



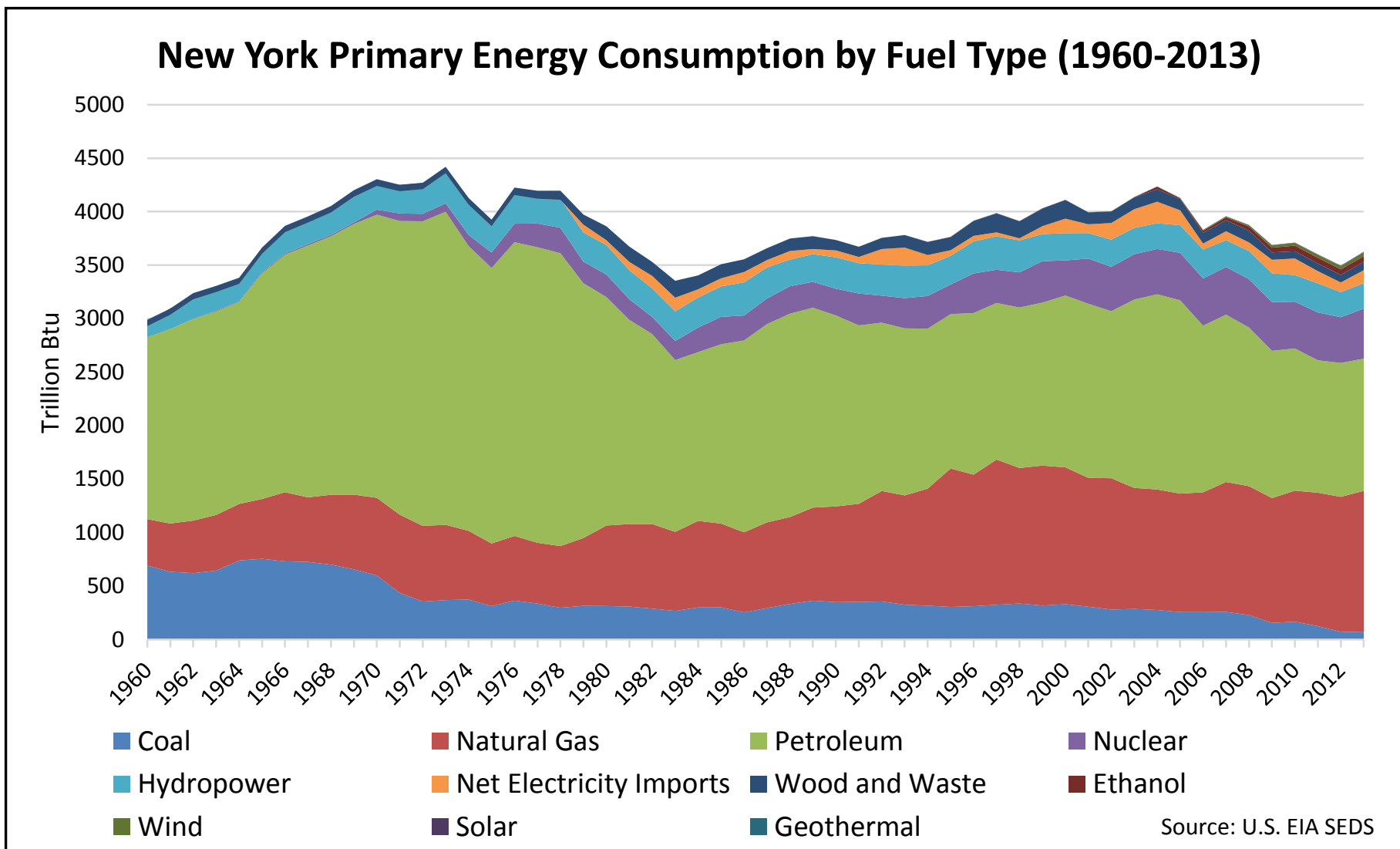
NYSERDA

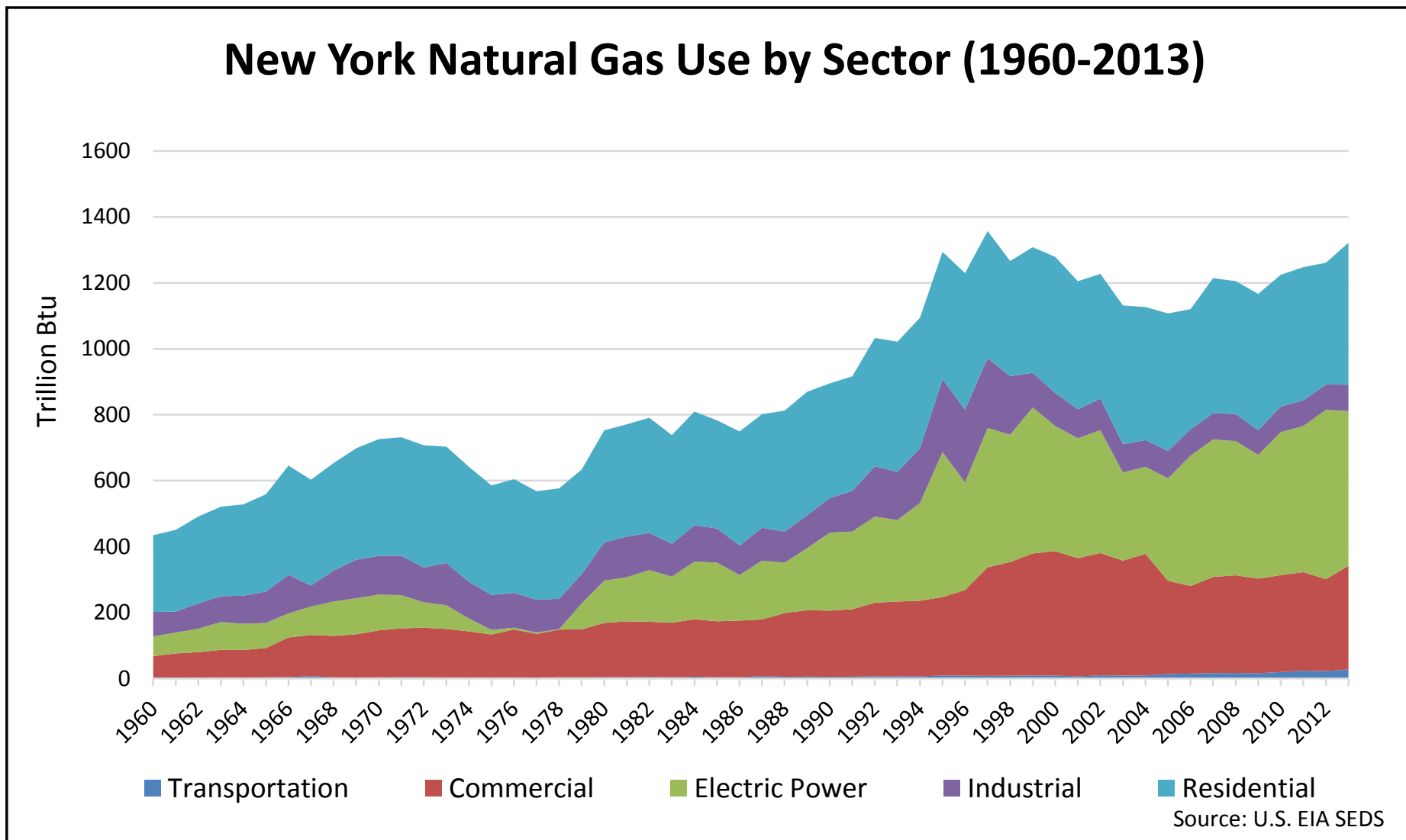
Energy in Transition

