



**NY Power
Authority**

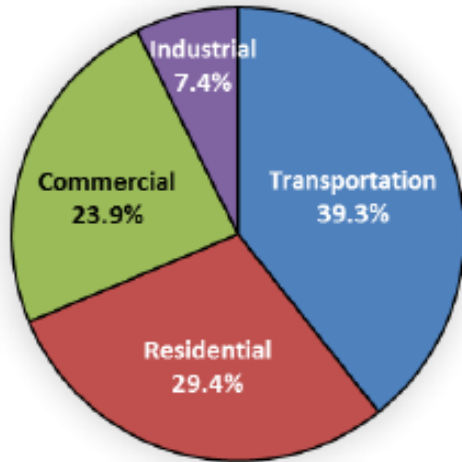


Heavy Duty Vehicle Electrification

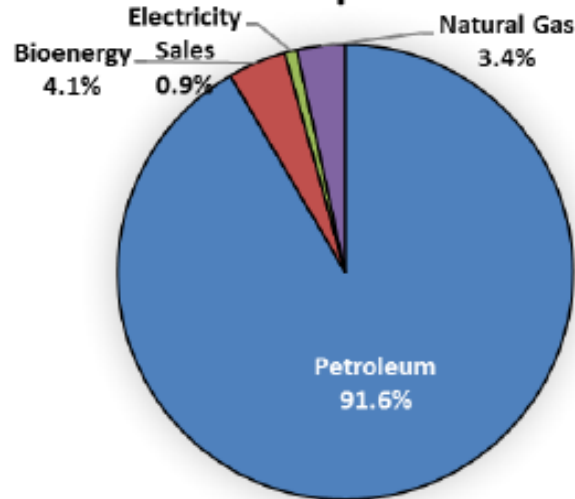
**John Markowitz, PE, CEM, Energy Services
Product Development**

April 2, 2018

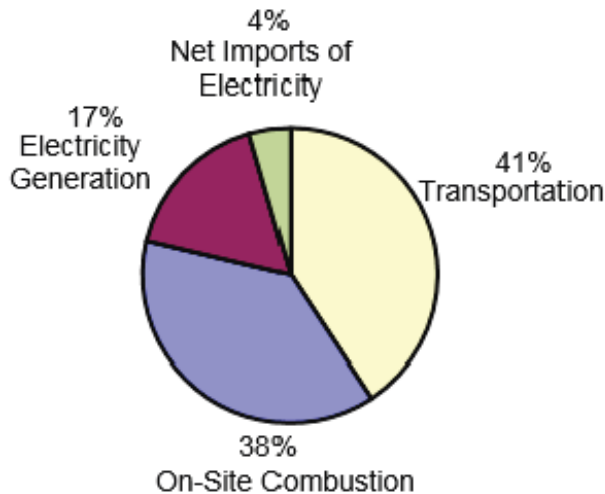
2015 NYS End-Use Sectors



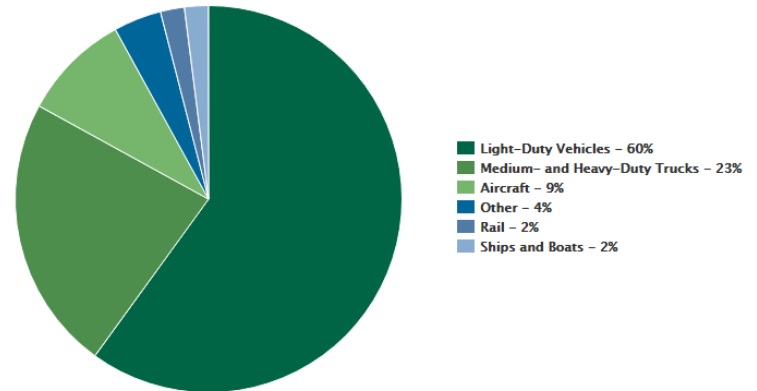
2015 NYS Transportation Sector



Percent of Total CO₂ Emissions from Fuel Combustion



2015 U.S. Transportation Sector GHG Emissions by Source



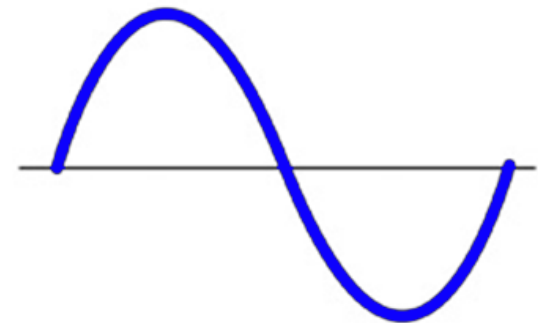
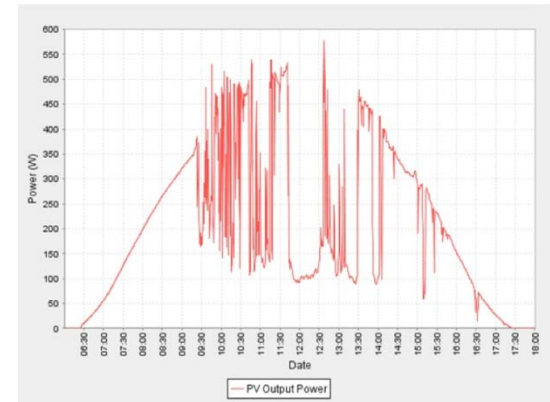
Heavy duty vehicle comparison

- Heavy-duty vehicles:
 - Less than 1% of population
 - About 3% of vehicle miles traveled (VMT)
 - Operate longer hours than light duty vehicles (LDVs)
 - Operate in more populated areas than LDVs
- LDV commonalities
 - Reduced battery costs
 - Smart charging
 - DC fast charging



Grid Technology

- EVs as the perfect load
- Off-peak and controllable in real time
- Grid Balance
 - Load vs Generation
 - 60 Hertz
- Renewable Intermittency
 - Solar
 - Wind
- Balancing DCFC with grid needs
 - Storage
 - Policy



Panel

- School buses
- Airport ground support equipment (GSE)
- Transit buses
- Funding

