

USEPA Clean Power Plan: Impacts on NY

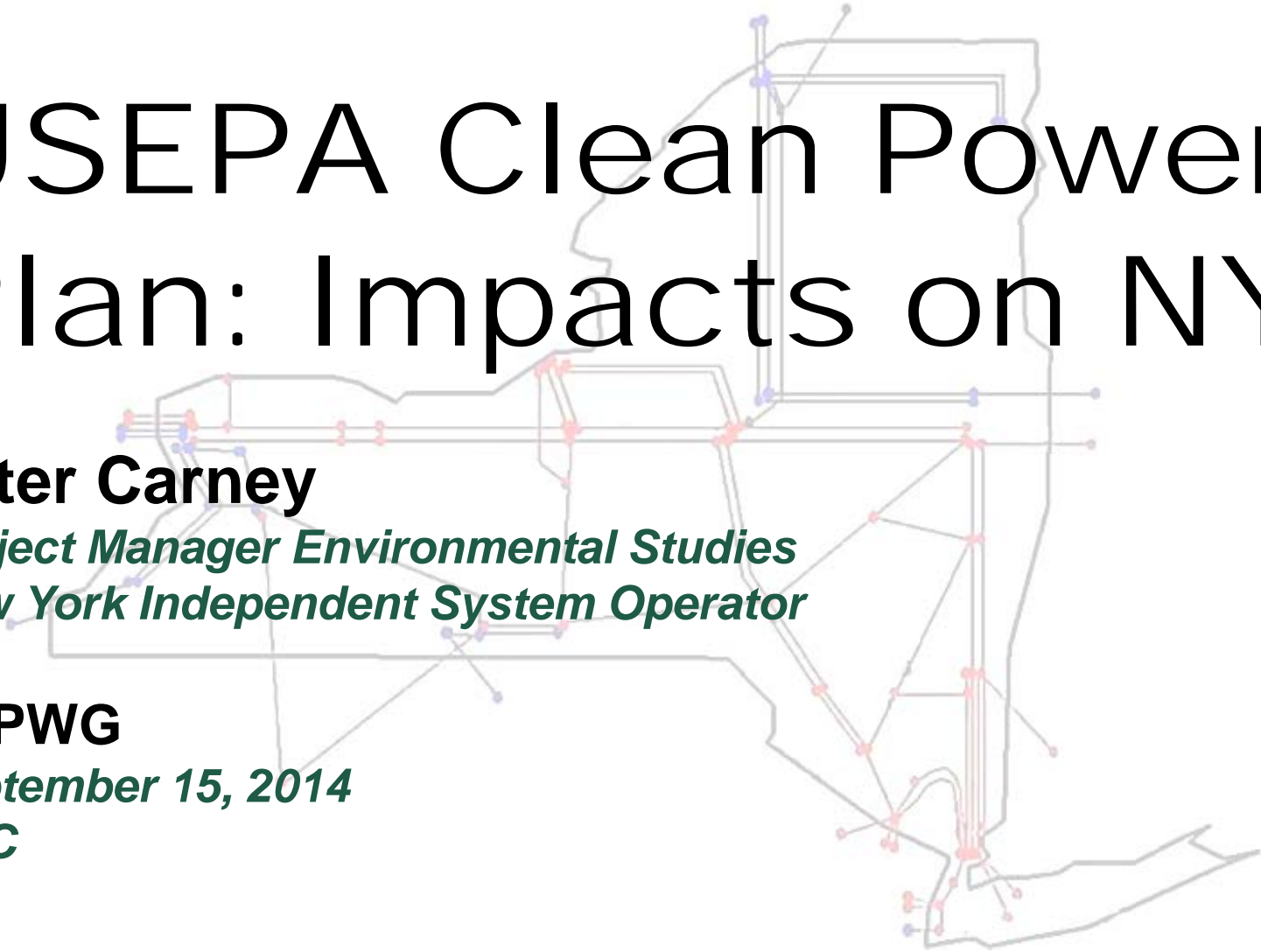
Peter Carney

*Project Manager Environmental Studies
New York Independent System Operator*

ESPWG

September 15, 2014

KCC



Agenda

- ◆ **Design of the Clean Power Plan**
- ◆ **Comparative Impact on NY**
- ◆ **Building Blocks**
- ◆ **Possible path to compliance**
- ◆ **Schedule**

EPA Proposed CO₂ Rule - "Clean Power Plan"