New York City Metro Area Energy and Air Quality Data Gaps Workshop

May 24, 2017

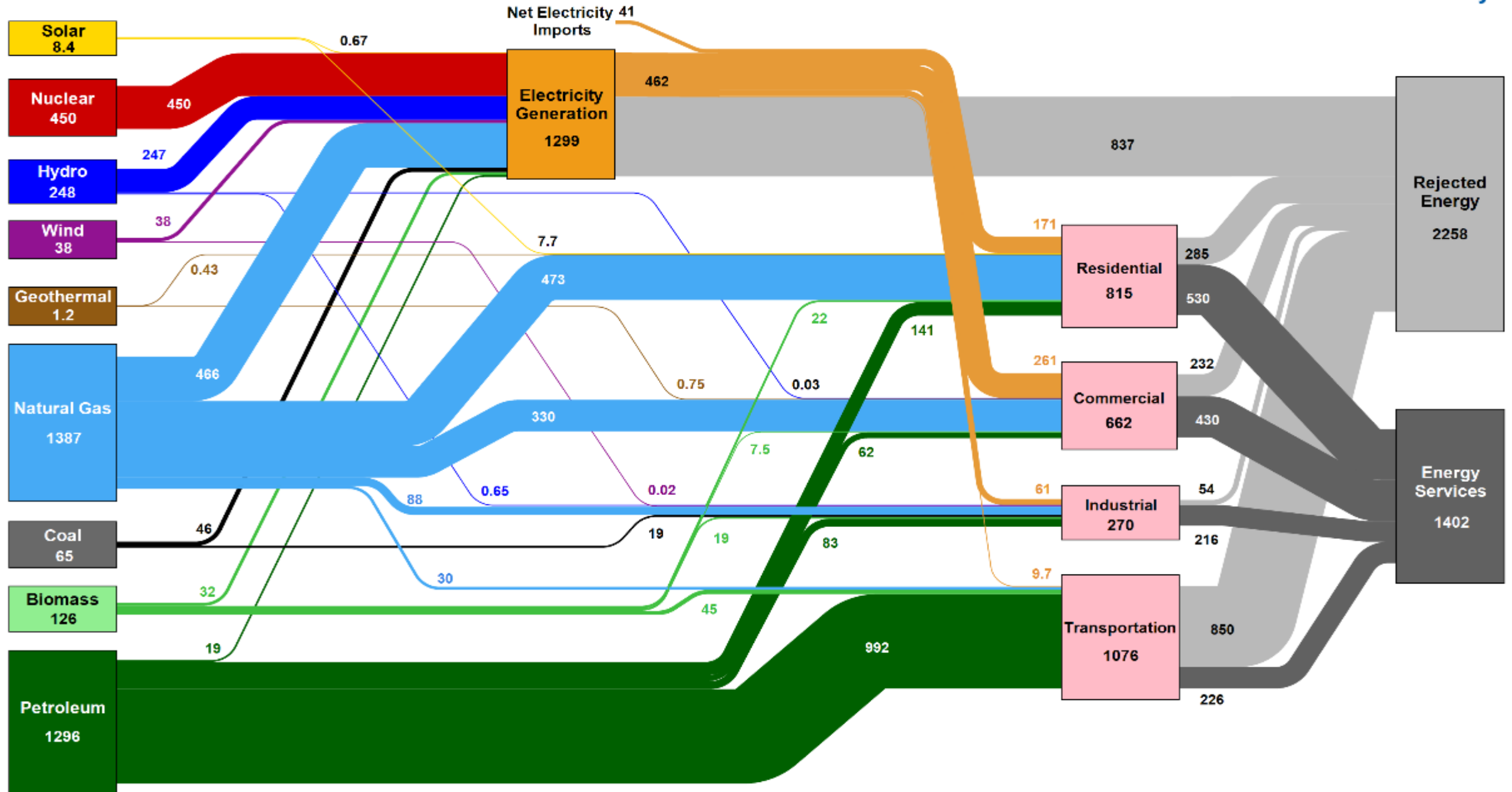
Carl Mas
Director Energy and Environmental Analysis
New York State Energy Research and Development Authority





