

# The New York State Energy Solutions Road Map

## Executive Summary on Demand-Side Measures for Governor Andrew Cuomo

Prepared by the  
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### Introduction

The Northern Westchester Energy Action Consortium (NWEAC)<sup>2</sup> presents this Energy Solutions Road Map to foster concrete discussions about securing our state's future economic development.

We believe our state's energy policy must be a significant positive force in our economic development. Further, we have specific recommendations about changes in our state energy policies that—collectively, when adopted—will help unleash the potential of our state to drive private investment in economic development for decades.

From our close work with municipalities, state agencies, the US Department of Energy, and many private sector organizations, we reach several important conclusions.

First, many stakeholders in our economy share common objectives, such as (a) cost-effectively reducing consumption of fossil-fuels, while (b) retaining system reliability and (c) enhancing the contribution of renewable supply sources.

Second, however, few stakeholders have offered specific legislative and regulatory levers that will clearly accomplish these outcomes.

Third, several proven policy tools are available with abundant success elsewhere that New York can and should import or improve for statewide adoption.

The Energy Solutions Road Map is our Consortium's effort to identify energy policies that do work elsewhere and show great promise for New York State. For policies that have been implemented in other states, New York has the opportunity to develop and adopt state enabling legislation or regulation that borrows from all the lessons learned elsewhere.

### Our goals

- To qualify and estimate the job creation and cost savings impacts of clean energy technology deployment on the demand side (energy efficiency, intelligent control of consumption and microgrid) and on the supply side (distributed generation and energy storage).
- To delineate specific policy and regulatory tools that will achieve ubiquitous energy efficiency,

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<sup>2</sup> The Northern Westchester Energy Action Consortium (NWEAC) is a collaboration of 15 municipalities who banded together in 2009 in order to share expertise and resources in pursuing reduction of greenhouse gas emissions and of future energy expenses. Our Consortium has been very successful in launching innovative programs for cost reductions for homeowners and for our local governments. For more on the Mid-Hudson Energy Solutions Road Map, see: <http://www.nweac.org/2011/10/26/the-mid-hudson-regional-energy-solutions-road-map/>

control, storage and distributed generation, while enabling deep penetration of renewable energy

- To enhance grid reliability and energy security using competition and local community aggregation/empowerment.
- To motivate private sector funding to finance the demand side opportunities and engage energy consumers to achieve efficiency and savings.

**Summary of our recommendations** We strongly recommend the state pursue the following policy changes to unleash the market power of energy efficiency and demand response.

1. **Community Choice Aggregation:** Community choice aggregation (CCA) is a market-based energy solution that is revenue supported, not reliant on taxpayer subsidies, and a procurement framework that allows municipalities to procure and produce electricity to meet the collective load of their local residents and businesses.
2. **Energy Efficiency Certificate:** Energy Efficiency Certificate (EEC) is a private-sector incentive structure that requires all private-sector energy sales entities to buy efficiency certificates—in proportion to the amount of energy they sell.
3. **Demand Response:** Demand Response (DR) programs pay utility customers to temporarily reduce electricity consumption in response to supply conditions. Implementing three policy changes will greatly increase participation in DR programs statewide: (1) allow aggregation, (2) lower eligibility thresholds, and (3) establish floor prices for demand side resources.

This suite of policies is discussed in more detail below. They are mutually self-reinforcing and unlock the potential for significant private sector investment in our state’s energy security.

## **Part 1: Solution 1: Energy Efficiency Certificates for Base and Peak Load Reductions**

The average home or business buys 20 to 30% more energy than it needs, due to inefficient heating, cooling and lighting systems, sub-standard insulation, inadequate air sealing, and aging appliances, pumps, and motors.

### **Benefit**

Energy efficiency is the single most effective driver for economic development for two reasons: (1) efficiency measures often pay for themselves while reducing future operating costs, and (2) efficiency implementation is a proven jobs-creator with immediate results.

A well-designed Energy Efficiency Portfolio Standard (EEPS) will drive private investment in raising energy efficiency.

An effective EEPS needs more than an aspiration to increase efficiency and reduce future demand. It needs a requirement to do so. Creating a tradable Energy Efficiency Certificate as central the EEPS program will ensure private sector investment for achieving efficiency results.

