65	49.0	68.80
2018	10.92	27.2	38.22	16.37	40.8	57.34	21.83	54.5	76.45
2019	12.01	29.9	42.05	18.01	44.9	63.07	24.02	59.9	84.09
2020	13.10	32.7	45.87	19.65	49.0	68.80	26.20	65.3	91.74
2020 Suite Savings	13.10	32.67	45.87	19.65	49.01	68.80	26.20	65.34	91.74
% of Firm Demand	1.72%	4.28%	6.01%	2.57%	6.42%	9.01%	3.43%	8.56%	12.01%
Lost Revenues	$ 4,257,071	$ 10,617,762	$ 14,906,538	$ 6,385,606	$ 15,926,644	$ 22,359,807	$ 8,514,141	$ 21,235,525	$ 29,813,077
2020 Total Savings	67.29	86.86	100.06	73.84	103.19	122.99	80.39	119.53	145.92
% of Firm Demand	8.81%	11.37%	13.10%	9.67%	13.51%	16.10%	10.52%	15.65%	19.11%

Only for the purpose of setting the statewide goal, assume LDC/NYSERDA programs run until the end of 2009.

Energy Efficiency Portfolio Standard Case 07-M-0548

Working Group 5

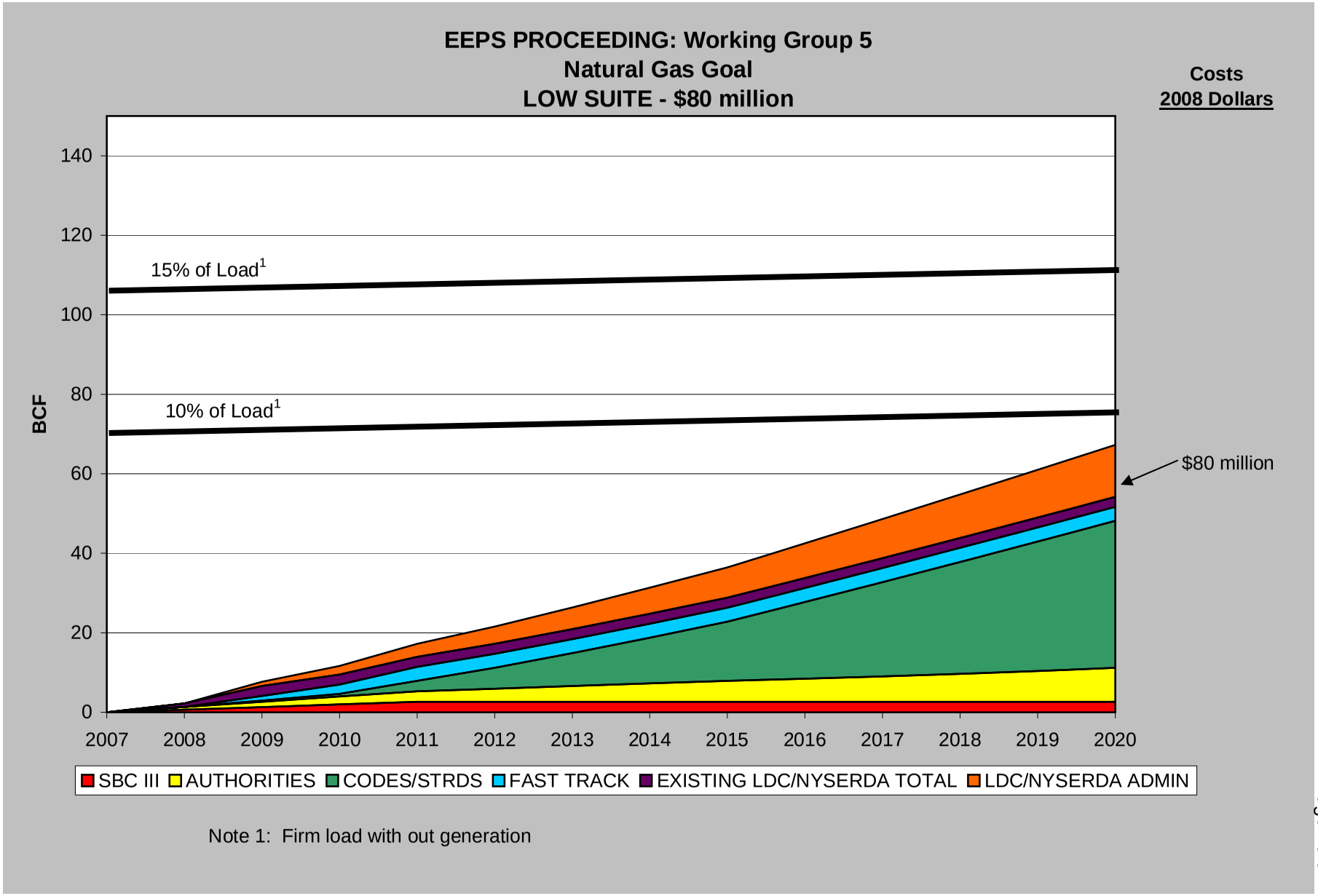
Matrix

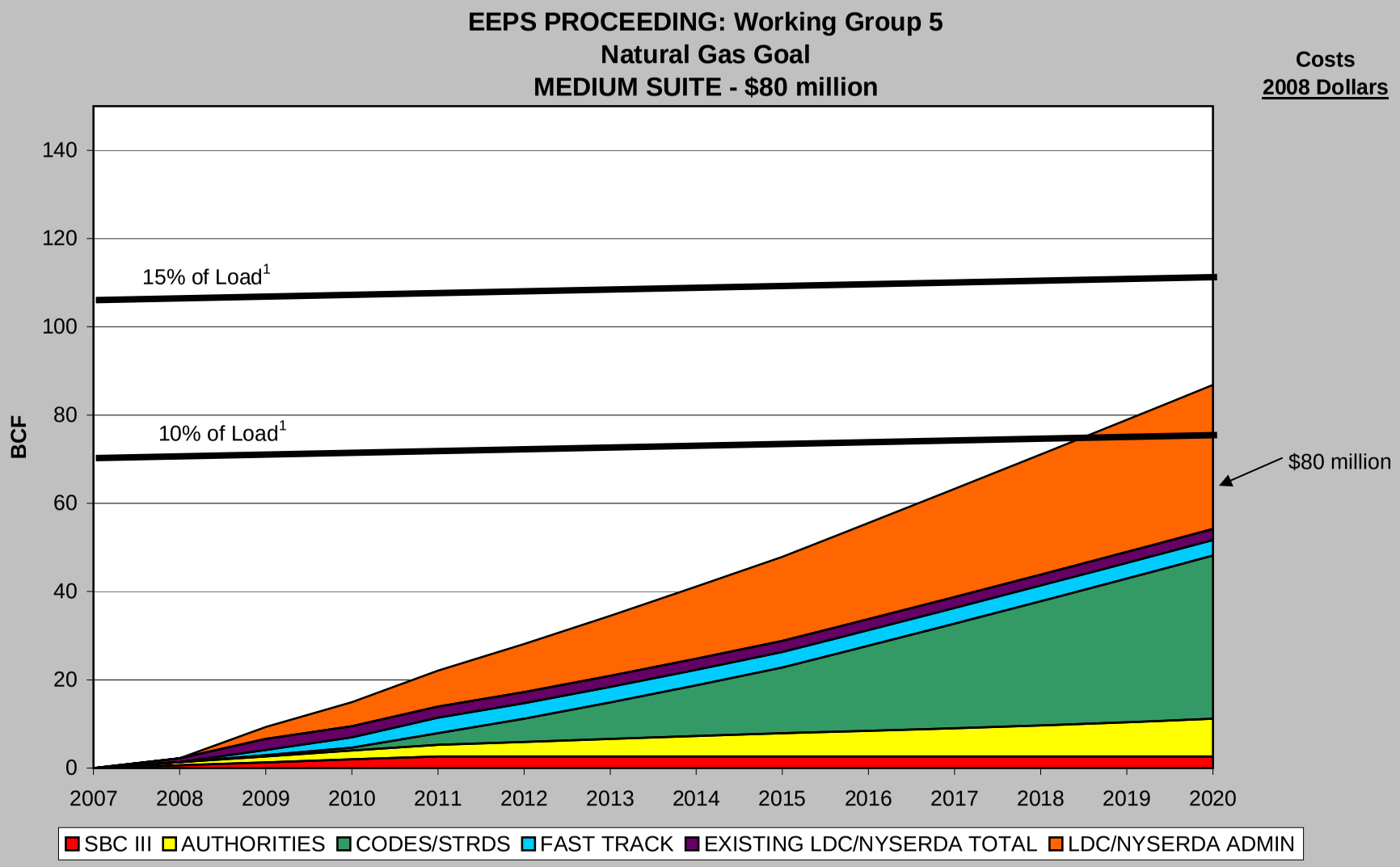
Annual Spending Level	Allocations Res	Allocations LI	Allocations C&I	Program Suite	Savings in 2020 Suite	Savings in 2020 Total	Estimated Annual Lost Revenue	Bill Impact[1] Delivery	Bill Impact[1] Total
				Low	1.72%	8.81%	$ 4,257,071	3.5%	0.93%
$ 80,000,000	39.4%	20.0%	40.6%	Med	4.28%	11.37%	$ 10,617,762	3.7%	1.00%
				High	6.01%	13.10%	$ 14,906,538	3.9%	1.05%
				Low	1.69%	8.79%	$ 4,203,485	3.5%	0.93%
$ 80,000,000	29.4%	30.0%	40.6%	Med	3.95%	11.04%	$ 9,795,915	3.7%	0.99%
				High	5.89%	12.98%	$ 14,609,001	3.9%	1.05%
				Low	2.57%	9.67%	$ 6,385,606	5.2%	1.40%
$ 120,000,000	39.4%	20.0%	40.6%	Med	6.42%	13.51%	$ 15,926,644	5.6%	1.50%
				High	9.01%	16.10%	$ 22,359,807	5.8%	1.57%
				Low	3.43%	10.52%	$ 8,514,141	6.9%	1.86%
$ 160,000,000	39.4%	20.0%	40.6%	Med	8.56%	15.65%	$ 21,235,525	7.4%	2.01%
				High	12.01%	19.11%	$ 29,813,077	7.8%	2.10%

TOTAL SAVINGS IN 2020 INCLUDE	
SBC III	0.35%
Authorities	1.12%
Codes & Strds	4.84%
Fast Track	0.46%
Existing Programs to 2009	0.33%
Total	7.09%

Note 1: Bill impacts consider an estimated amount of lost revenue which would be recovered through each LDC's Revenue Decoupling Mechanism.

Note 2: Only for the purpose of setting the statewide goal, assume LDC/NYSERDA programs run until the end of 2009.


EEPS PROCEEDING: Working Group 5
Natural Gas Goal
LOW SUITE - $80 million
Costs
2008 Dollars
BCF
140
120
100
80
60
40
20
0
15% of Load1
10% of Load1
$80 million
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
SBC III
AUTHORITIES
CODES/STRDS
FAST TRACK
EXISTING LDC/NYSERDA TOTAL
LDC/NYSERDA ADMIN
Note 1: Firm load with out generation