Note: Values less than 100% represent electricity exports

New York Energy Consumption in 2014: ~ 3660 Trillion BTU



New York State Energy Plan

Reforming the Energy Vision (REV): A comprehensive roadmap to build a clean, resilient, and affordable energy system for all New Yorkers

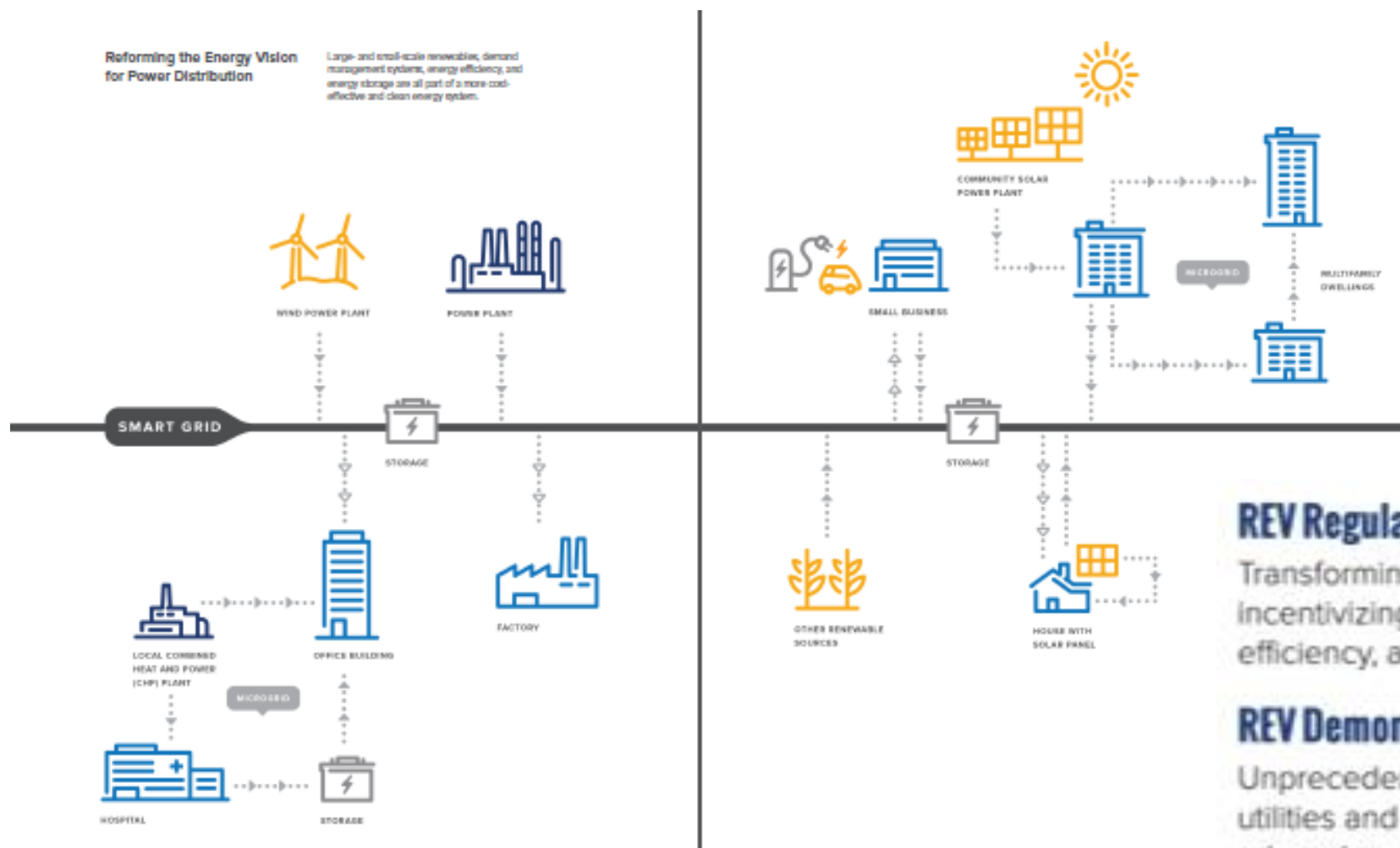
40% **Reduction**
in GHG emissions from 1990 levels

50% **Generation**
of electricity must come from renewable energy sources

23% **Decrease**
in energy consumption in buildings from 2012 levels

New York State Energy Plan

REFORMING the ENERGY VISION (REV)



REV Regulatory Reform

Transforming the way utilities operate by incentivizing smart energy management, efficiency, and renewable energy.