### **Barriers**

Many cost-effective energy efficiency upgrades are not being implemented. Why?

1. Efficiency financing is expensive. Creating commercial financing transactions is time-consuming, because:
  - (a) There is no asset to securitize in an upgrade project;
  - (b) There is no common metric for a unit of efficiency achieved;

- (c) The value of a unit of efficiency is unclear in discussions between energy services company and consumer; and
  - (d) Decision-makers lack a clear and trusted information source regarding the financial merits of an upgrade.
2. Motivation among end-users and building owner is diluted, because:
    - (a) Owner and tenant interests are often not conflicted between who pays for the upgrade and who pays for the utilities, a.k.a. the “split incentive” problem;
    - (b) Owner and tenant behavior is further misaligned between who controls the energy consumption and who pays for upgrades or utilities; and
    - (c) Finally, turnover in tenants and building owners leads to disincentives for long term investments.
  3. Current energy efficiency incentive benefits and terms are confusing and remain a challenge to pursue, because:
    - (a) Multiple agencies and utilities offer consumers what appear to be overlapping programs or differing incentives for similar measures.
    - (b) Accessing incentive programs can be quite laborious, often requiring expertise the consumer may not be willing to pay for up front in the absence of a clear fiscal return; and
    - (c) Resulting incentives can be unpredictable or lower than expected, further discouraging participation.
  4. Professional capacity in the energy efficiency service sector, while growing, remains challenged by several factors, including:
    - (a) Performance—such as completing high quality upgrades on time and on budget—remains uneven across the sector;
    - (b) The ability to communicate effectively with consumers as potential clients about upgrades and incentives remains uneven across the sector; and
    - (c) Labor force training, while improving, continues to lag behind the growth needs of the sector.

Four steps can and should be taken to overcome the barriers above. These steps collectively create an Energy Efficiency Certificate as a asset of a reasonably stable value with built-in market of private sector participants.

**Step 1 of Solution 1: Empower local communities with Community Choice Aggregation** Adopt enabling legislation that allows New York’s municipalities to create “opt-out” energy purchase contracts for all consumers of electricity.

In states; like New York, where electricity is deregulated and semi-deregulated, community choice aggregation (CCA) provides municipalities with access to the wholesale power market to meet their desired electricity supply portfolio, while still having the existing utility provide delivery and billing services. CCA works very effectively in California, Illinois, Massachusetts, Ohio, and Rhode Island.<sup>3</sup>

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<sup>3</sup> For more on CCA, visit: [www.leanenergyus.org](http://www.leanenergyus.org) and [www.galvinpower.org/sites/default/files/Community\\_Choice\\_Aggregation\\_Report\\_Final\\_1-4-11.pdf](http://www.galvinpower.org/sites/default/files/Community_Choice_Aggregation_Report_Final_1-4-11.pdf)

Community choice aggregation is:

1. A market-based energy solution that is revenue supported and not reliant on taxpayer subsidies; and
2. A procurement framework that allows municipalities to procure and produce electricity to meet the collective load of their local residents and businesses.
3. A form of public power in which communities choose power sources, but distribution is left to the incumbent utilities.

Specifically, under CCA, a single organization aggregates the choices by consumers to gain scale on price, achieve operational efficiencies, and be accountable to the state and consumer about the energy sources and prices.

Across all the states that have established CCA programs, we find the following common features:

- CCA is enabled by state legislation.
- CCA is an “opt out” program, meaning all local end-users are automatically enrolled, yet may opt out.
- Local governments are the decision-makers regarding electricity supply and local program optimization (local renewable generation, feed in tariffs, local efficiency initiatives, local job creation).
- Utilities remain as the delivery and billing partner.
- Existing state regulations and environmental mandates apply, such as renewable portfolio standards, greenhouse gas reductions.
- Taxpayers do not fund CCA programs. CCA programs are entirely funded by the existing end-users of the electricity

Successful CCA programs make local organizations much more aware of their own energy consumption patterns. Local CCA programs deal first hand with thousands of retail customers of energy. This new local knowledge leads directly to insights into achieving savings via energy demand reductions. CCA will empower localities to achieve unparalleled energy efficiency by, allowing localities to create their own efficiency funds that complement other funds, attracting private investment to create new efficiency upgrades and renewable power generation projects.

