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New York Cap & Invest and the Power Sector

Options and Issues

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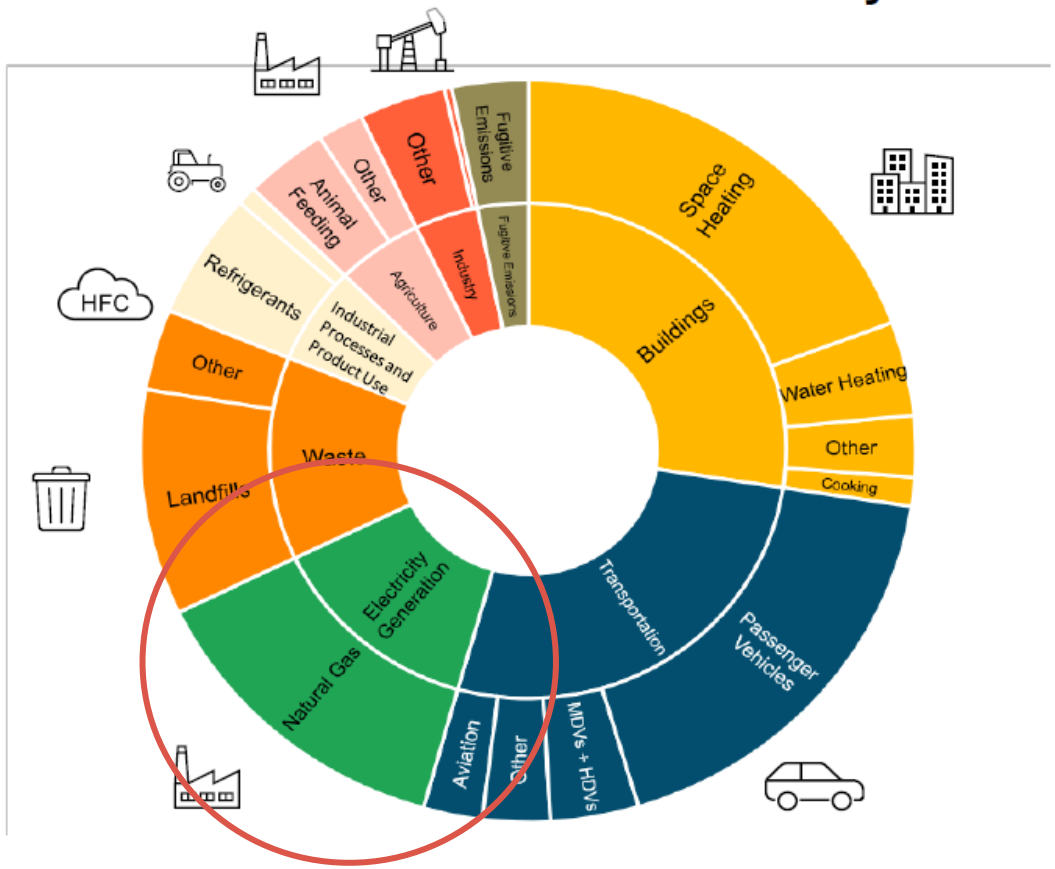
NY CLCPA Scoping Plan – Economy-Wide Policy

- Economy-wide strategy as a complement to, rather than a replacement for, other policies
  - DEC would establish the rules related to a cap-and-invest program
  - The program would involve:
    - a declining cap on GHG emissions – starting with the current emissions of all sector included in the cap and then dropping over time to achieve the CLCPA targets
    - regulated entities hold and surrender GHG allowances equivalent to their compliance obligations (e.g., carbon content of fuel, or combustion-related emissions)
    - a state-run auction sells allowances into the market
    - parties can purchase and sell allowances
    - holders of allowances include in their own product prices the price of GHG allowances
- The program would have cost-containment mechanisms and rebates/subsidies to offset the price impacts on low/moderate income consumers

https://climate.ny.gov/resources/scoping-plan/

Electric Sector GHG Emissions in New York

Current Estimated GHG Emissions by Sector



- Predominantly natural gas, some oil
- In-state and upstream fugitive methane in addition to stack emissions of CO_2
- Small relative to statewide emissions under the cap
- Decline to zero at 2040, not 2050
- Three design considerations
  - In-state versus interstate electricity market transactions
  - RGGI vs. non-RGGI units – smaller grid-connected and distributed power sources
  - Electric sector vs. rest of C&I affected sources