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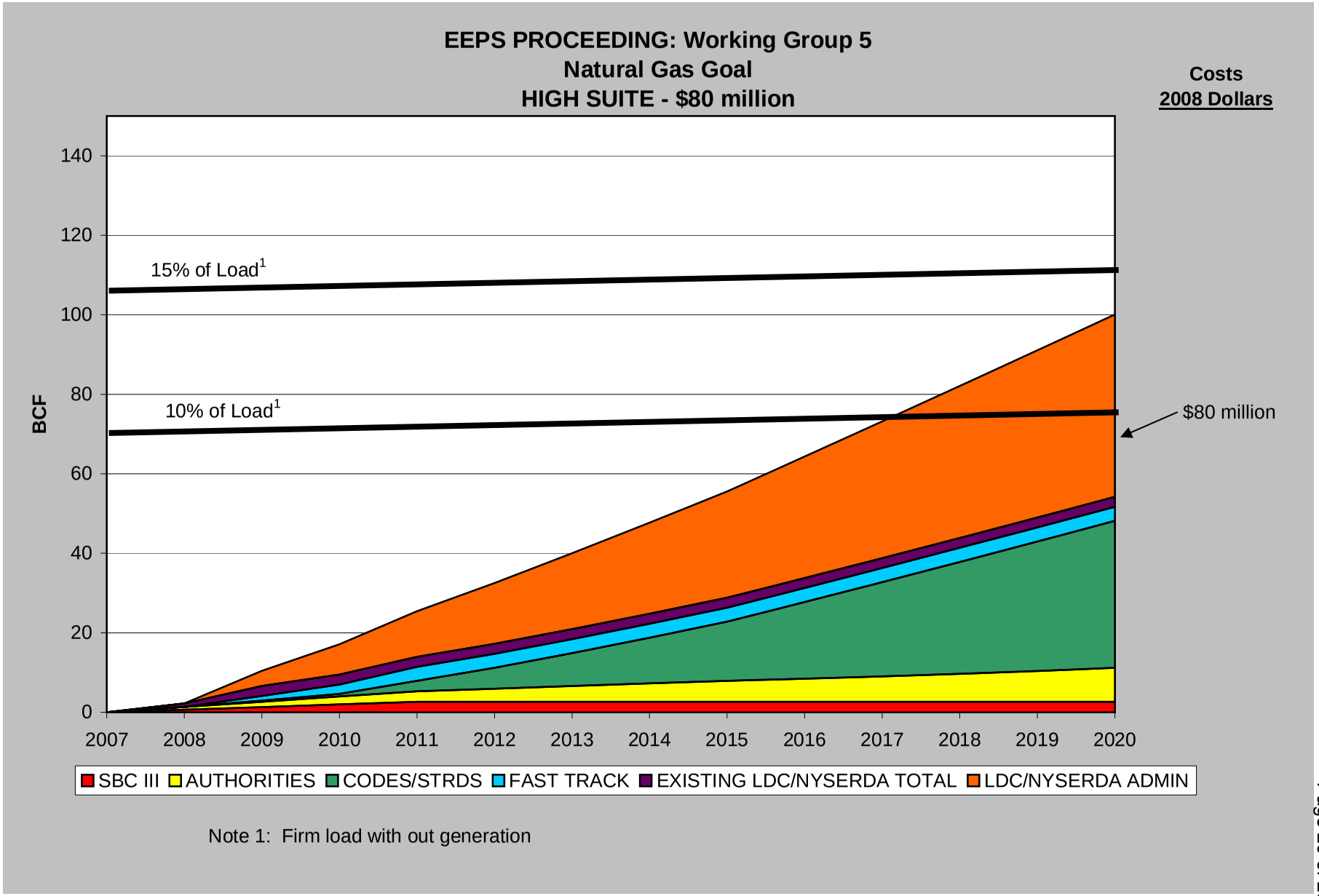