## **Step 2 of Solution 1: Create fungible assets with an Energy Efficiency Certificate program**

**Adopt an Energy Efficiency Certificate Program that creates a market, defines buyers and sellers, and establishes a tradable commodity with a reasonably stable value based on verifiable efficiency measures.**

An Energy Efficiency Certificate is:

1. A private-sector incentive structure that requires all private-sector energy sales entities to buy efficiency certificates—in proportion to the amount of energy they sell; and
2. A commodity that may be created and sold by private or public sector entities that undertake efficiency measures.

An Energy Efficiency Certificate Program enables private sector organizations that undertake efficiencies to sell the credit for that efficiency to the entities that buy efficiency certificates. These commodities may also be called “white certificates.” Such efficiency certificates would be in addition to existing efficiency incentives parceled out with Public Service Commission approval.

EEC programs currently operate in Italy, the United Kingdom, Connecticut, Pennsylvania, and Nevada, and are expected soon to be implemented in India and other nations in Europe.<sup>4</sup>

In an EEC program, the government sets a requirement for energy efficiency achieved by a date certain. The law generally defines who will be responsible for covering the cost of energy efficiency achieved. The marketplace then incorporates these definitions into its rules. Anyone who sells electricity to consumers has to buy electricity from power plants in order to serve the consumers they sell to. In addition to the electricity they buy, they have also to buy energy efficiency certificates.<sup>5</sup>

A truly effective Energy Efficiency Certificate Program has yet to emerge in the United States, but based on lessons learned elsewhere, New York could and should lead the way.

In sum, the steps include the following:

1. Create compliance buyers of efficiency certificates by establishing a New York EEC program, refined by lessons learned from the existing EEC programs.<sup>6</sup>
2. Create peak demand reduction certificates, akin in structure to Peak Demand Reduction markets in New England and in the Mid-Atlantic and Midwest (PJM Interconnect) states.<sup>7</sup>

The above steps create an asset—the Energy Efficiency Certificate—as well as common metrics to assess and verify the efficiency achieved. A good EEC program will overcome tenant/owner misalignments and split incentives by creating a fungible, transparent, valuable asset that survives the transfer of a property or tenancy.<sup>8</sup>

### **Step 3 of Solution 1: Provide a floor value for the certificates in the market**

**Use a state agency, for example, NYSERDA, as the collection, measurement, distribution and verification entity to fund minimal feed-in tariffs for energy efficiency and demand reduction.**

Our third recommendation addresses an important factor often missing in other states' programs: setting a floor value for the energy-related certificates.

From the perspective of state government, an Energy Efficiency Certificate program is the most cost-effective approach to achieving energy efficiency for both base and peak load demand. However, such market structures have created undesirable volatility in pricing.<sup>9</sup> Such instability tends to lower private investment volume.

How does the state attract significant levels of private sector investment in a new efficiency certificate market?

The new step is to establish and fund a small tariff base for energy efficiency and demand reduction.

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<sup>4</sup> In our view, each of these existing EEC markets has one or more serious flaws that could be easily addressed in the careful design of a New York EEC market.

<sup>5</sup> For example, if an efficiency standard is adopted requiring utilities to procure 5% of electricity sales from efficiency resources such as demand reduction or combined heat and power, for every 100 energy units procured buyers of that energy will have to also purchase 5 energy efficiency certificates, each of which represents an upgrade to a facility that saves one unit of energy each year.

<sup>6</sup> Beyond electric reduction, efficiency certificates could be a powerful tool if applied to heating oil consumption. We strongly recommend an EEPS be established for heating oil to enable efficiency certificates for reductions in heating oil consumption.

<sup>7</sup> In our view, design nuance would address a. underpayment in each of these markets and b. over and under-estimates of demand relief provided in future years, in each of these markets.

<sup>8</sup> The certificate remains with the property owner, if the property owner has not sold the certificate. If the property owner has sold the certificate, it remains with whoever bought it.

<sup>9</sup> For example, the near collapse of the solar renewable energy credit (SREC) market in New Jersey is at least in part due to lack of minimum on the value of the commodity being traded.

