



**NYSERDA**

# **Market Dynamics & Supply Infrastructure Status**

**2018-2019 New York State  
Winter Fuels Outlook Meeting**

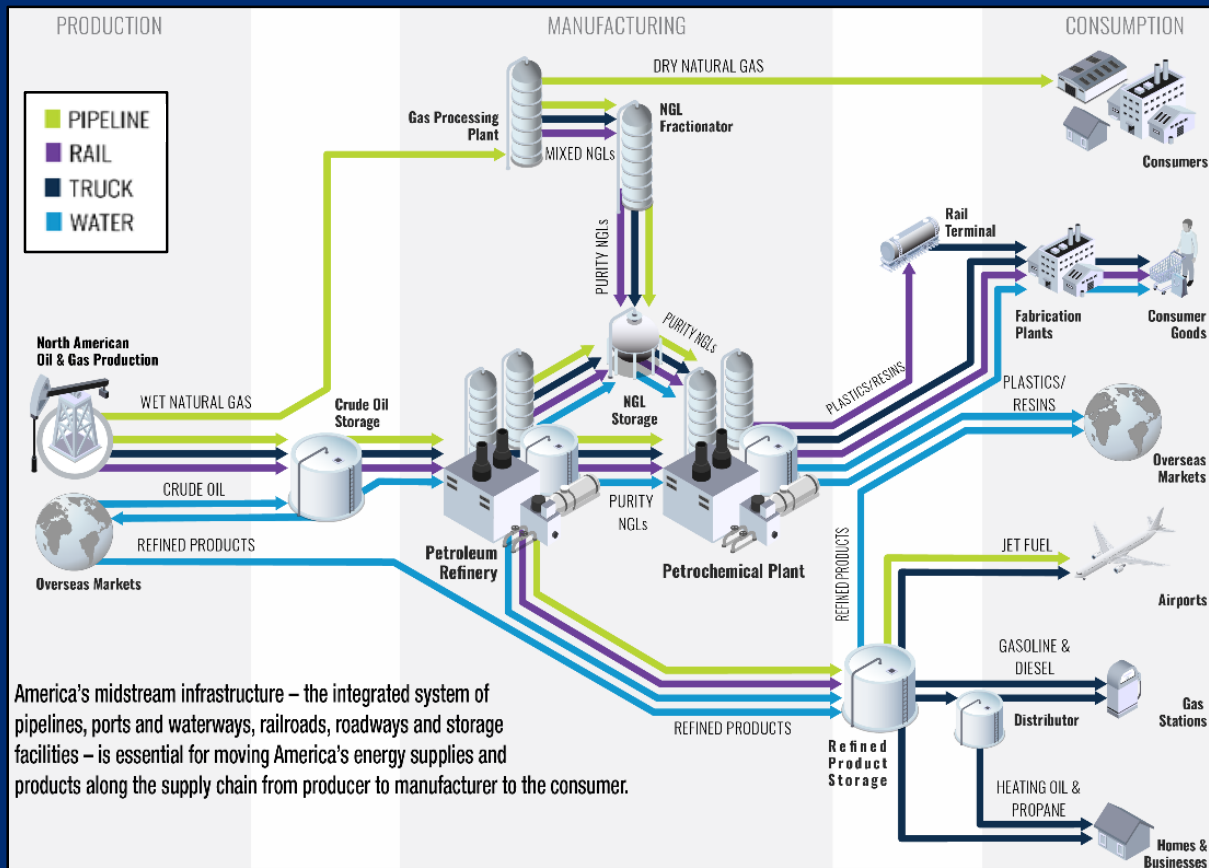
**October 31, 2018  
Joseph Osso, Jr  
NYSERDA**

# Agenda

- Summary of the New York State petroleum fuel supply system
- 2018 Atlantic hurricane season summary
  - Hurricane Florence and Hurricane Michael east coast petroleum fuels infrastructure impact
  - Comparison to previous hurricane seasons
- U.S. Department of Homeland Security Regional Resiliency Assessment Program (RRAP)
  - Program description
  - Summary of 2018 activities
- New York State natural gas liquids Infrastructure
- Residual fuel oils discussion