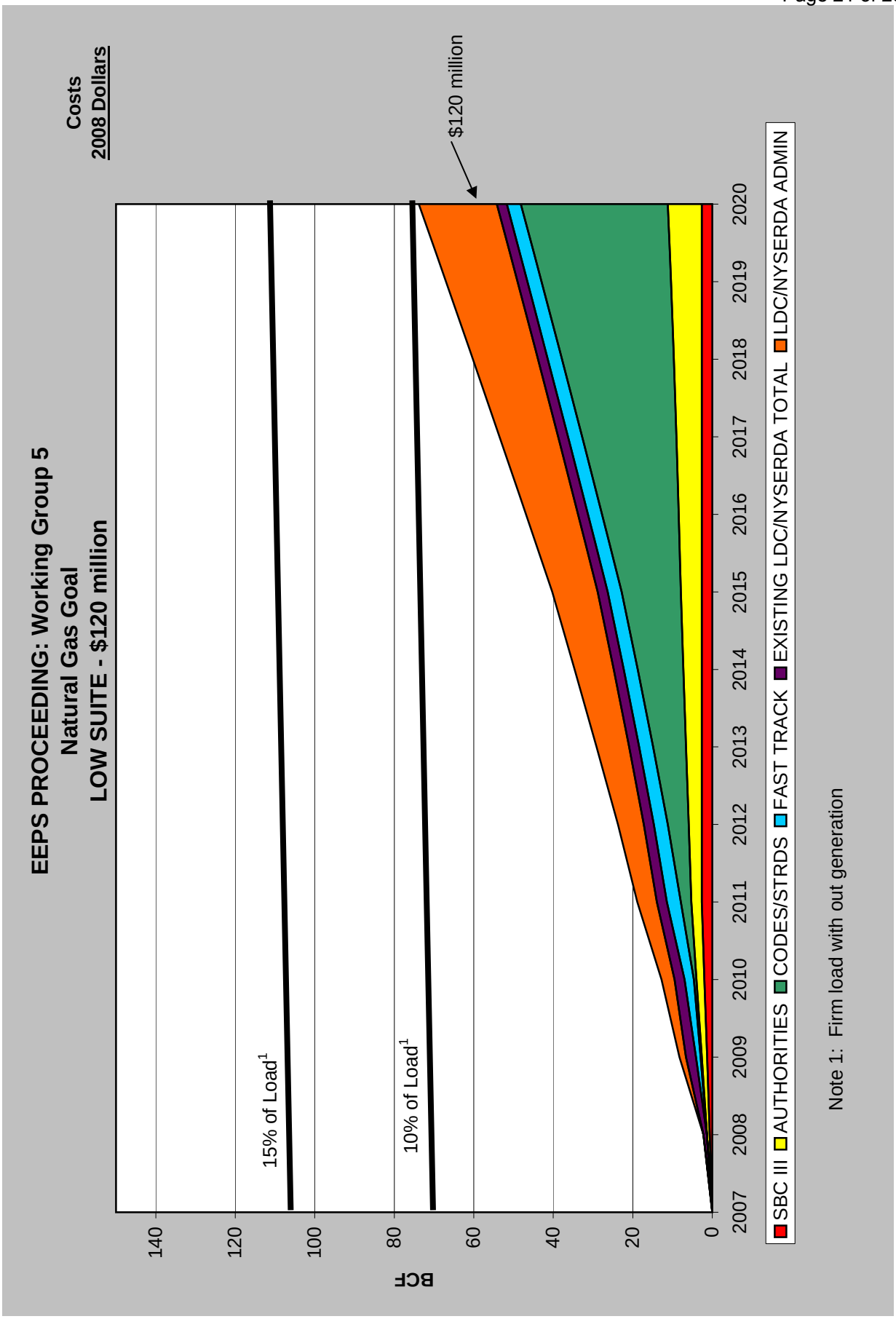
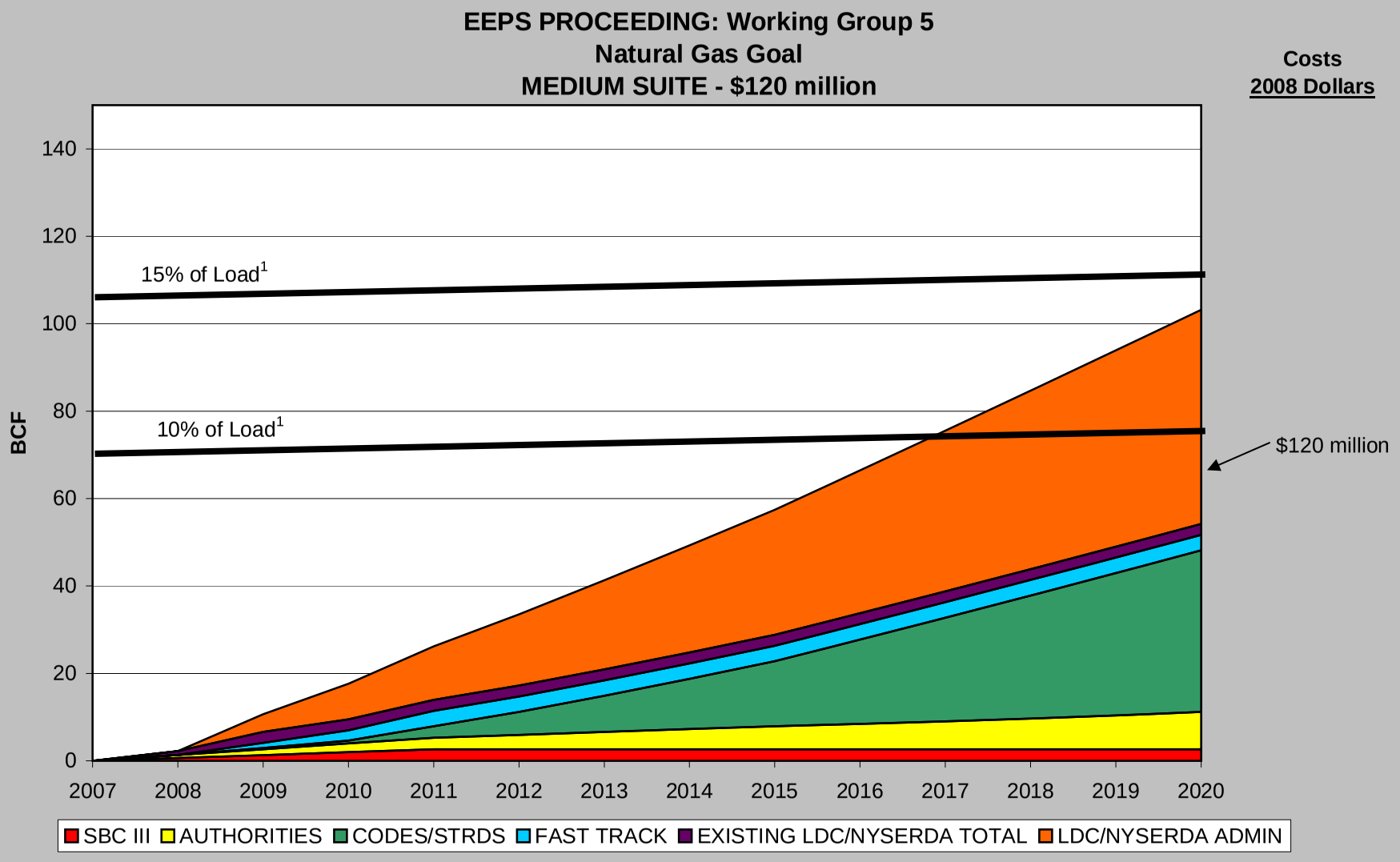