1. Establish minimal feed-in tariffs for energy efficiency and demand reduction, which creates a floor value for the certificates.<sup>10</sup>
2. Fund this new feed-in tariff by means of a small efficiency surcharge on all electricity bills, as is already done for the RPS/SBC programs in New York.
3. Use NYSERDA, or another state agency, as the collection, measurement, distribution and verification entity for the feed-in tariff.<sup>11</sup>

These feed-in tariffs should provide additional value for a certificate, creating a floor for the value of each energy efficiency certificate. This floor will encourage low-cost, private sector financing of upgrades and deeper participation in the EEC market. Conversely, lack of any floor will discourage private investment.

#### **Step 4 of Solution 1: Simplify ownership rules for the certificate**

**Sort out the competition between rebates and market forces by ensuring that any government rebate does not require the facility owner to cede ownership of private market benefits (e.g. certificates) to the state or utility.**

Currently, New York State (NYSERDA) and utility incentive contracts (whether rebates or performance payments, etc) contain “fine print” clauses that retain the energy credit for the state or utility. The state or utility then retires the credit upon completion of the incentive payment.

This claim against value of any future certificate market creates a real concern for any knowledgeable consumer or energy service provider.<sup>12</sup>

If New York establishes an energy efficiency or renewable energy certificate market, these same ownership restrictions in an incentive contract would create competition between the public and private sectors and would confuse all consumers.

#### **Step 5 of Solution 1: Support local initiatives with coordinated, state-wide policy**

**Allow existing finance activities by New York State’s agencies to include investment in finance products being created by the energy efficiency investment the state already supports and promotes.**

New York State has invested wisely and heavily in numerous energy efficiency programs that we

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<sup>10</sup> A Feed-in Tariff (FIT) generally refers to fixed per-unit payments, usually paid by the government for renewable energy generation. Here, we apply the same concept to fixed payments for units of energy efficiency documented and achieved, funded likely through a surcharge on all electricity bills. This approach differs from NYSERDA’s current rebate structure in that it requires no bureaucratic cost share or subjective burden to prove “additionality” to get the dollars. Subjective additionality is driven by good intentions, but is poor public policy. Instead, we can ensure that public funds drive truly additional efficiency by designing rigorous requirements for what constitutes efficiency achieved (e.g. efficiency beyond current code). Feed-in tariffs are often considered to be mutually exclusive of certificate markets (an exception is Sweden) and are often criticized by many who feel they over-pay to achieve renewable generation. Our approach is to provide minimal feed-in tariffs for efficiency, accomplishing the best of all worlds: (1) A cost effective application of the concept; (2) Assured private sector investment in efficiency; and (3) The flexibility to also introduce a certificate market, which enables cost-effective achievements of far more ambitious goals.

<sup>11</sup> NYSERDA has a robust energy research capacity and serves to measure and verify actual efficiency performance for the state’s existing incentive programs.

<sup>12</sup> Imagine this entirely plausible nightmare scenario: After New York adopts the Solar Jobs Bill, solar RECs rise in value to \$300/MWh, spurring a jump in nearly cost-free photovoltaic installations that do not need further state incentives. Meanwhile, recently contracted NYSERDA projects (e.g. under PON 2156) cost those building owner scores of millions of dollars to install, yet leave these owner/investor ineligible to sell the RECs produced by that installation, because the state owns and retires them.

believe will bring very positive results in saving building owners money and reducing energy demand.

However, a valuable opportunity exists for New York State to “put its money where its mouth is” here.

For example, Property Assessed Clean Energy (PACE) programs will continue to be established in New York. Such PACE programs will source capital from both traditional and non-traditional funders.

We recommend that New York State’s own agencies be authorized to invest in purchases of locally sourced PACE finance products. After all, these products will be originated through NYSERDA’s accepted underwriting standards and upgrade measures.<sup>13</sup>

Specifically, the Energy Improvement Corporation will roll out a pilot PACE program this year in Westchester County using federal and state funds.<sup>14</sup> However, achieving real scale with such programs will require much more capital and produce a much greater public benefit than heretofore achievable.