# Summary of the New York State Petroleum Fuel Supply System

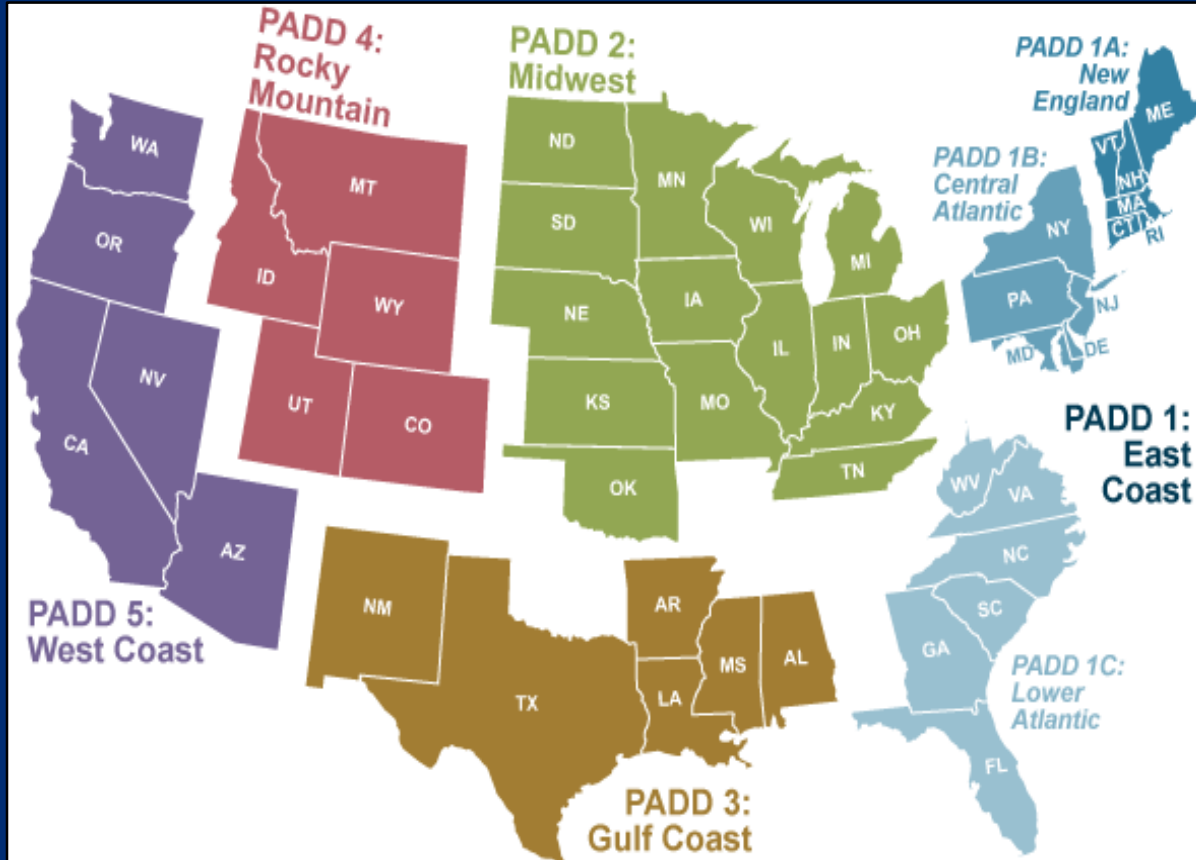
# National Petroleum Fuels Supply



America's midstream infrastructure – the integrated system of pipelines, ports and waterways, railroads, roadways and storage facilities – is essential for moving America's energy supplies and products along the supply chain from producer to manufacturer to the consumer.

- Source-to-consumer
- Importance of the arrows between the major facilities
- Driven by supply and demand