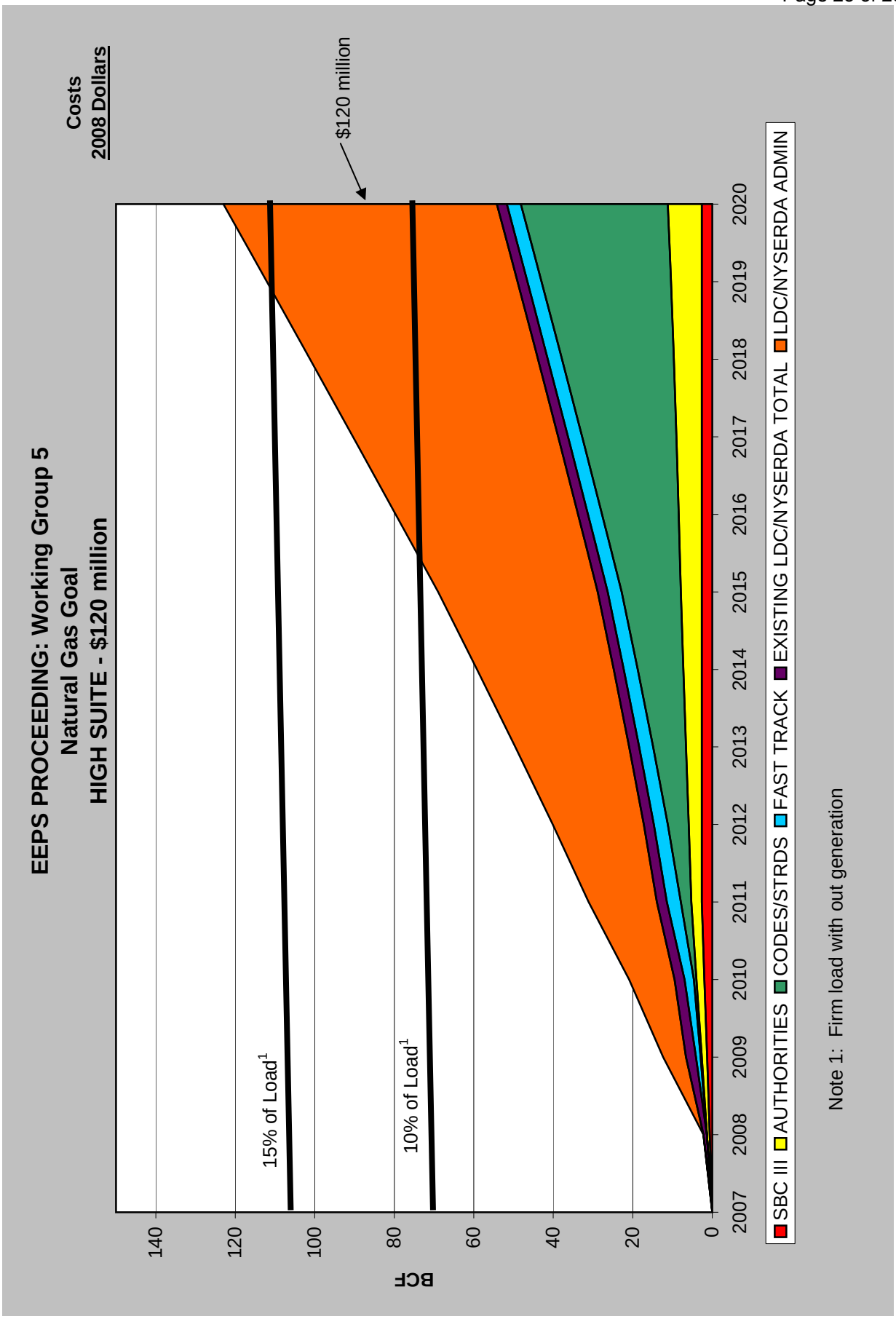
Note 1: Firm load with out generation



Note 1: Firm load with out generation



Note 1: Firm load with out generation