REV Demonstration Projects

Unprecedented partnerships between utilities and technology companies advancing private investment in clean energy.

State Energy Plan

Clean air and clean water are essential to New Yorkers' health and quality of life as well as the State's economic development.

Guiding Principles

Market Transformation

Community Engagement

Private Sector Investment

Innovation and Technology

Customer Value and Choice

State Energy Plan cont'd

Initiatives

Renewable Energy

Buildings and Energy Efficiency

Clean Energy Financing

Sustainable and Resilient Communities

Energy Infrastructure Modernization

Innovation and R&D

Transportation

Clean Energy Fund

A Strategic Pillar of the New York State Energy Plan

- 10-year, \$5 billion funding commitment
- Reshapes New York's energy efficiency, renewable energy and energy innovation programs
- Reduces cost of clean energy
- Increases renewable energy to meet demand
- Mobilizes private investment in clean energy

<https://www.nyserda.ny.gov/About/Clean-Energy-Fund>

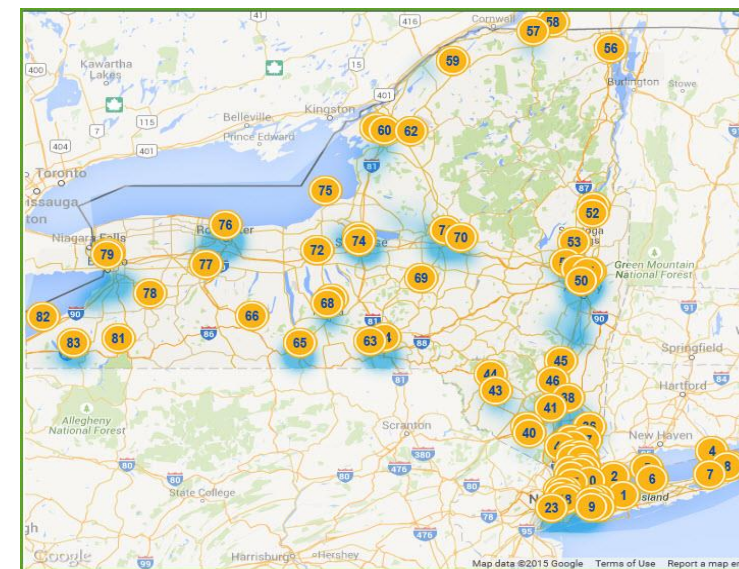
NY Prize \$40,000,000

A first-in-the-nation competition to help communities create microgrids - standalone energy systems that can operate independently in the event of a power outage.

