Working Group III – LIPA's Overall EPS Structure Proposed Position

a) Targets and Benchmarks

It is not clear to LIPA what the DPS's definitions of Targets and Benchmarks are. Benchmarks could be the establishment of interim measurement points between now and 2015 or could mean the establishment of the baseline forecast that would be used to measure the achievement of the 15 x 15 goal. Establishment of targets could mean the discussion of what measures are allowed to be counted toward the 15 x 15 goal or could be the establishment of targets for specific types of measures (e.g. codes and standards are to targeted to achieve 4.5 percentage points of the 15 percentage point goal) or could mean allocation of the 15 x 15 goal between specific utilities or regions of the state.

For the purpose this proposal, LIPA has used the following definitions:

- ***Targets*** – The allocated share of the 15 x 15 goal assigned to specific utility service territories, regions and/or specific measures or programs.
- ***Benchmarks*** – Interim goals for specific points in time between the present and 2015.
- ***Baseline*** – The forecast of load, absent the 15 x 15 program, that would be used as a reference to measure the achievement of the 15 x 15 goal.

Establishment of Targets

LIPA proposes that the energy target for achieving the 15 x 15 goal be allocated to each utility service territory or region in proportion to the energy requirements of the service territory or region using the Baseline energy forecast.

LIPA proposes that no targets be established for the individual measures within the energy target. The composition of the program needs to vary from region to region depending upon the nature of each regions customer base and growth pattern, and needs to be flexible over time to facilitate the achievement of the 15 x 15 goals.

Establishment of Measures

The types of measure that can count toward the 15 x 15 goal impact how the forecast baseline is established and define what types of measurement and verification is required. LIPA proposes that the following measures be allowed to count toward the 15 x 15 goal:

1. Building code enhancements. More stringent standards established in state and local codes that require builders/owners to improve the energy efficiency of new or renovated structures.

2. Appliance efficiency standard enhancements. More stringent standards for national and State standards to improve the energy efficiency of new appliances and sold in New York.

3. Market transformation. Voluntary improvement to the appliances, equipment and design standards offered by manufacturers and retailers that result in greater efficiency options and fewer inefficient choices.

4. Renewable distributed generation located on the customer side of the meter. The annual output of the renewable generation (ie. Solar Panels, Small Wind) can be measured and should be counted towards the goal.

5. Measures that improve the efficiency of the delivery of power from the generator to the customer over the transmission and distribution system within the NYISO. Measures which reduce line losses, such as higher efficiency substations and the use of superconductors, reduce the amount of kWhs that would otherwise need to be generated.

6. Transmission Induced Generator Efficiency Recovery (TIGER) - Improvements to the transmission system that result in reduction of the average heat rate of the generation fleet. In certain instances transmission constraints prevent the efficient dispatch of the system. In "load pockets", locally installed generation must be run to maintain reliability and offset load on transmission lines importing energy into the area.

7. Improvements to power plants that result in reduction of electricity use at power plants. Known as "station power", power plants require a substantial amount of power to continue operation. New improvements could measurably reduce the amount of power drawn by the plants themselves, reducing overall electricity requirements and use of fossil fuel.

8. Improvements to power plants that result in increased efficiency of power production. Retrofitting and modifications to existing power plants to increase generation efficiency, lowering the overall heat rate - the amount of fuel used in BTUs to generate a kWh of electricity. While this measure does not reduce consumption of electricity, it reduces the overall consumption of fossil fuel – a stated objective of the 15x15 initiative.

9. Efficient Electro technologies should not be counted as part of the load[1]. The spread of technologies which reduce overall energy requirements (fuel usage) yet

[1] An example of this is the rechargeable hybrid vehicle, whose increased penetration would result in an increase in electrical energy usage from recharging, but a larger reduction in energy consumption and air emission via decreases in gasoline consumption. In order to increase and encourage the use of such efficient technologies, it is necessary to develop a mechanism such that the load serving entity is credited for the overall energy savings from the implementation of such efficient electro-technologies. In order to accomplish this goal, an organization such as NYSERDA (in conjunction with LIPA) could develop a list of approved efficient technologies so that appropriate credits for the use of these technologies could be given to load serving entities.

increase electricity consumption should not be counted against a utility's compliance with the 15x15 goal (ie. Electric Cars). The attributed increase in electric sales should be removed for comparison purposes to the benchmark load forecast.