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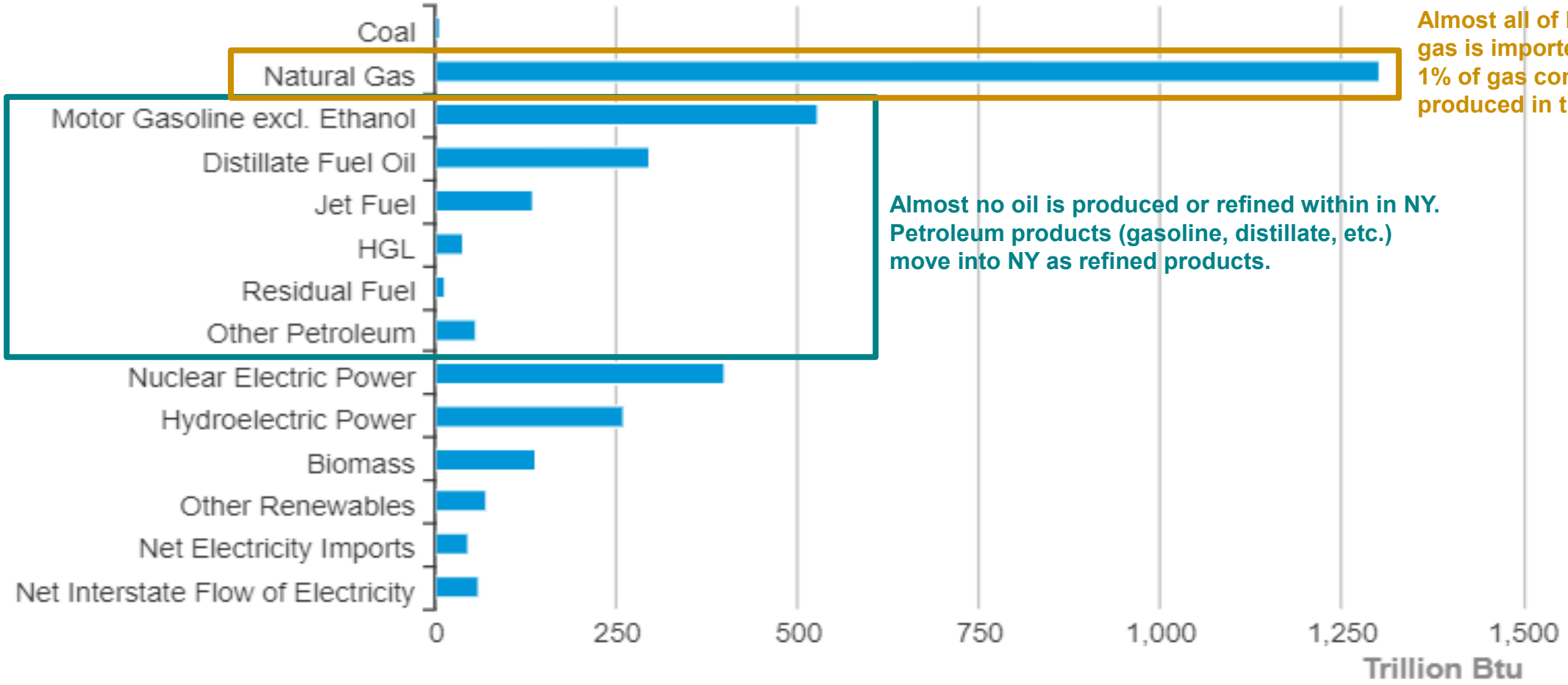
NY Energy Consumption Estimates (2020)



Almost all of NY's natural gas is imported into NYS. 1% of gas consumption is produced in the state.

Almost no oil is produced or refined within in NY. Petroleum products (gasoline, distillate, etc.) move into NY as refined products.

Energy Information Administration, State Energy Data System (SEDS), NY State Profile, https://www.eia.gov/state/print.php?sid=NY