The above five interlocking steps are strategies that ensure that all our sectors—public, for-profit (service, technology, financial), faith-based, institutional, community, and not for profit—are fully engaged with unified goals and standards, aligned incentives, and a common message about the value of energy efficiency to our economy.

## **Part 2: Solution 2: Demand Response: Enhancing local reliability and economic development**

**Demand Response (DR) programs pay utility customers to temporarily reduce electricity consumption in response to supply conditions.**

When the electric delivery system is under stress or prices reach a specific threshold, DR program participants are asked to reduce their energy use. Energy storage or local and distributed low emissions generators (e.g. cogeneration) can also be activated at these moments of system stress or high prices.

### **Benefit**

As demand response resources, energy storage and distributed generation are more localized than central generation. They tend to inject more economic activity into local economies. It is also often more cost-effective to pay local resources for demand reduction, than it is to pay centralized generators to increase production on fairly short notice.

In other words, grid operators find local resources valuable because they ensure grid reliability at the lowest possible cost. Reliable local resources also reduce the need to build new power plants.

### **Barriers**

New York State has many pieces in place for a vibrant market structure to support local demand response resources. However, the New York Independent System Operator (NYISO) has spotlighted that participation in our demand response programs is limited primarily to large customers.

NYISO finds that current minimum thresholds for participating in the demand response programs

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<sup>13</sup> NYS PACE Enabling Legislation (GML 119 ee, ff, gg) already mandate Upgrade and Renewable Energy improvements be approved by NYSERDA

<sup>14</sup> For more on Energy Improvement Corp, visit: [www.energyimprovementcorp.org](http://www.energyimprovementcorp.org)



limit the ability of existing or proposed distributed generation and energy storage resources to participate in the state's most valuable local reliability markets.

As a result, tens of thousands of New York's business owners are currently ineligible to participate in the most valuable demand response markets, especially in the downstate region.

## **Step 1 of Solution 2: Change some rules governing current Demand Response Programs**

**Some minor changes in the current demand response rules would ensure New York offers the most vibrant market for local efficiency resources in the world.**

We need no new legislation to improve participation in our existing demand response programs. The New York Independent System Operator (NYISO) and Public Service Commission (PSC) are the key regulatory decision-makers for demand response policy.

Specifically, we recommend changes in the existing rules governing our DR programs, as follows:

1. NYISO rules and PSC rulings should allow customers (and even communities) to aggregate their efficiency resources together to reach size thresholds dictated by the NYISO for all electricity market products. (See Community Choice Aggregation discussion above.)
2. The NYISO should lower size thresholds for all electricity market products to expand the pool of eligible participants.<sup>15</sup>
3. New York State (e.g. the NYISO or the legislature) should establish floor prices for demand side resources to attract private investment in building out energy control and storage capabilities.

In fact, regarding items 1 and 2 above, the NYISO has undertaken significant positive changes over the last five years that already move us toward allowing aggregation and lowering size threshold, with more rule changes coming over the next two years. These changes stem mainly from compliance with federal regulatory rulings, primarily Order #719 from the Federal Energy Regulatory Commission.

As with the need for a floor value for the Energy Efficiency Certificate, discussed above, the Demand Response resources will also need an established floor price per product in order to provide a stable business case for private sector investment in demand response technology.

## **Step 2 of Solution 2: Invest in local infrastructure for smart grid demand response programs**

**Extend NYSERDA's existing Demand Response policy of subsidizing the cost of DR meter for large facilities to DR meters located in distribution loop with aggregated demand among smaller customers.**

Even as the NYISO and PSC have begun to expand the pool of electricity customers eligible to access the electricity markets, NYSERDA has not quite caught up yet. When NYSERDA started to fund about 80% of the cost for DR meters for larger facilities, this incentive sparked the DR participation among large buildings.

Installing smart meters in every home or business would be quite expensive. It would be much less costly to provide every community with access to data from one or two sophisticated meters per

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<sup>15</sup> Participation in demand response is limited to customers who meet or exceed a minimum size of facility requirement, size of shed commitment requirement, or total shed load aggregated together in order to be eligible for DR. If the first and second minimums are eliminated, and the third is reduced to, say, 100kW for every DR product, a very large number of medium to smaller electricity customers could participate in DR programs.



distribution loop. NYSERDA could subsidize some portion of the cost of these distribution loop meters to allow a business district of small to medium electricity customers to participate the demand response markets.