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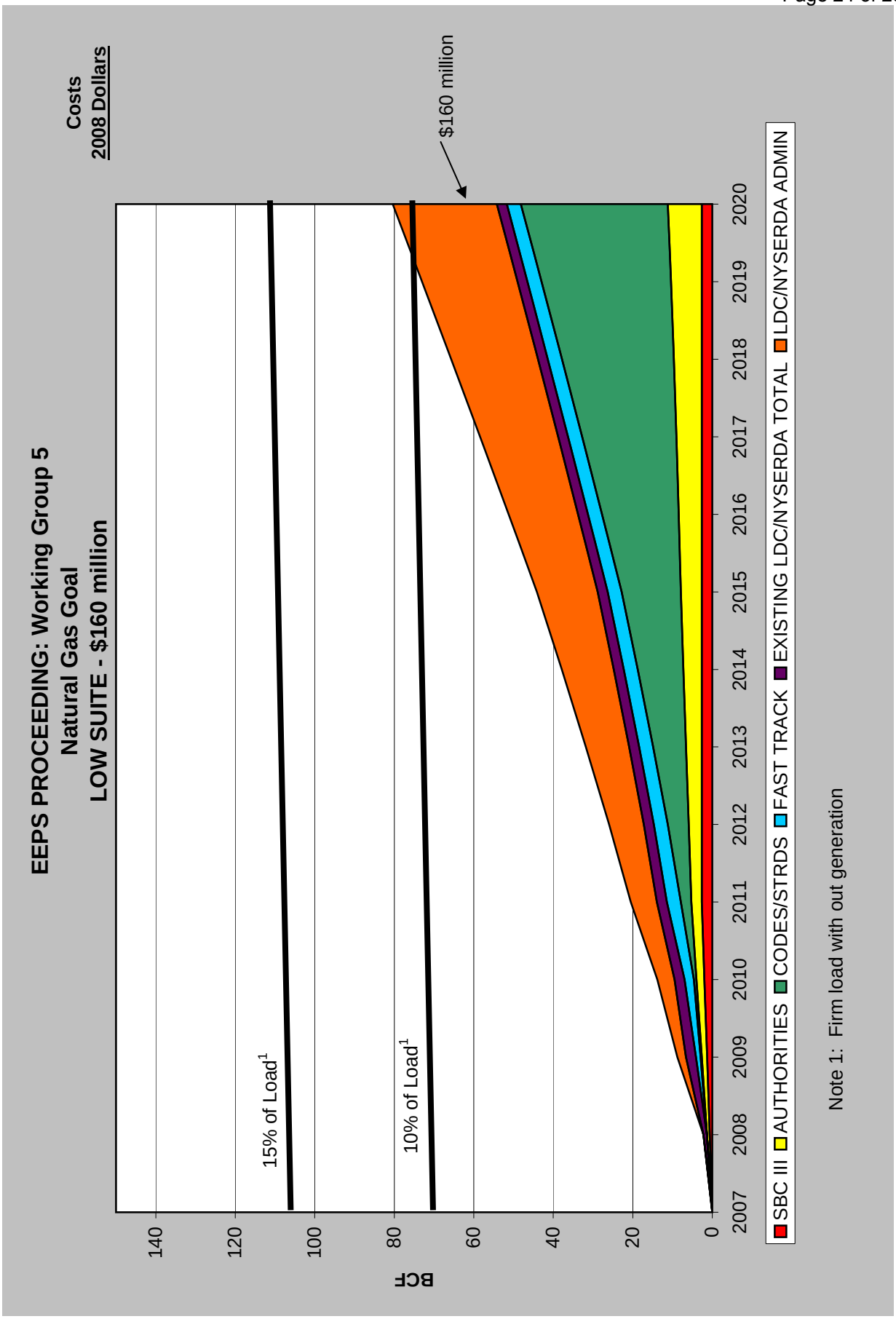
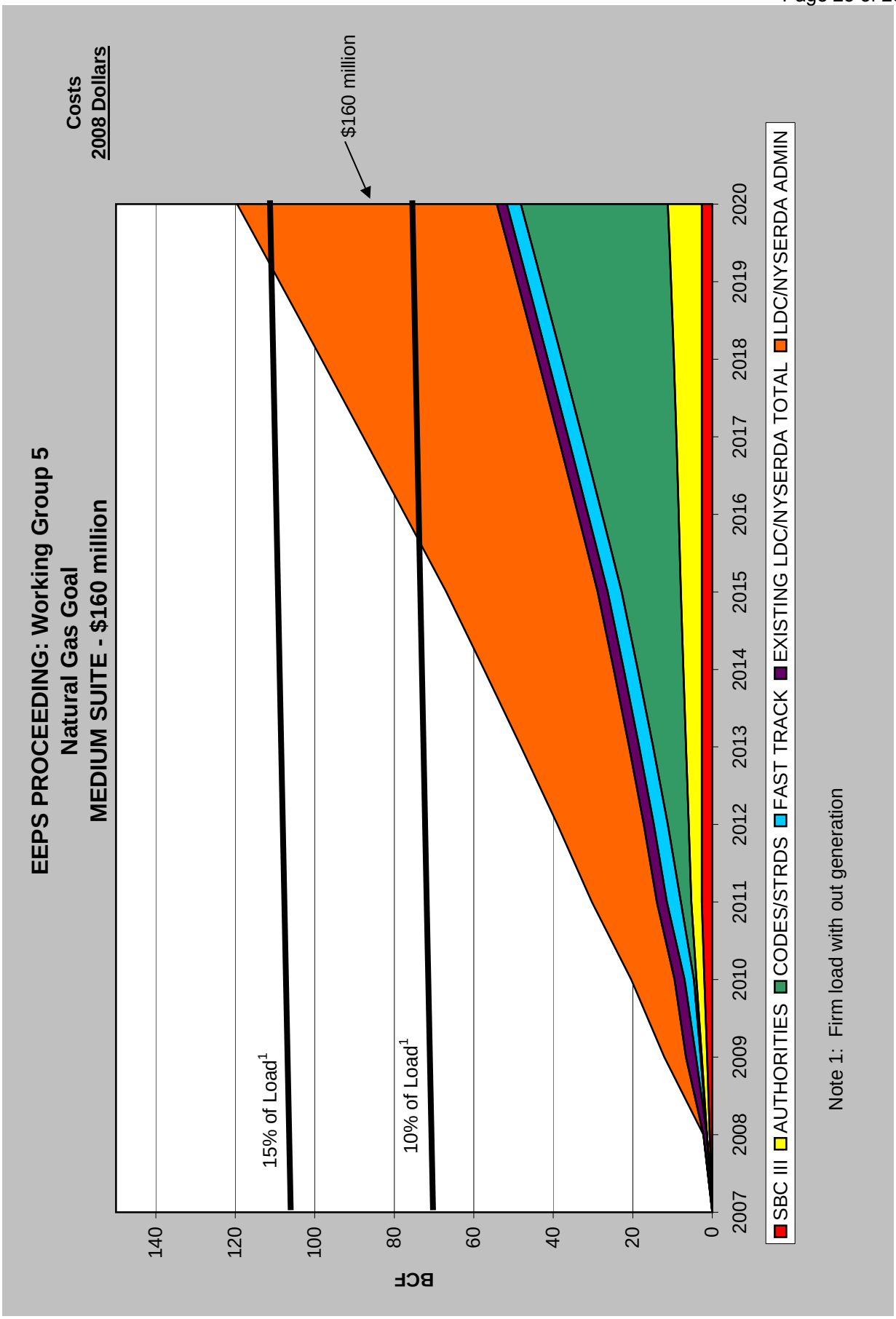