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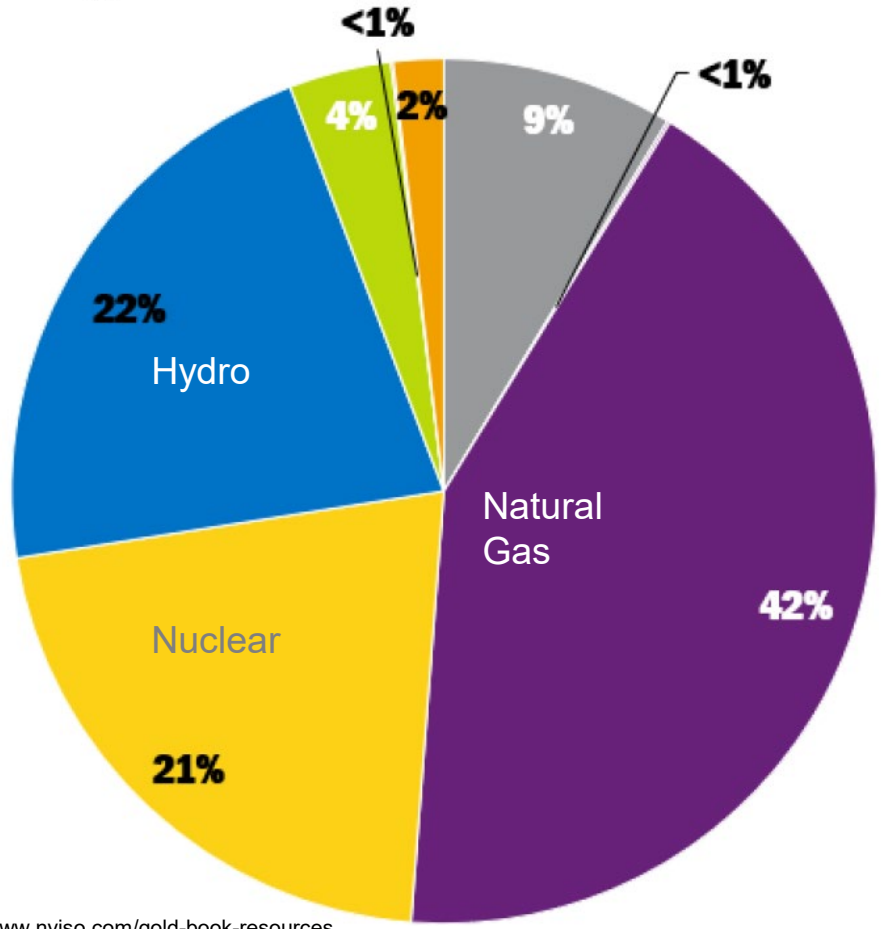
NY's Fossil Fuel Power Production Profile

- **NY State's fossil generation is dominated by natural gas.**
  - Around half of NY's in-state power comes from resources with zero GHG emissions: nuclear, hydro, wind, and solar.



GWh (1)

- GAS : 10,913 (9%)
- OIL : 143 (<1%)
- GAS & OIL : 53,547 (42%)
- NUCLEAR : 26,883 (21%)
- HYDRO : 27,354 (22%)
- WIND : 4,825 (4%)
- SOLAR : 110 (<1%)
- OTHER (2) : 2,368 (2%)

Total 2022[1] = 125,691 GWh

Renewable Resources (3)

Conventional Hydro	22%
Wind	4%
Solar	<1%
Other	2%
Total	28%

(1) Only includes fuel types with positive net energy and are rounded to the nearest whole GWh
(2) Includes Methane & Refuse
(3) Renewable Resources do not necessarily match the NYS Clean Energy Standard (CES) definition

https://www.nyiso.com/gold-book-resources

Possible Objectives for Electric Sector Participation

- Ensure compliance with CLCPA goals, in conjunction with NY's other policies and programs
- Maintain electric system reliability, especially as NY will have more sectors relying on electricity
- Ensure efficient pricing in wholesale markets
- Avoid double-counting of emission reduction requirements across programs and across borders
- Keep GHG compliance costs as low as possible for consumers in the state
  - Rely as much as possible on market-based mechanisms for compliance with C&I and NY power sector's GHG program requirements
  - Ensure fair competition among different forms of generation within NY, taking GHG price impacts into account
  - Ensure fair competition with non-NY sources of power generation without similar GHG emission policies, by taking GHG price impacts into account

(Some) Issues and Options for the Electric Sector

- ISSUES
  - Point of Regulation
  - Focus of regulation (emissions or carbon content of fuel?)
  - Comparability of carbon pricing between RGGI and non-RGGI sources of electricity
  - Comparability of carbon pricing between electric sector and other industries/sectors in the C&I program
  - Comparability of carbon pricing between in-state and border electricity transactions
- OPTIONS
  - Electric sector participates in C&I while still participating in RGGI
  - Electric sector participates only in C&I, leaving RGGI and *not* implementing carbon pricing in wholesale markets
  - Electric sector *does not* participate in C&I, and implements carbon pricing

Not enough time to discuss all today!