Such an investment by the state in local microgrid meters will allow and enable the following<sup>16</sup>:

1. Private enterprise will create collectives of small customers who will annually earn scores (perhaps hundreds) of millions of dollars by intelligent management of their energy consumption.
2. Private investment of hundreds of millions (perhaps billions) annually will finance new installations and upgrades of energy management systems, energy storage systems and distributed generation in homes and in small and medium commercial facilities.
3. High technology and service firms will migrate to New York, bringing jobs, primarily in energy storage, energy management systems, as well as in smart metering technology, installation, and maintenance.
4. The increase in the state's dynamic smart grid resources will allow for far deeper penetration and integration of intermittent renewable generation—primarily wind and solar—while enhancing regional and local grid reliability.

Next, we will discuss the potential impact on economic development of the solutions recommended above.

## **Part 3 Potential Outcomes & Impact on Jobs and the Economy**

### **1. Reasonable Goals**

We have built goals based on assessments of available cost-effective energy efficiency and demand response (FERC report, NYISO study of potential resources by sector). We use estimates of total cost-effectiveness, based on conservative assumptions of cost-effective upgrade opportunities. We have devalued the total projected benefit through estimating completion of only a percentage of these cost-effective opportunities.

Our proposed policy mix achieves 100% of the targeted energy efficiency, by definition. But not all the available cost-effective energy-efficiency projects will be completed. Therefore, the final mix of efficiencies will be achieved through an unknown mixture of cost-effective projects supplemented by other projects driven by personal commitment and comfort needs.

In our view, this mix is fine, because:

1. When a private individual funds an upgrade that is not cost effective, that upgrade is funded from disposable income and the investment clearly creates intangible benefits that are valuable to that private individual;
2. The cost-effective initiatives are clearly beneficial to society; and
3. All upgrades add value to our statewide base of facilities and housing.

While further quantitative assessment of the precise cost-effectiveness of this policy mix would prove valuable, we find that:

1. Directionally, the bulk of market data indicates that impacts and cost/benefits are clear;
2. There is no way to determine the precise cost-effectiveness, because this mix of policy will

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<sup>16</sup> For more on microgrids: see Hyams Mea (2010) *Microgrids: an assessment of the value, opportunities, and barriers, to deployment in New York State*. NYSERDA 10675 [www.nyserd.org](http://www.nyserd.org)

produce known energy efficiency with an unknown mix of upgrade projects that are determined by thousands of free market choices; and

3. Though the magnitude of job and economic gains are not yet precisely quantified, benefit to cost ratios for these policies are clearly better than for alternatives.

## **2. Implementing the above policy and regulatory levers, by 2024, we could reasonably and profitably require:**

- 1,000 heretofore unplanned MWs of demand reduction in Zones G, H, I & J by 2018;<sup>17</sup>
- 4,000 heretofore unplanned gigawatt-hours (GWhs) of efficiency in Zones G, H, I & J by 2018;
- 3,000 heretofore unplanned MW's of demand reduction statewide by 2021 & 6,000 MW's reduced by 2024;
- 12,000 heretofore unplanned gigawatt-hours (GWhs) of efficiency state-wide by 2018, & 24,000 by 2024;
- Building envelope upgrades to cost-effectively achieve 10% reduction in fossil fuel consumption, statewide.

## **3. These achievements will create:<sup>18</sup>**

- More than 70,000 jobs for one year by 2018;
- More than 13,000 permanent jobs by 2018;
- More than 200,000 jobs for one year, state-wide by 2021;
- More than 30,000 permanent jobs by 2021;
- More than 300,000 jobs for one year, state-wide by 2024;
- More than 50,000 permanent jobs by 2024; and
- Private sector investment in New York State's energy efficiency infrastructure of more than \$6 billion by 2018, more than \$18 billion by 2021, and more than \$40 billion by 2024.<sup>19</sup>

## **4. Additionally, the Mid Hudson region could lead the way by creating:**

- 1,000 MWs of additional capacity demand response resources with 93%+ reliability, dispersed into every distribution loop, by 2018, in Zones G, H, I, J, & K;
- 500 MWs of reserves demand response resources with 93%+ reliability, dispersed into every distribution loop, by 2018, in Zones G, H, I, J, & K;
- 200 MWs of regulation demand response resources with 99%+ reliability, dispersed into every

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<sup>17</sup> We focus our projections on the NYISO control area zones in the Mid-Hudson Economic Development Region and New York City area, Zones G, H, I, J & K, because these zones will experience more growth than upstate zones over next decade.