Note 1: Firm load with out generation



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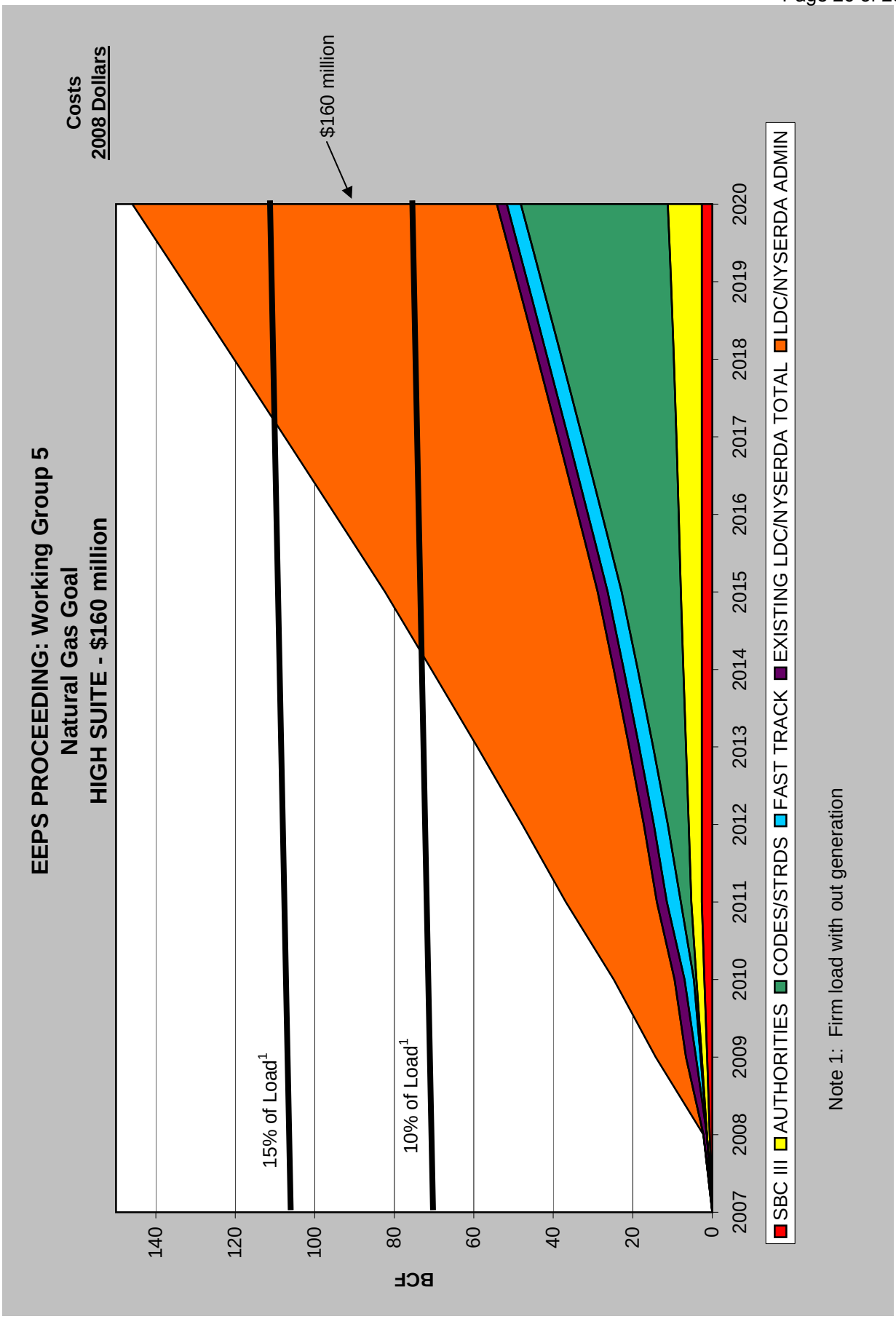

Note 1: Firm load with out generation

Appendix B

Updated Codes and Standards Analysis

New York State Code Savings

		2008	2009	2010	2011	2012	2013	2014	2015
	Residential								
1	New housing units	19,755	17,493	22,761	25,594	25,901	26,212	26,526	26,844
2	Energy savings per home								
	kWh	0	0	0	938	938	938	938	938
	Peak MW	0	0	0	0.14	0.14	0.14	0.14	0.14
	therms	0	0	0	674	674	674	674	674
3	% of code savings realized				70%	80%	90%	90%	90%
4	Savings from current year construction								
	GWh				16.8	19.4	22.1	22.4	22.7
	Peak MW				2.5	2.8	3.2	3.3	3.3
	Billion Btu				1,207	1,397	1,590	1,609	1,628
5	Savings including earlier construction								
	GWh				17	36	58	81	103
	Peak MW				2	5	9	12	15
	Billion Btu				1,207	2,604	4,194	5,803	7,431
	CommercialNew Construction and Major Renovations								
6	New square feet (millions)	93	66	86	96	98	99	100	102
7	Energy savings per square foot								
	kWh		1.4	1.4	5.5	5.5	5.5	5.5	5.5
	Peak MW		0.0003	0.0003	0.0012	0.0012	0.0012	0.0012	0.0012
	therms		0.03	0.03	0.09	0.09	0.09	0.09	0.09
8	% of code savings realized		70%	80%	70%	80%	90%	90%	90%
9	Savings from current year construction								
	GWh		63	94	369	427	487	493	500
	Peak MW		14	21	84	97	111	112	114
	Billion Btu		160	238	603	698	795	805	816
10	Savings including earlier construction								
	GWh		63	94	369	796	1,283	1,777	2,277
	Peak MW		14	21	84	181	292	404	517
	Billion Btu		160	238	603	1,300	2,095	2,900	3,716
11	*Total Savings -- Residential and Commercial*								
	GWh		63	94	386	833	1,342	1,858	2,380
	Peak MW		14	21	86	186	300	416	533
	Billion Btu		160	238	1,810	3,904	6,289	8,703	11,147

Notes

1 From Residential New Construction program template, see note for row 1 on this template. We reduce these 20% in 2008, 30% in 2009 and 10% in 2010 to account for current problems in the economy.

2 From Residential New Construction program template, see notes for rows 4-6 on this template. These figures are from the impact evaluation of the Energy Star New Homes program.

3 ACEEE estimate based on very limited data. An early 1990s study on NYS by NCSBCS found ~70% compliance and we use this as the starting point for our analysis of new codes (assuming significant implementation efforts, as NYS had in the early 1990s). A 1994 study for PG&E found average energy consumption of new residences 3-5% below code levels. We believe there were similar findings for California commercial buildings in ~2002 but are trying to track down the reference. California has better than average enforcement and we estimate that this level of compliance can be approached in NYS in the third year of a new code, assuming well-funded implementation efforts.