Stage 1: Feasibility Assessment

Stage 2: Engineering Design, Financial /Business Plan

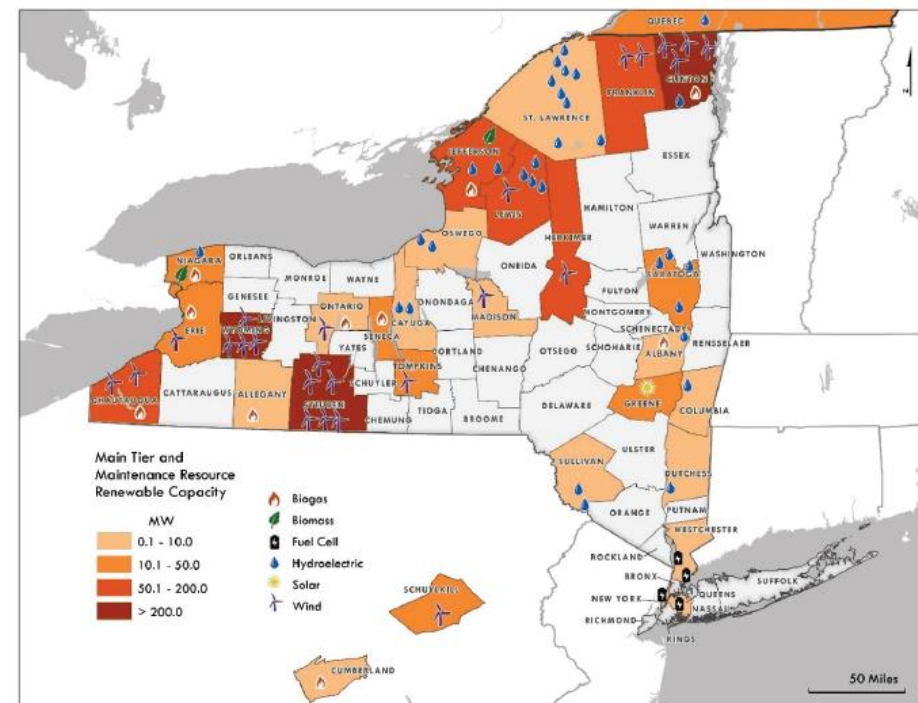
Stage 3: Microgrid Build-out and Operation



Clean Energy Standard

50% by 2030

- CES was adopted by the PSC in August 2016 requiring that 50% of NY's electricity come from renewable energy sources by 2030.
- Steadily build upon the 2014 baseline of renewables (26%) and dovetail with the State Energy Plan goal of achieving a 23% decrease in energy consumption.



NY-Sun

Making solar affordable for all New Yorkers

Progress:

- 800% increase since 2011
- 8,000 people in industry
- Costs cut in half in 5 years
- 814 MW solar installed + 1,142 MW in pipeline

Why:

- Expand installed solar capacity
- Attract private investment
- Enable sustainable development of a robust industry
- Create well-paying skilled jobs
- Improve grid reliability
- Reduce air pollution



Multi-State Transportation and Climate Initiative

- Partnership of 11 Northeast states & DC, facilitated by Georgetown Climate Center
- Collaboration of Energy, Environment, & Transportation agencies in each jurisdiction
- Bringing states together to address barriers to EV adoption, sustainable communities, clean freight
- Under the auspice of the TCI, six jurisdictions have agreed to work together to develop potential new market-based policies to cut transportation emissions

Multi-State ZEV MOU

- In October 2013, Gov. Cuomo and seven other governors (CA, CT, MA, MD, OR, RI, VT) signed an MOU agreeing to cooperate to expedite the deployment of zero emission vehicles (EVs and fuel cell vehicles)
- Agency staff developed an action plan, which includes incentives, collaborative programs and research
- Focus areas include consumer engagement, dealer engagement, fleets, infrastructure planning and regulation, and workplace charging

Charge NY

EV Programs

- Drive Clean Rebate - www.nyserda.ny.gov/Drive-Clean-Rebate
- EV Truck Voucher Program
- Charging Station Tax Credit
- Municipal Charging Station & EV Rebates
- Additional Charging Station Incentives (upcoming)
- Aggregate EV Purchasing for Public Fleets
- EV Consumer Outreach and Education
- EV-related R&D Grants