- ◆ **EPA's proposal requires reductions in CO₂ emissions from existing power plants through plans to be established by the states. State Implementation Plans (SIPs) must be designed to reduce emissions to an amount equivalent to the rate, #CO₂/MWH, established by EPA. The formula to calculate the rate is described on slide 5. EPA sets two target rates, one for 2020-2029 and another for 2030.**
 - *USEPA has set allowable emission rates for each state*
 - *USEPA is seeking comment on an alternative that is less restrictive*
 - *The proposal allows states to propose mass based and regional systems (a mass-based plan translates the rate/MWH set by EPA to a state-wide or regional tonnage cap which is what RGGI uses).*

USEPA used four design elements to set the allowable emission rate for each state

- ◆ **Using the base year 2012, these design elements describe state actions EPA assumed could be pursued to reduce CO₂ emissions, and from which the proposed rates were derived. These are not required actions – the SIP can identify alternatives that get the state to the same place.**
- ◆ **The first design element is based upon a 6% improvement in heat rate from coal fired units.**
- ◆ **The second element is based on achieving a 70% nameplate capacity factor at existing natural gas fired combined cycle units.**

Design Elements cont.

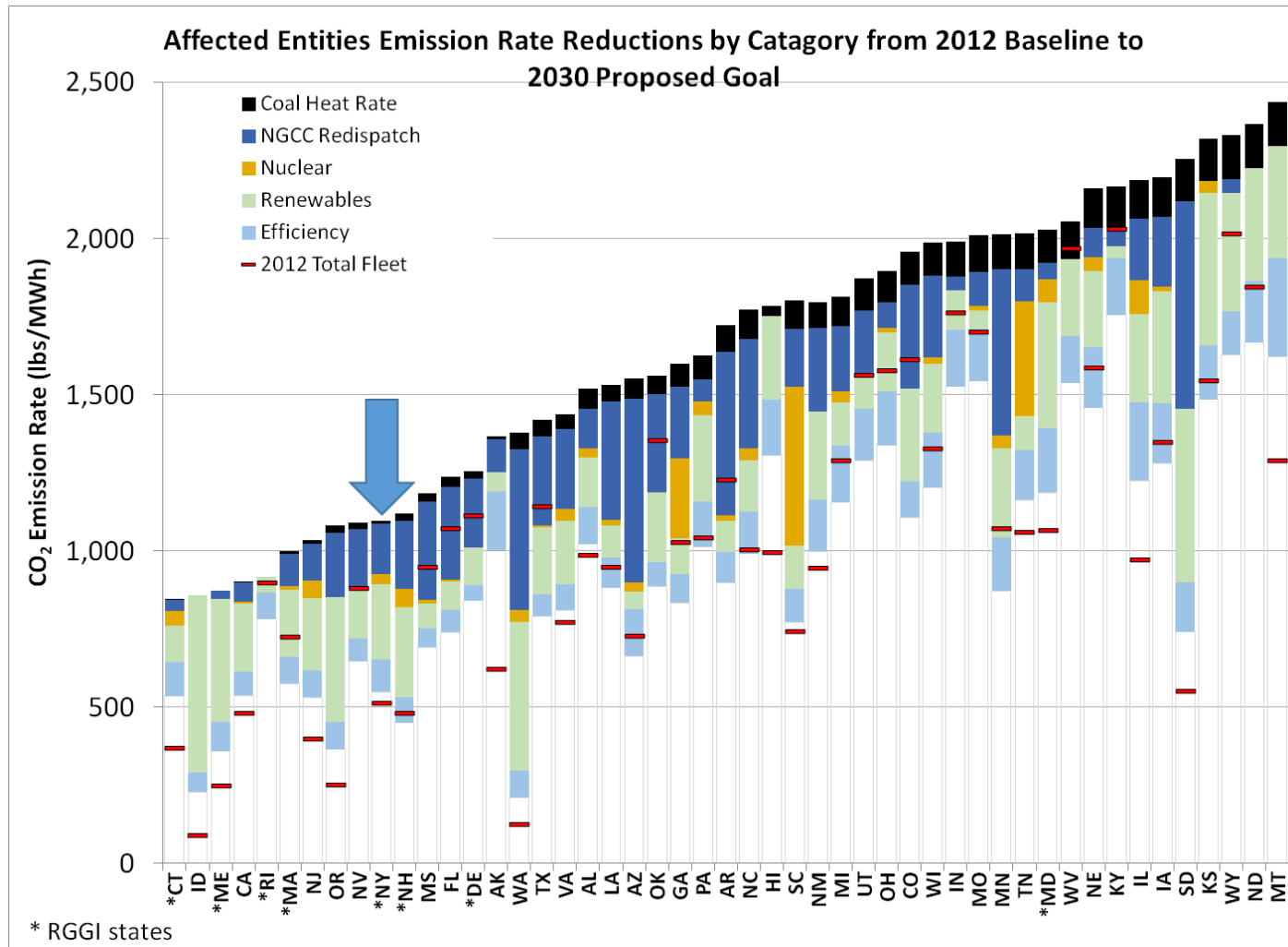
- ◆ **The third element is based on an aggressive build out of renewable generation as well as maintaining existing nuclear generation;**
- ◆ **The fourth element is based upon an aggressive deployment of energy conservation measures**
- ◆ **These design elements are used in this equation**