4 Row 1 * Row 2 * Row 3 plus a factor to get the units right.

5 Row 4 from current year plus Row 5 from previous year.

6 From Commercial New Construction program template, see note for row 1 on this template. We reduce these 20% in 2008, 30% in 2009 and 10% in 2010 to account for current problems in the economy.

7 Derived from Commercial New Construction program template, see notes for rows 4-6 on this template. We took the impact evaluation results from the NYSERDA commercial new construction program and adjusted for differences in average percentage savings. Specifically, the figures used for this analysis are an average of 7% savings from ASHRAE 90.1-2004 (PNNL estimate), 19% savings from the current NYSERDA program (Eggers, personal communication) and 30% average savings for the 2011 code relative to 90.1-2004 which is based on ASHRAE's target for 90.1-2010. For the 30% average savings we estimate 35% electric savings and 25% gas savings, since there are more opportunities for cost-effective electric savings.B28

8 See note 3.

9 Row 6 * Row 7 * Row 8 plus a factor to get the units right.

10 Row 9 from current year plus Row 10 from previous year.

New York

	Products	National Annual Sales (2006) (million)	State Allocation or Adj. Factor	<- Used what	Adjusted State Sales (million)	National Average per Unit Savings (kWh, therm, or gal.)	Per Unit Usage Adjustment	<- Used What	Adjusted Per Unit Savings (kWh, therm, or gal.)	Effective Date (Year)	Avg Equip Life (Year)	One Sales year Savings (GWh, Tril. Btu, or Mil. Gal.)	Energy Savings in 2015 TWh	MW	Tril. Btu	Energy Savings in 2020 TWh	MW	Tril. Btu
	Federal Legislation - 2007	3	4	5	8	9	10	11	12	13	14	15	16		17	16		17
1	**Reflector lamps (BR and R20)**	93	6.3%	Housing units	5.9	26	1.0		26	2008	0.94	151	0.14	35	1.53	0.14	35	1.5
2	**External power supplies**	198	6.3%	Housing units	12	4	1.0		4	2009	7	14	0.09	12	0.97	0.10	13	1.0
3	**Metal halide lamp fixtures**	2.9	6.3%	Housing units	0.18	329	1.0		329	2009	20	49	0.32	103	3.40	0.56	183	5.8
4	**Walk-in refrigerators and freezers**	0.1	6.0%	Com elec use	0.00	8,220	1.0		8,220	2009	12	24	0.16	37	1.71	0.28	65	2.9
5	**Dishwashers**	7.4	6.3%	Housing units	0.47					2010	11							
5a	*electricity*	3.0	6.3%	Housing units	0.19	24	1.0		24	2010	11	1	0.007	2	0.08	0.014	5	0.1
5b	*natural gas*	3.8	6.3%	Housing units	0.24	1	1.0		1	2010	11	0	*NA*	*NA*	0.04	*NA*	*NA*	0.1
5c	*water*	7.4	6.3%	Housing units	0.47	409	1.0		409	2010	11	57	*Bil. Gal.-->*		0.31	*Bil. Gal.-->*		0.6
6	**Electric Motors -- not covered by EPAct**	0.5	2.0%	Ind elec use	0.01	960	1.0		960	2011	19	6	0.03	4	0.29	0.06	9	0.6
7	**Electric Motors -- covered by EPAct**	1.1	2.0%	Ind elec use	0.02	273	1.0		273	2011	19	5	0.02	4	0.24	0.05	8	0.5
8	**Residential Dehumidifiers**	1.0	6.3%	Housing units	0.06	112	1.0		112	2013	15	7	0.02	6	0.19	0.05	17	0.5
9a	**Boilers (nat. gas)**	0.2	6.3%	Housing units	0.01	56	1.0		56	2013	25	0.08	*NA*	*NA*	0.21	*NA*	*NA*	0.6
9b	**Boilers (oil)**	0.0	6.3%	Housing units	0.00	54	1.0		54	2013	25	0.02	*NA*	*NA*	0.06	*NA*	*NA*	0.2
10	**General Service Incandescent Lamps - Tier 1**	2,000	6.3%	Housing units	126	28	1.0		28	2013	1.14	2,784	3.18	473	34.21	3.18	473	33.1
11	**General Service Incandescent Lamps - Tier 2**	2,000	6.3%	Housing units	126	7	1.0		7	2020	1.14	586	-	-	-	0.29	44	3.1
	Subtotal												**4.0**	**676**	**43**	**4.7**	**851**	**50**
	Federal Rulemakings																	
12	**Dry type transformers - medium voltage**	8	4.1%	All elec use	0.3	4	1.0		4	2010	30	1	0.01	1	0.08	0.01	2	0.1
13	**Liquid immersed transformers**	112	4.1%	All elec use	5	5	1.0		5	2010	30	25	0.14	19	1.47	0.26	36	2.7
14	**Fluorescent lamps**	691	6.3%	Housing units	43.58	10	1.0		10	2012	5	449	1.57	514	16.91	2.38	778	24.8
15	**Incandescent Reflector lamps**	188	6.3%	Housing units	11.86	44	1.0		44	2012	1	442	0.42	102	4.47	0.42	102	4.3
16	**Ranges and Ovens (gas, not self-cleaning)**	4	6.3%	Housing units	0.24	22	1.0		22	2012	19	0	*NA*	*NA*	0.22	*NA*	*NA*	0.5
16a	*electricity*	4	6.3%	Housing units	0.24	(55)	1.0		(55)	2012	19	(13)	(0.05)	(7)	(0.49)	(0.11)	(16)	(1.2)
17	**Microwave Ovens**	11	6.3%	Housing units	0.68	31	1.0		31	2012	9	17	0.06	9	0.63	0.14	21	1.5
18	**Comm'l clothes washers**	0			0.01					2012	11							
18a	*electricity*	0	6.0%	Com elec use	0.01	208	1.0		208	2012	11	3	0.01	3	0.10	0.02	7	0.2
18b	*natural gas*	0	9.4%	Com ng use	0.02	27	1.0		27	2012	11	0	*NA*	*NA*	0.19	*NA*	*NA*	0.5
18c	*water*	0	6.0%	Com elec use	0.01	5,828	1.0		5,828	2012	11	74	*Bil. Gal.-->*		0.26	*Bil. Gal.-->*		0.6