<sup>18</sup> Assumption: Each MW reduced injects \$1.2 million annually in electric spend into the economy, creating 11 permanent jobs per million dollars saved annually. The 11 permanent jobs per million saved annually, is an extrapolation of the DOE's direct jobs calculator that assesses the direct jobs value of \$1 million spent, one-time: 11 one-year jobs. The capital cost of a MW saved is projected to be \$6.6 million, assuming the average pay-back for energy reduction measures is 5.5 years. More conservative estimates of average pay-back will raise the estimate of jobs created as well as of investment attracted, while paybacks of up to ten years and beyond still justify the cost-effectiveness of efficiency and control investments.

<sup>19</sup> This reflects the very conservative assumption that pay backs for energy efficiency will be reduced because low hanging fruit has been achieved. This is conservative because it assumes little or no technology development in the efficiency industry.

distribution loop, by 2018, in Zones G, H, I, J, & K; and

- Through private investment of more than \$500 million.

## 5. Private investment in demand response initiatives would create:

- Regional annual earnings and savings of more than \$125 million;
- More than 1,300 permanent jobs; and
- More than 4,000 one-year jobs.

The policy initiatives related to energy efficiency and demand response that we propose cost nothing on net. They are simply transfers of dollars from one set of stakeholders to others.

## 6. Redistribution; a cost/benefit qualitative analysis and discussion

**The policy initiatives related to energy efficiency and demand response that we propose cost nothing on net. They are simply transfers of dollars from one set of stakeholders to others.**

Community Choice Aggregation will create hundreds of millions of dollars of annual electricity per unit savings for every economic sector throughout the state. CCA will also bring hundreds of millions of dollars of private investment in renewable generation (likely more upstate than down), fed by better utilization of federal tax credits, coupled with the tax benefits that the municipal sector enjoys.<sup>20</sup>

An Energy Efficiency Portfolio Standard (EEPS)—coupled with minimal feed-in tariffs for energy efficiency as a foundation for the value of an Energy Efficiency Certificate—will result in an overarching transfer from sales of fossil fuels to disposable income in consumers' pockets. The cost of fossil fuel is primarily exported outside the state, as is a substantial portion of power plant profits. Some of the retained disposable income will also be spent outside the state, but most of those retained dollars will be recirculated within New York.

Further, an EEPS does have some redistributive impact on ratepayers through the following individual effects:

- **Impact 1:** An EEPS will create a slight per unit cost increase for all consumers from the efficiency benefit surcharge, just occurs now with the RPS/SBC surcharge.
- **Impact 2:** This slight increase will be offset by per unit cost decreases for all consumers: When total consumption goes down, clearing prices go down due to the favorable changes in the supply/demand balance.

On net, an EEPS might create a transfer from those consumers who do nothing to enhance energy efficiency to those consumers who do something to upgrade their facility. On the other hand, it might not cost consumers anything, because the cost of Impact 1 could be more than offset by the savings from Impact 2.

Consumers who do upgrade their facility will certainly benefit. In addition to the offsetting impact outlined above, consumers who upgrade will see additional benefits:

- **Impact 3:** Consumers who become more energy efficient will see total bill decreases, due to fewer units of energy purchased,

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<sup>20</sup> NWEAC is currently quantifying estimated savings, through a request for price quotations, to be issued to a subset of state electricity suppliers. Renewable investment market size is conservatively estimated based on proprietary internal business plans of suppliers focusing on CCA states. These could be better quantified through direct and formal NYS government contact with these business entities, contributing to a government study.

- **Impact 4:** Consumers who become more energy efficient will see earnings beyond savings, due to their being able to sell energy efficiency white certificates (under an effective EEPS program in New York).