$(\text{coal gen.} \times \text{coal emission rate}) + (\text{OG gen.} \times \text{OG emission rate}) + (\text{NGCC gen.} \times \text{NGCC emission rate}) + \text{“Other” emissions}$

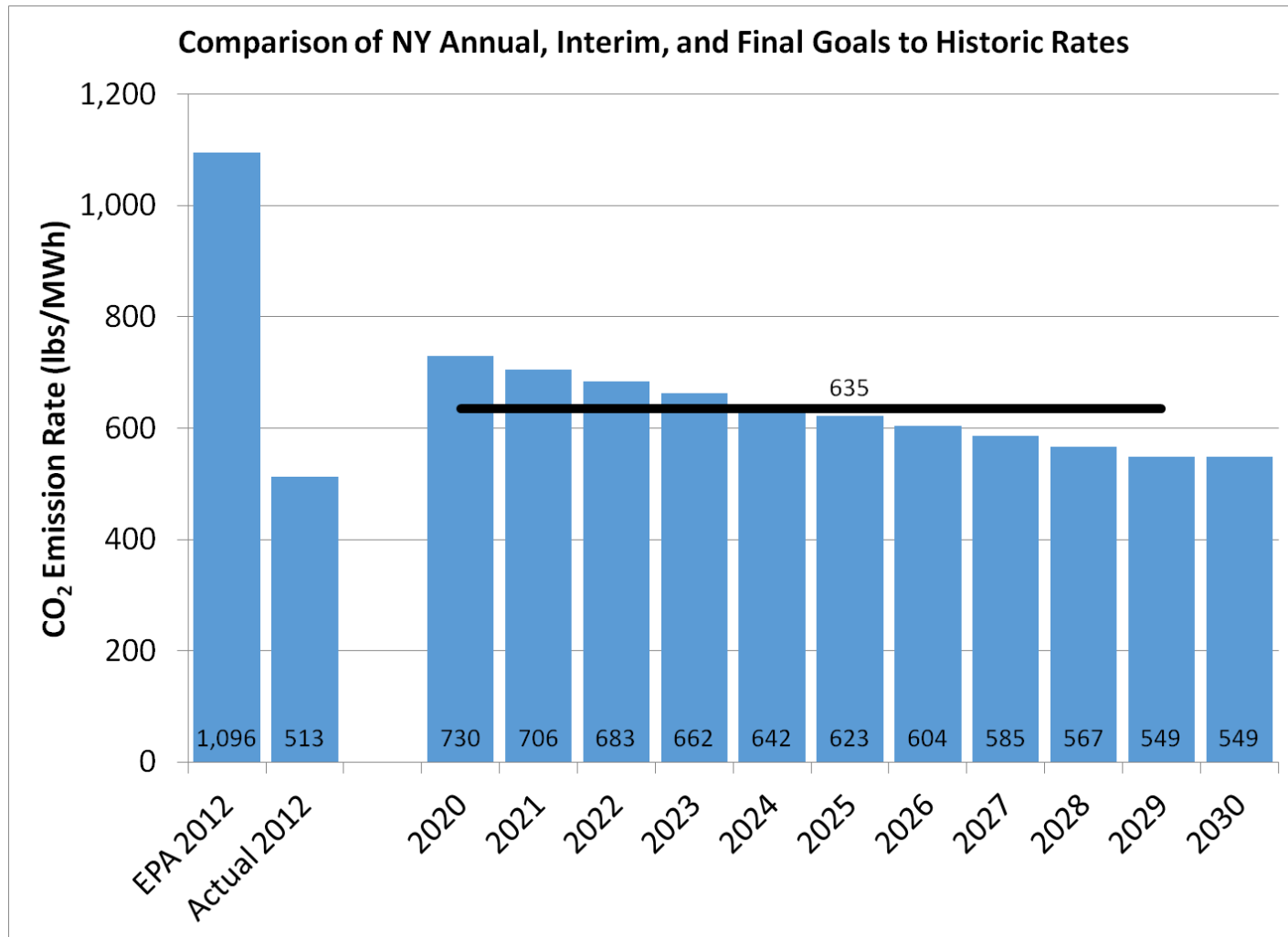
$\text{Coal gen.} + \text{OG gen.} + \text{NGCC gen.} + \text{“Other” gen.} + \text{Nuclear gen.}_{uc+ar} + \text{RE gen.} + \text{EE gen.}$