Issue: Point of Regulation

The Scoping Plan's point-of-regulation construct includes a combination of compliance entities:

- The Scoping Plan separates out compliance according to the end use of various fossil fuels. For example:
  - "Transportation: Producers & distributors of *transportation fuels* (with compliance obligation tied to the carbon content of fuels)".
  - "Heating fuels: Utilities & other distributors of *heating fuels* (with compliance obligation tied to the carbon content of the fuels)".
  - "Electricity sector: Sources would be responsible for emissions from the combustion of fuels, although the program should be structured to reflect that many of these sources are also subject to RGGI…"
- Thus, some of these compliance entities would have obligations relating to input (e.g., tied to the carbon content of fuels) which others have obligations related to outputs (e.g., emissions from combustion of fuels in NYS).
  - The ones involving inputs rely on regulating the carbon content of physical volumes of fuels (e.g., pipeline volumes transported or shipped) while the ones involving outputs rely on emissions resulting from combustion.
  - Some transporters (e.g., pipelines) move gas for multiple end-use markets (e.g., natural gas for residential and commercial buildings or for power generation) or even for different end uses at a single site (e.g., a power plant with an operations building at the site).
  - These circumstances could introduce complicated tracking, allocation, measurement, monitoring, and other compliance issues relating to ensuring appropriately equivalent regulatory outcomes by different compliance entities.

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C&I Program: Point of Regulation Considerations

IDEAL:

SECOND-BEST IN-STATE COMPLIANCE METHOD

Natural Gas

Interstate NG pipelines

Compliance entity = Interstate gas pipeline, based on carbon content of net import volumes (poss. including upstream fugitive emissions)

Local Distribution Companies (LDCs) – *at citygate, based on carbon content of citigate volumes (in-state and upstream fugitive emissions?)*

Carbon price reflected in price of fuel delivery charge to users (power plants, buildings, industry) on LDC system

Shippers: power plants, Industry sources connected to interstate gas pipelines – *at location, based on carbon content of fuel input, or emissions (including upstream + instate fugitive emissions)*

Oil

Interstate oil and refined product pipelines, barges, trains, trucks (from out of state)

Compliance entity = oil pipelines, barges, interstate trucks, based on carbon content of net import volumes (poss. including upstream fugitive emissions)

Distributors – *at distributor receipt point, based on carbon content of receipt volumes (in-state and upstream fugitive emissions?)*

Carbon price reflected in price of fuel delivery charge to users (power plants, vehicles, industry, buildings) served by distributors

Shippers: power plants, Industry sources taking direct delivery – *at location, based on carbon content of fuel input, or emissions (including upstream + instate fugitive emissions)*

Coal

Barges, trains, trucks (from out of state)

Compliance entity = coal train, barge shipments, based on carbon content of net import volumes (poss. including upstream fugitive emissions)

Distributors – *at distributor receipt point, based on carbon content of receipt volumes (in-state and upstream fugitive emissions?)*

Carbon price reflected in price of fuel delivery charge to users (power plants, vehicles, industry, buildings) served by distributors

Shippers: power plants, Industry sources taking direct delivery – *at location, based on carbon content of fuel input, or emissions (including upstream + instate fugitive emissions)*

Note: Any in-state fossil fuel production is regulated at point of production, based on carbon content of produced fuel

GHG emissions not associated with combustion of fossil fuel in state (e.g., agricultural, airline, industry): special case compliance approaches based on in-state GHG emissions, involving (for example) source emission limits, cap adjustment, direct allocation of allowances, etc.

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One Issue: Compliance Based on Emissions or Fuel?

- The C&I Program could address power-sector emissions through either an input (fuel use) or output (emissions) approach.
- The two alternative options would focus on conforming the power sector's GHG emissions to either the other NY economic sectors that are part of the state's C&I Program (for whom the carbon content of fuel would be key) or to the other power plant participants in the RGGI program (for whom combustion-related emissions are key).
- These two alternatives might work as follows, with Option A providing a simpler approach.
  - Option A: Require all NY power plants to comply based on *fuel input* (carbon content of fuel):
    - Plants beyond point of compliance (e.g., on LDC system) face fuel prices with GHG impacts and have no other C&I requirement.
    - Plants at compliance point (e.g., as offtakers on interstate pipeline system) must surrender allowances based on carbon content of fuel.
    - In both approaches, the power plant would price GHG compliance into energy market offers in an equivalent way.
    - This approach supports situations in the NYISO market where a site has more than one end use (e.g., multiple power plants; other non-power-production facilities) and where NYISO does not have visibility into the amount of delivered fuel to each end use.
    - A border adjustment (for imports into or exports out of the NYISO market) would need to take into account resulting $/MWh impact of C&I requirement.
  - Option B: Require all NY power plants to comply based on *CO_2 output (emissions)*.
    - Some method would be needed to avoid double counting for power plants that take deliveries from compliance entities (e.g., LDCs, oil/propane distributors), for example by eliminating the obligation of the fuel distributor for quantities of fuel purchased by the power plant.
    - A border adjustment would need to take into account resulting $/MWh impact of C&I requirement.
  - Either approach could include a DEC mechanism to reflect the upstream emissions associated with leakage and venting of natural gas.