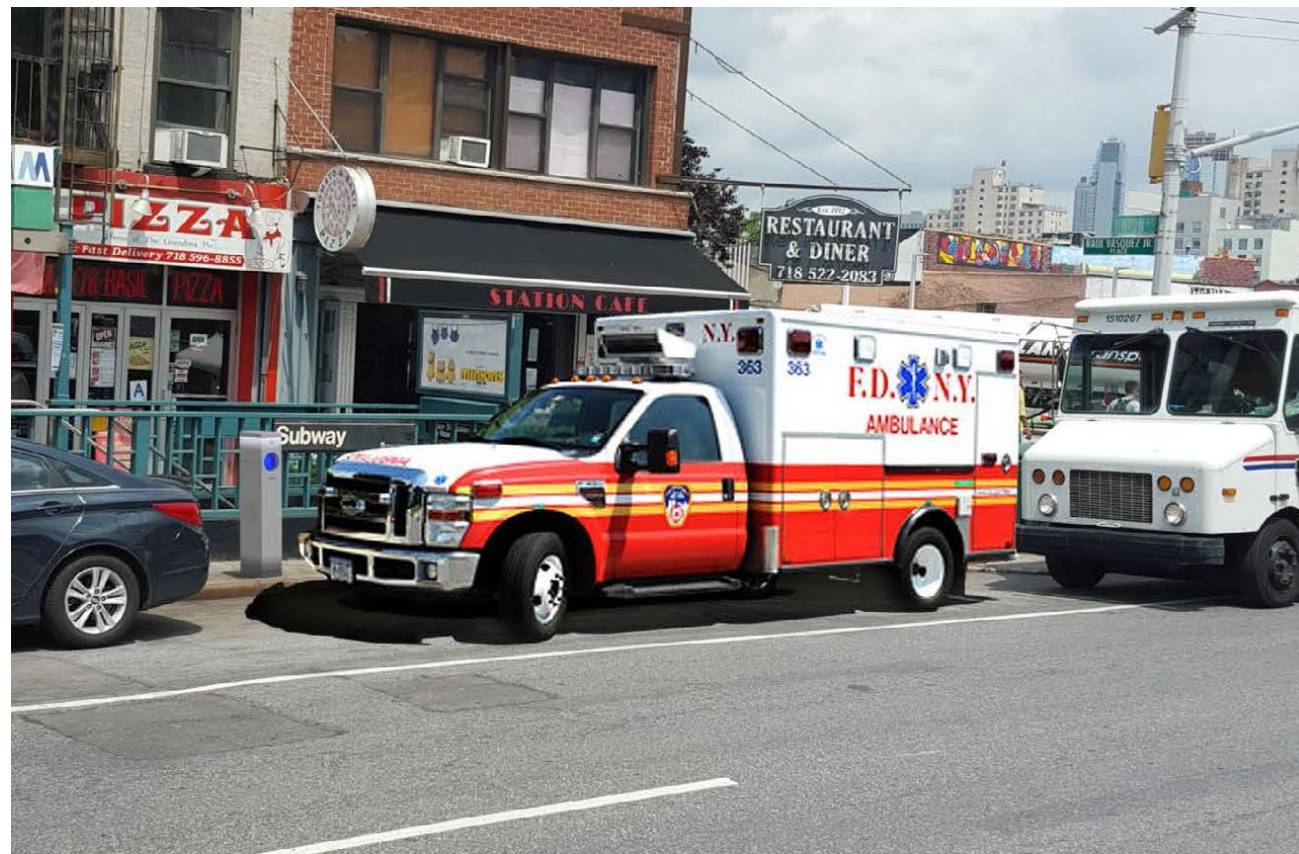


NYSERDA's Clean Transportation Program

- **Goal:** Develop, demonstrate and deploy cutting edge technologies, policies, and business models that expand the use of:
 - Electric Vehicles
 - Public Transportation
 - Mobility Management
- Work with private sector and public partners
- Total budget of approximately \$15M per year

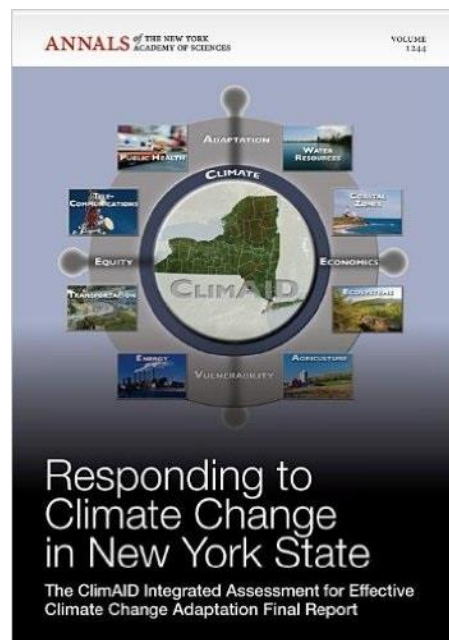
Reducing Ambulance Idling in NYC

- MOVE Systems & FDNY installing on-street power pedestals
- Also working with Shurepower & Mobile Fleet on alternate solutions