- *uc = under construction (N/A in NY)*
 - *ar = at risk*
- ◆ **2020 Target = 730 # CO₂/MWH**
- ◆ **2020 – 2029 Average Rate = 635 #CO₂/MWH**
- ◆ **2030 Target = 549 #CO₂/MWH**

NY is required to do more than most other States



NY Emission Rate Targets



Building Block Issues

- ◆ **Building Block #1 Heat Rate Improvement**
 - *At the very low production levels called for in the USEPA IPM production cost modeling, heat rates will increase*
 - *USEPA calls for comment on including oil and gas units in this building block*
- ◆ **Building Block #2 70% CC capacity factor**
 - *Incorrectly uses nameplate in the calculation*
 - *May well not be feasible in a market based system*
 - *Above normal production is assumed by USEPA to reduce coal and oil/gas production to near zero.*

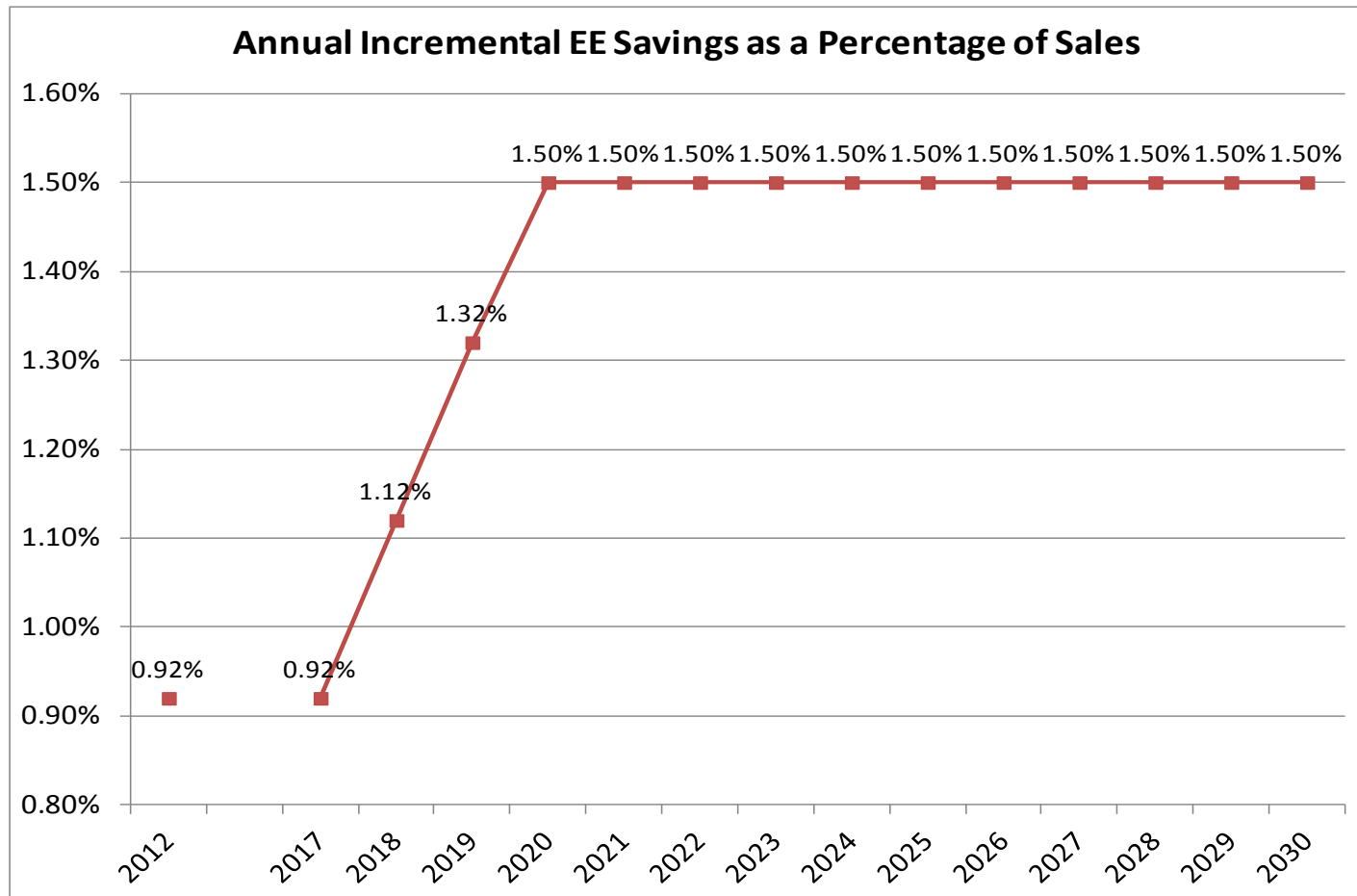
Building Block Issues

- ◆ **Building Block #3 Expanded Use of Non-emitting Generation**
 - *USEPA uses the average RPS of NY and New England to set NY's target*
 - NY's RPS goal of 30% includes existing hydro
 - USEPA excludes the use of existing hydro to meet the target. Net effect is the addition of 24,000+ GWH of renewables above the RPS
 - *This block also assigns an extra amount of nuclear generation to NY as a proxy for "at risk" nuclear generators while excluding nuclear generation*
 - 5.8% * NY Nuclear Capacity*90% CF.
 - Any loss of nuclear capacity would need to be compensated for by additional renewables

Building Block Issues

- ◆ **Building Block #4 Expanded Deployment of Energy Efficiency**