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One Option: NY Remains in RGGI, and the Power Sector Participates in C&I

- All sectors* would be included in NY's C&I Program.
- NY would remain in RGGI, with all NY power plants also included in the C&I Program.
- The C&I Program would thus cover: RGGI units, non-RGGI units (small central station and distributed generation).
- NY would continue to participate fully in the RGGI market:
  - RGGI Units would continue to need to acquire and surrender RGGI allowances equivalent to these units' emissions.
  - NY State would continue to participate in and receive proceeds from the RGGI allowance auctions.
  - Because RGGI is a multi-state program without internal border-adjustments or constraints on individual RGGI states' power-sector emissions, any CLCPA-specific power sector emissions reductions would need to be covered by the C&I Program.
- As a result, C&I and RGGI allowances likely not fungible
- Mechanism needed to address the fact that NY RGGI Units will comply with both RGGI and C&I, and ensure that prices offered in wholesale markets have equivalent carbon pricing

* Besides the Excluded Sectors

RGGI plus C&I Consideration

- RGGI Units could pay twice for climate-related emissions (and in turn, consumers would be exposed to higher costs) unless the design addresses this potential market distortion.
- Thus, the design of this option would need to include a mechanism to address the fact that NY RGGI units would comply with both RGGI and be affected directly or indirectly by the C&I (and to avoid multiple layers of impacts).
  - One way to do that would be to anticipate that RGGI units would submit offer prices into NYISO markets that take into account the price impacts of the C&I Program and for those units to be reimbursed for their RGGI allowance purchases.
  - Ideally, the total payment by power generators for GHG emission allowances would be equivalent (on a $/ton basis) to the opportunity cost of a C&I allowance in NY State economy-wide market – e.g., by:
    - using C&I/RGGI allowance revenues to reimburse RGGI generators for RGGI allowance purchases (tied to market prices of allowances).
    - implementing a border adjustment mechanism to credit/debit imports and exports such that
      - an export is assigned the RGGI allowance price (and similar for exports to Canada), and
      - an import is assigned the C&I allowance price.
  - Adjustments for allowance costs could be based on most recent auction prices in each allowance market.

RGGI plus C&I - Observations

- **Benefits:**
  - Would not disrupt the RGGI program, and NYS would retain its share of allowance auction revenues as a potential non-C&I source for RGGI price adjustment and other funding priorities.
  - Establishes a common all-sector allowance-trading framework within NY State, promoting economic efficiency in achieving NY State's GHG reduction targets.
- **Potential Drawbacks:**
  - Determining a mechanism to harmonize RGGI participation and C&I participation for affected units – e.g., through a mechanism to compensates generators for RGGI allowance prices – could be controversial.
  - Establishing consistent allowance pricing across NY sectors using a price adjustment (refund of RGGI costs to RGGI Units) might *appear* as though RGGI units are in effect paying a different price for CO_2 emissions (even if they are still complying in RGGI through retirement of RGGI allowances). This could raise questions about the fungibility of NY's RGGI allowances (across other RGGI states) and raise questions for other RGGI states.

RGGI plus C&I - Observations

- **Feasibility/practicality:**
  - The mechanisms are relatively straightforward. The border adjustments could be administered by NYS.
  - NYS would have to work with other RGGI states so that they are comfortable with how this affects the RGGI program.

- **Power plants' participation in an economy-wide C&I program has the potential to be economically efficient and lead to lower overall GHG compliance costs for the economy and for NY consumers.**
  - Ideally, in this case, fossil generators would face the same GHG emissions price impact as other sectors of the economy.
    - This would lead to the economy-wide C&I Program having comparable price impacts across different sectors of the NY economy.
    - This approach would allow for trading across sectors with all parts of the economy finding economically efficient opportunities for GHG emissions reductions.

Wrap Up

- The electric sector is a relatively small piece of the NYS C&I emissions, but its integration with C&I could provide benefits and lower the total cost of C&I implementation
- There are significant differences among ways to consider the point of regulation (e.g., interstates vs. LDCs vs. end users) and the focus of compliance determination (e.g., emissions or carbon content of fuel); may want to focus on simplification and consistency across NY sectors as much as feasible
- Regardless of the electric sector design chosen (e.g., stay in RGGI, leave RGGI, implement carbon pricing), there will be adjustments needed to harmonize the programs from the perspective of wholesale markets
- For a program of this scope and ambition, however, these adjustments are relatively straight forward