NYSERDA's Environmental Research Program

- Increase the understanding and awareness of the environmental and public health impacts of energy choices and emerging energy options
- Provide scientific foundation for creating effective and equitable energy-related environmental policies and resource management practices



Air Quality and Health Effects Research

What are the significant changes that are occurring in the power, building heating and cooling, and transportations sectors and what are the anticipated changes (increases and decreases) in emissions and exposure estimates?

emissions characterization

ambient air quality monitoring

source apportionment

improved modeling

trends analysis

epidemiology studies

clinical health studies

accountability studies

exposure assessment

health impact assessment



Atmospheric Sciences Research Center Long-term Monitoring



Queens College, Whiteface Mountain, Pinnacle State Park

20+ year database of highly-time resolved measurements –
particulate matter, ozone, gaseous precursors

Technology evaluation

Source apportionment

Field intensives/ vehicle chase

Particle compositional changes

Particle formation studies

Trends analysis

Atmospheric chemistry

New York City Metro Area Energy and Air Quality Data Gaps Workshop

May 24th – 25th, 2017

Workshop Steering Committee

Ellen Burkhard, *NYSERDA*

Arlene Fiore, *Columbia University*

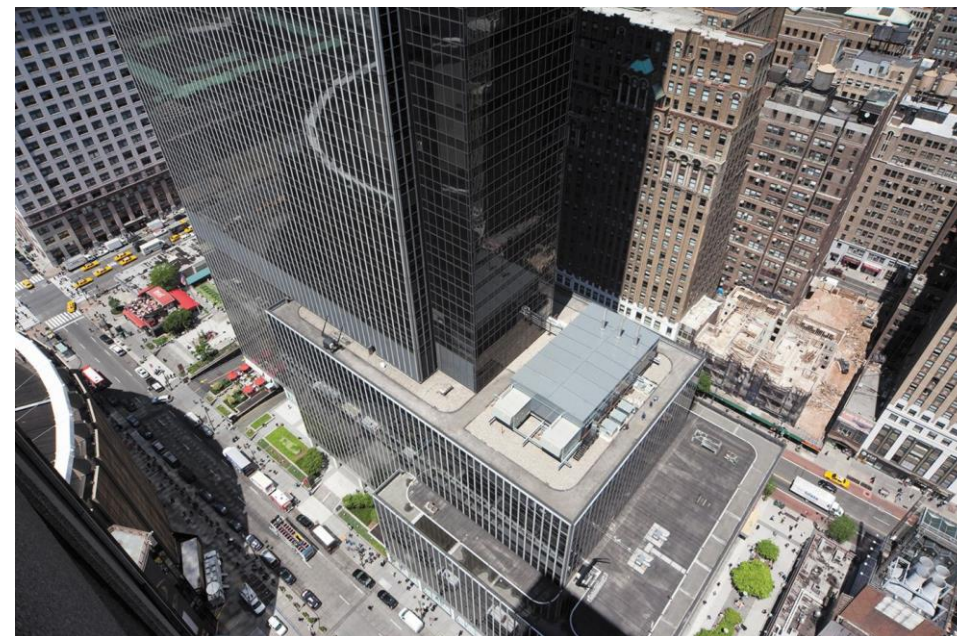
Daniel Jacob, *Harvard University*

Iyad Kheirbek, *NYC Dept. of Health and Mental Hygiene*

Paul Miller, *NESCAUM*

Rob Sliwinski, *NYS Dept. of Environmental Conservation*

Max Zhang, *Cornell University*



One Penn Plaza, 6MW natural gas CHP rooftop unit, provides more than half the required energy

Thank you

Carl Mas

Director Energy and Environmental Analysis