 - *Ramp up deployment rate to an incremental rate of 1.5% annually*
 - *Credit is limited to the ratio of in state generation*
 - **(Instate Generation/Sales)* EE Savings=Eligible EE**

NY Energy Efficiency Deployment Assumptions



Remaining Questions

- ◆ **Notwithstanding the unequal reductions required of NY, nor the technical issues of the design of the building blocks, the question remains, “Can New York comply with the requirements of the Clean Power Plan?”**
- ◆ **What is the appropriate conversion method from USEPA’s rate base system to the RGGI mass base system?**

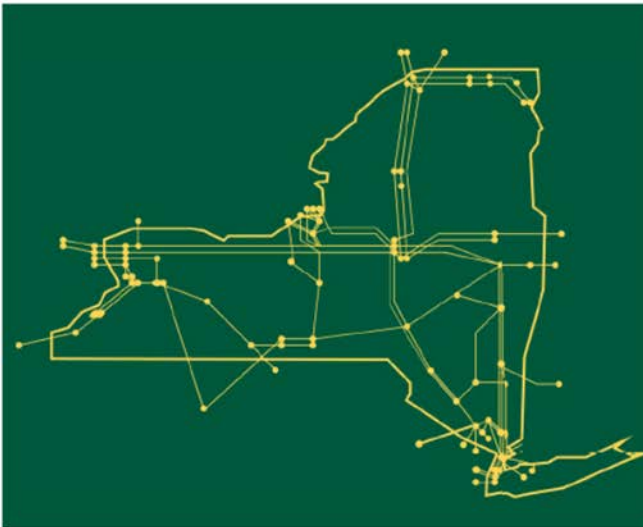
Base Year 2012

2012 Base Year					
Generation Type	MW	CF	GWH	#CO2/MWH	Tons CO2
Hydro	4,272	0.69	25,822	0	0
Coal	1,495	0.35	4,584	2,219	5,085,582
OG Steam	9,550	0.13	10,876	1,366	7,427,994
NGCC	8,291	0.6	43,421	934	20,277,607
GT gas	3,025	0.11	2,915	1,320	1,923,827
GT oil	1,800	0.01	158	2,400	189,216
Wind	1,450	0.28	3,557	0	0
PV	35	0.12	37	0	0
PS	1,400		750	0	0
Nuclear	5,425	0.94	44,672	0	0
Other			2,590	0	960,506
Total	36,743		139,379		35,864,732
Fleet Rate #CO2/MWH					515
EPA Rate #CO2/MWH					999

Clean Power Plan Schedule

- ◆ **June 18 Federal Register**
- ◆ **October 16 Public Comments Due**
- ◆ **June 2016 USEPA finalizes the rule**
- ◆ **June 2017 State Implementation Plan Due**
- ◆ **June 2018 Multi State Implementation Plan Due (RGGI)**
- ◆ **2020 First emission reductions required**
- ◆ **2030 Final emission reductions required**

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



www.nyiso.com