Establishment of Benchmarks

It is important that benchmarks be established to measure progress along the way. LIPA does not have a specific recommendation for what these benchmarks should be. As a guiding principal, LIPA recommends that the benchmarks start with a small goal in 2008 and 2009 to recognize the fact that it takes time to start up new programs. The benchmarks should be greater in the 2010 to 2012 time period to recognize the accomplishment of the proposed fast track programs. Finally, the benchmarks should recognize an acceleration of the program in the 2012 to 2015 time period as newer, more aggressive programs are added to the fast track efficiency measures.

Establishment of Baseline

Existing utility load forecasts, modified as discussed herein, are best suited to serve to establish the baseline of future usage for measuring the level of energy efficiency savings in 2015. Utility load forecasts should be measured at the requirements level to include utility losses, company use and station service. Utility load forecasts should be subject to the following adjustments prior to establishment of the baseline:

1. Load forecasts developed in calendar year 2006 are recommended for use by all utilities (a common forecast year should be used by all participants)

2. Forecasts should be adjusted to remove the effects of all planned energy efficiency measures implemented since January 1, 2007 by NYSERDA, NYPA, LIPA and other transmission owners.
    a. Failure to do so will penalize the utilities that were already planning energy efficiency programs in their respective forecasts prior to the announcement of the EPS program.
    b. The 2007 and beyond effects of measures installed in 2006 or earlier should not be removed from the baseline forecast.

3. Any effects built into the forecast for improvements in building code changes and appliance efficiency standards slated for implementation in 2007 and beyond should be removed from the forecasts.

4. The effects of market transformation activities for 2007 and beyond that were included in the utility forecast should also be removed from the forecasts.

5. The effects of natural conservation and free ridership for 2007 and beyond should also be removed from the forecasts to establish a pre-efficiency baseline.

6. The effects of customer side of the meter distributed generation installed in 2007 and beyond that were included in the utility forecast should be removed from the forecasts.

7. The effects of T&D system efficiency improvements made during and after 2007 that were included in the utility forecasts should also be removed from the energy requirements forecasts (there should be not effect on sales forecasts).

8. Load forecast should be measured at the requirements level (metered usage plus losses).
    a. The effects of programs that lower requirements (e.g., T&D improvements (regardless of the impact on load at the customer's meter) should be added back into the forecast.

9. The specific effects of the energy consumed by efficient electro-technologies in the baseline forecast should be identified and removed from the forecast.

b) Measurement and Verification

Two key components of a measurement and verification philosophy are:

- Rigorous performance metrics and monitoring – a constant and ongoing evaluation is needed to measure actual progress relative to each program's goals and costs; and
- Flexibility – the ability to quickly implement program adjustments as necessary to meet performance goals and manage costs is required.

While overall program effectiveness can be easily measured, individual programs require defined methods to determine their respective contribution to overall savings.

- Savings estimates for all utilities programs should be measured, verified and refined over time with rigorous third party[2] impact evaluations.

[2] The definition of 3rd party depends upon how the program is being implemented. If the program is being implemented by contractors to a utility or authority, measurement and verification should be performed by an entity that does not have a direct interest in demonstrating that they have achieved their contracted goals. This entity could be another contractor and internal staff of the utility or authority. If the program is being implemented by internal utility staff, measurement and verification should be done by a different group within the utility that does not have performance goals, targets or incentives tied to the success of the program.

- As the implementer of its own programs, LIPA is best situated to manage the measurement and verification of its programs, and savings estimates are to be verified and refined over time with rigorous third party impact evaluations.
- Progress toward meeting established goals need to be monitored, measured, and evaluated on an on-going basis.
- An appropriate role for the PSC would be in compiling statewide data and monitoring the progress of achieving established goals.
- Sufficient funding needs to be included in programs to allow for such measurement and verification.

Building Code enhancements and Appliance efficiency standard enhancements should be measured against what energy use would have been with the standards in effect in 2006 minus the energy used under the enhanced standards and codes.

Similarly, market transformation activities that contribute to the EPS savings estimates should be measured against a verifiable baseline estimate of what the market penetration of specific appliances or end uses would be absent the utility-sponsored transformation of the market.