19	**Commercial refrigeration**	2	6.0%	Com elec use	0.10	281	1.0		281	2010	11	29	0.10	24	1.10	0.25	58	2.6
20	**Commercial boilers**	0	6.0%	Com elec use	0.00	514	1.0		514	2012	30	0.03	*NA*	*NA*	0.18	*NA*	*NA*	0.3
21	**Water Heaters (res)**	0	6.3%	Housing units						2013	0							
21a	*electricity*	4	6.3%	Housing units	0	106	1.0		106	2013	10	25	-	-	-	-	-	-
21b	*natural gas*	6	6.3%	Housing units	0	13	1.0		13	2013	14	0	*NA*	*NA*	1.21	*0.0*	*NA*	3.6
22	**Pool heaters**	0.24	6.3%	Housing units	0.0	58	1.0		58	2013	15	0.09	*NA*	*NA*	0.22	*NA*	*NA*	0.7
23	**Vending machines**	0	6.0%	Com elec use	0.02	682	1.0		682	2013	14	8	0.02	5	0.21	0.06	14	0.6
24a	**Direct heaters**	0	6.3%	Housing units	0.01	24	1.4	HDD	32	2013	15	0	*NA*	*NA*	0.07	*NA*	*NA*	0.2
24b	*electricity*	0	6.3%	Housing units	0.01	(97)	1.4	HDD	(131)	2013	15							
25	**PTACs and PTHPs**	0	6.0%	Com elec use	0.03	205	1.0		205	2013	15	5	0.01	12	0.13	0.04	35	0.4
26	**Refrigerators**	10	6.3%	Housing units	0.61	130	1.0		130	2014	19	64	0.16	24	1.73	0.48	72	5.0
27	**Fluorescent ballasts**	22	6.0%	Com elec use	1.30	2	1.0		2	2014	16	2	0.00	1	0.03	0.01	4	0.1
28	**Clothes dryers (residential)**	8	6.3%	Housing units	0.53					2014	19	-						
28a	*electricity*	7	6.3%	Housing units	0.42	93	1.0		93	2014	19	35	0.05	8	0.57	0.23	34	2.4
28b	*natural gas*	2	6.3%	Housing units	0.11	4	1.0		4	2014	19	0	*NA*	*NA*	0.05	*NA*	*NA*	0.2
29	**Room AC**	6	6.3%	Housing units	0.38	86	1.0		86	2014	13	15	0.02	32	0.24	0.10	139	1.0
30	**Battery chargers**	83	6.3%	Housing units	5.25	6	1.0		6	2014	4	24	0.04	5	0.38	0.15	21	1.6
31	**Furnaces (nat. gas) - Tier 1**	3	3.2%	Furnace Sales	0.10	8	1.4	HDD	11	2013	18	0	*NA*	*NA*	0.00	*NA*	*NA*	0.0
32	**Furnaces (nat. gas) - Tier 2**	3	3.2%	Furnace Sales	0.09	73	1.4	HDD	99	2013	18	0.58	*NA*	*NA*	1.45	*NA*	*NA*	4.4
33	**Furnaces (oil)**	0	6.3%	Housing units	0	16	1.4	HDD	21	2013	18	0	*NA*	*NA*	0.04	*NA*	*NA*	0.1
34	**Res. central air conditioners & heat pumps**	5	6.3%	Housing units	0.3	625	1.0		625	2017	0			-		-	-	-
34a	*cooling (includes A/C and HP)*	5	6.3%	Housing units	0	289	0.0		-	2017	18	-	-	-	-	-	-	-
34b	*heating (HP in heating mode only)*	1	6.3%	Housing units	0.05	336	1.4	HDD	454	2017	18	21	-	NA	-	0.07	NA	0.8
35	**Residential Clothes Washers**	10	6.3%	Housing units	0.60	-	1.0		-	2015	14			-			-	
35a	*electricity - machine*	10	6.3%	Housing units	0.60	36	1.0		36	2015	14	22	0.01	NA	0.12	0.12	NA	1.2
35b	*electricity - water heating*	4	6.3%	Housing units	0.25	357	1.0		357	2015	14	88	0.04	NA	0.47	0.48	NA	5.0
35c	*natural gas*	6	6.3%	Housing units	0.35	19	1.0		19	2015	14	1	*NA*	*NA*	0.33	*NA*	*NA*	3.6
35d	*water*	10	6.3%	Housing units	0.60	8,906	1.0		8,906	2015	14	5,336	*Bil. Gal.-->*		2.67	*Bil. Gal.-->*		29.3
36	**Small Electric Motors**	7	6.3%	Housing units	0.42	87	1.0		87	2014	8	35	0.02	3	0.19	0.19	30	2.0
	Subtotal												**2.6**	**754**	**32**	**5.3**	**1,338**	**69**
	State Standards																	
46	**Furnace fans**	3.8	6.3%	Housing units	0.24	554			557	2013	18	105	0.26	*72*	2.84	0.79	217	8.2
46a	*heating*	3.4	6.3%	Housing units	0.21	326	1.4	HDD	441	2013	18	*85*	*0.21*	*NA*	*2.28*	*0.64*	*NA*	*6.6*
46b	*cooling*	3.1	6.3%	Housing units	0.20	228	0.5	CDD	117	2013	18	*21*	*0.05*	*72*	*0.55*	*0.15*	*217*	*1.6*
47	**Flourescent Fixtures**	146.49	6.3%	Housing units	9.24	3	1.0		3	2010	25	27	0.15	48	1.59	0.28	92	2.9
48	**Metal halide ballasts (Calif. Only)**	2.93	6.3%	Housing units	0.18	197	1.0		197	2011	20	35	0.16	51	1.68	0.33	108	3.4
49	**Nightlights**	15.75	6.3%	Housing units	0.99	10	1.0		10	2011	8	10	0.04	3	0.48	0.08	5	0.8
51	**Compact audio equipment**	9.19	6.3%	Housing units	0.58	53	1.0		53	2010	5	22	0.11	15	1.17	0.11	15	1.1
52	**DVD players**	12.95	6.3%	Housing units	0.82	11	1.0		11	2010	5	3	0.02	2	0.17	0.02	2	0.2
53	**Portable electric spas**	0.37	9.2%	Regional sat. and pers. income sat.	0.03	250	1.0		250	2010	10	3	0.01	2	0.10	0.02	4	0.2
54	**Water dispensers**	0.21	6.3%	Housing units	0.01	266	1.0		266	2010	8	2	0.01	1	0.12	0.02	2	0.2
55	**Hot food holding cabinets**	0.03	6.3%	Housing units	0.00	1,815	1.0		1,815	2010	15	2	0.01	3.4	0.11	0.02	6.5	0.2
57	**TVs**	37.9	6.3%	Housing units	2.39	58	1.0		58	2010	10	95	0.52	53	5.63	0.95	97	9.9
58	**Portable lighting fixtures**	36.8	6.3%	Housing units	2.32	22	1.0		22	2010	10	26	0.14	21	1.52	0.24	36	2.5
	Subtotal												**1.4**	**273**	**15.4**	**2.9**	**585**	**30**
	GRAND TOTAL												**8.0**	**1,703**	**90.6**	**12.9**	**2,773**	**149**
												Natural Gas only (Tbtu):			**4.1**			**14.5**
												Oil only (Tbtu):			**0.2**			**0.5**
												Electric @ power plant heat rates (Tbtu):			**86.3**			**134.2**