If all consumers benefit from demand-side initiatives, then who pays?

The losers would be the centralized, fossil fuel power plants and their fuel suppliers from out of state and overseas. These traditional power plants would see the following impacts:

- **Impact 5:** Decreased margins due to lower clearing costs (see #2 above); and
- **Impact 6:** Decreased unit sales due to energy efficiency.

A heating oil EEPS would have slightly different impacts on oil suppliers. Oil companies would lose unit sales, but would transfer much of their focus into revenue-enhancing services that provide building efficiency. These building efficiency upgrades would add jobs and better utilize the maintenance sector of the state economy.

Democratizing "local reliability" markets—with community choice aggregation and microgrid metering for distribution loops—will benefit primarily small commercial and residential consumers of electricity, as larger consumers are already taking part in some of these markets.

Slightly more of the earnings in these markets will go to downstate consumers, because the ancillary services electricity markets are more lucrative downstate. However, we project these resources, and therefore earnings, will be located throughout the state.

Also, an inexpensive, clean and well-distributed ancillary services market will enable for supply-side policies that will benefit upstate more than downstate. A deeply committed renewable portfolio standard will create a powerful wind industry presence upstate.

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## Appendix: Some New York energy trends

### Some energy demand facts and trends

Overall, the baseline forecasts for New York's statewide energy demand have fallen from 2009 through 2011, largely due to the economic slowdown.<sup>21</sup>

Demand is less predictable today, perhaps due to global warming: 3 out of the last 4 summers have experienced "one summer in ten" levels of heat and humidity.

New York State is well behind in its 2015 energy efficiency goals, with some experts projecting that we will fall as much as 40% short of our 15% by 2015 goals.<sup>22</sup>

### Some energy supply facts and trends

Centralized generation capacity is the current business-as-usual condition of our state and region's energy system.

We lose two-thirds of the energy used in New York State for electricity generation due to being consumed by energy conversion itself or lost during transmission and distribution.

Only one-third of the energy we use generating electricity becomes power we can sell to end-users.

Electricity generation is the state's single largest consumer of energy.

Since 2000, electricity rates in New York State have risen by 24 to 33%.<sup>23</sup>

### Conclusions about current energy supply and demand trends

Siting large, centralized supply side power plants is enormously expensive and time consuming, with no guarantee to ratepayers of delivering cost-effective solutions.

Siting flexible, demand side solutions is both less expensive and less risky over the long-term than siting large-scale supply side plants.

Further, the short deployment cycle for flexible, demand side solutions means those investment produce results more quickly.

Energy efficiency gives New York the most impact for the least cost.

Public funding of demand side solutions funnels 100% of the costs and benefits back into the rate base. Public funding of supply side solutions does not.

The next 2 to 3 years are a good period for deploying any changes in either supply or demand, before demand increase accelerates again, especially in the more congested downstate electricity markets.

Our best current options for demand-side solutions are those require success in meeting a goal, rather than mere aspiration toward a goal: under the EEPS plan outlined above, each unit of energy efficiency will produce a certificate with predictable value.

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<sup>21</sup> Conversely, the NYISO Gold Book 2011 shows very modest increases in the Mid-Hudson zones of about one half of one percent per year between 2011 and 2021. These areas are reached through the limited transmission lines in the Mid-Hudson region. For these reasons, the Mid-Hudson region may be a good site for pilot projects for new energy policies.

<sup>22</sup> Source: NYISO 2011 Gold Book; NYSERDA Patterns and Trends 2011 [www.nyserda.ny.gov/Programs/Energy-Prices-Supplies-and-Weather-Data/Energy-Statistics.aspx](http://www.nyserda.ny.gov/Programs/Energy-Prices-Supplies-and-Weather-Data/Energy-Statistics.aspx)

<sup>23</sup> Source: NYISO 2011 Gold Book; NYSERDA Patterns and Trends 2011 [www.nyserda.ny.gov/Programs/Energy-Prices-Supplies-and-Weather-Data/Energy-Statistics.aspx](http://www.nyserda.ny.gov/Programs/Energy-Prices-Supplies-and-Weather-Data/Energy-Statistics.aspx)