Provisions also need to be made to allow measurement of programs that focus on areas other than end-use efficiency gains. Proposed measurement approaches for these other types of programs are as follows:

1. Renewable distributed generation located on the customer side of the meter – Where available, the actual output from each and every customer owned renewable generator should be tallied and counted towards the goal. In the absence of direct metering, estimates will need to be developed based on verified installed capacity and annual load factors specific to the technology, location, equipment and installation design, and pre-determined site specific factors.

2. T&D Loss Reductions – LIPA proposes that T&D losses reductions be calculated using load flow calculations on a test year basis. Calculation of loss reductions would be done in the following manner:
    - A model of the transmission and/or distribution system at the beginning of a year would be created
    - A model of the transmission and/or distribution system at the end of the year would be created
    - Both models would be simulated using the historic load for the year.
    - The losses in kWh for each model would be calculated
    - The efficiency gain in kWh for the given year would be calculated by subtracting the value of the losses at the end of the year from the value of the losses at the beginning of the year.

3. Lost and Unaccounted for Energy – L&U studies will need to be performed periodically to document improvements in L&U to include the key components of transmission losses, distribution system losses, company use and unaccounted for energy. Since transmission losses and distribution losses are captured in 2 above, only reductions in company use and unaccounted for energy would be counted as efficiency savings.

4. TIGER – Generators operate less efficiently when transmission constraints exist, and generators may operate that otherwise would not need to be running. To capture efficiency increases resulting from alleviating the transmission constraints, the reduced use of fuel needs to be quantified and translated into kWhs. The efficiency savings would be calculated using a production simulation model in the following manner:
    - The system commitment and dispatch constraints would be modeled before the transmission improvements designed to reduce dispatch constraints.
    - The system commitment and dispatch constraints would be modeled after the transmission improvements designed to reduce dispatch constraints.
    - The base fuel requirement in BTUs would be calculated for both the before and after case
    - The system average heatrate before the system improvements would be calculated.
    - The equivalent kWh of savings from the TIGER program would be calculated by [(Base Fuel Requirement in BTUs – New Fuel Requirements in BTUs)/(System Average Heat Rate)].

5. Generator Ancillary Services Efficiency Gains – When generators are not generating power, they still consume a certain amount of energy to maintain the plant. Energy can be saved by installing more efficient equipment in the generating stations. To the degree that these savings are not captured through other means, the efficiency gains from such efficiency improvements should be captured in a manner similar to other efficiency measures installed in customer facilities.

6. Increased power plant efficiency measures – When power plants are generating power, more efficient equipment mentioned in 5 above can result in a reduction in the unit's heat rate. Other efficiency measures can reduce the total fuel consumption of the unit. Since both types of reductions result primarily in fuel savings, these savings should count toward the 15 x 15 objective. Since improvements in power plant efficiency results in an overall reduction in the heat rate, or BTUs consumed per kWh energy produced, we recommend the following formula to translate generator efficiency improvements into yearly efficiency savings in terms of kWhs [(Heat Rate Improvement)/(Base Heat Rate) x Base kWh output]. The result is the equivalent amount of kWhs in fuel saved the base

generator would be able to generate. This amount should be used to reduce the annual electric consumption data.

7. Efficient Electro-technologies – As efficient electro-technologies spread, the resulting additional load will need to be netted out through a proper estimation of the technology's resulting increased demand. LIPA recommends the following approach:
    - First an entity such as NYSERDA should perform a study to determine which technologies should be considered an efficient electro-technologies. The study should also determine a multiplier that would be used to calculated the net energy savings for a technology[3].
    - As mentioned above, the baseline forecast should be adjusted by removing the projected energy from the eligible electro-technologies from the forecast.
    - In the absence of directly metered data, surveys and other data collection processes should be used to establish the extent to which the technology has penetrated the market. Additionally, a per-unit estimate of annual electric requirement will need to be developed, based on manufacturer provided data and/or average usage habits.
    - The product of the estimated electric requirements (kWhs) times the number of units of the technology times the electro-technology multiplier should used to calculate the annual amount of kWhs reductions attributed to the electro-technology.
    - The savings amount should then be deducted from the utility's yearly energy sales to determine the utility's compliance with the 15x15 goal.

[3] For instance, if a given technology saved 45,000 BTU of fossil fuel for each kWh of electricity used and an average of 9000 BTUs were used to produce a kWh of electricity, a multiplier of 5 might be applied to that technology. Depending upon transmission constraints, the multiplier might vary from one locations to another.