# Petroleum Administration for Defense Districts (PADDs)



- National petroleum districts
- Dataset awareness
- PADD 1 highlights

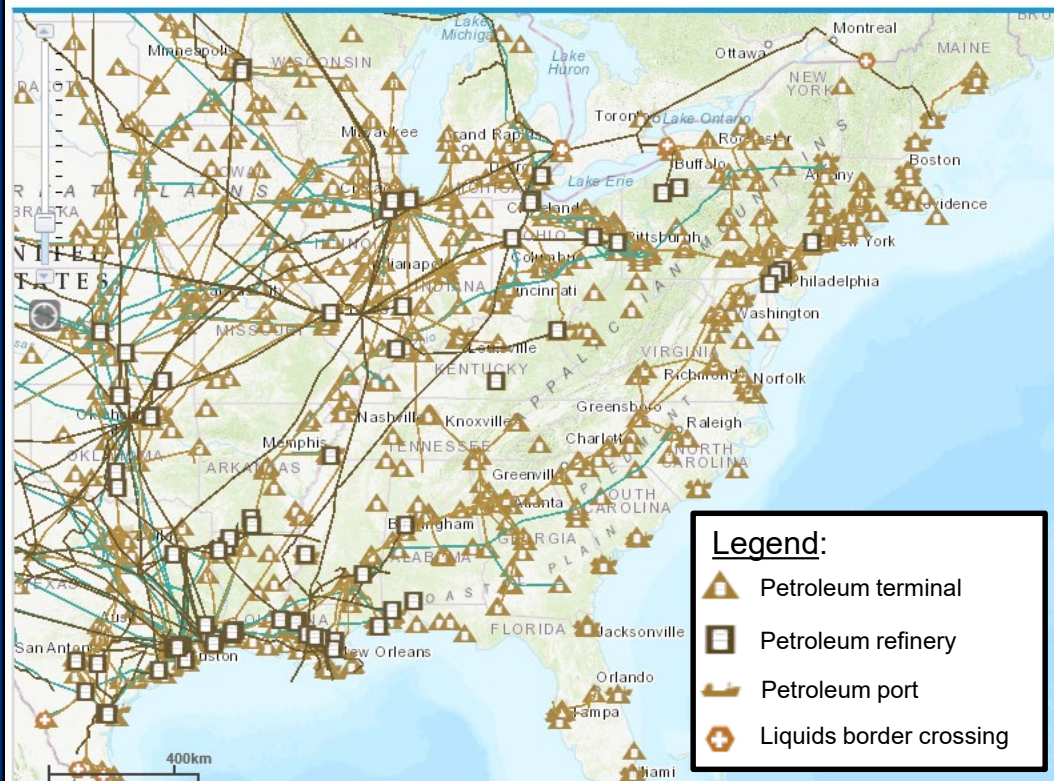
# East Coast Petroleum Supply System



- General product flow
- Multiple modes of delivery
- Importance of east coast pipelines

# East Coast Petroleum Supply System

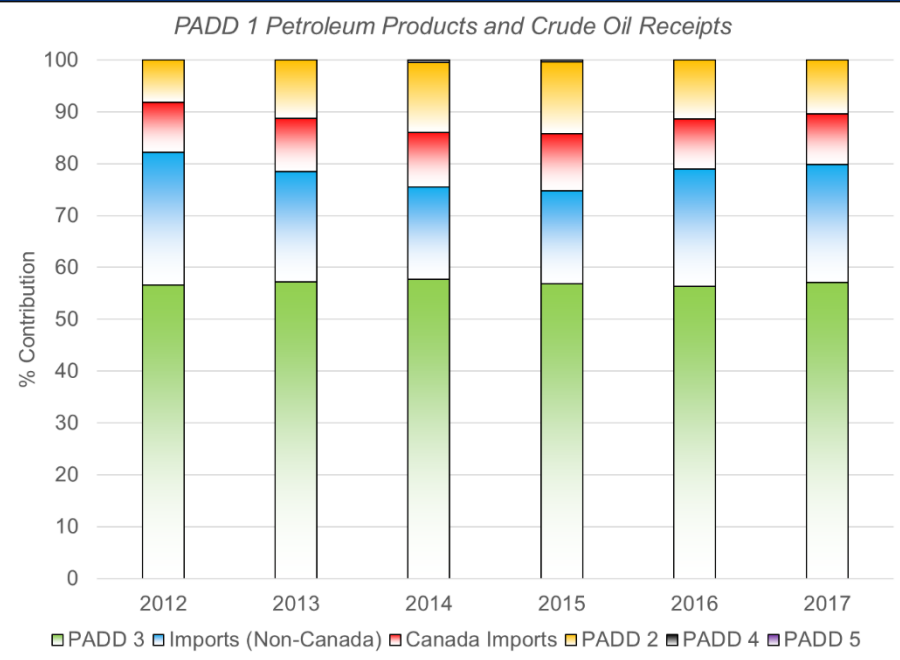
## U.S. Energy Mapping System



Mapping source: USEIA 2018c

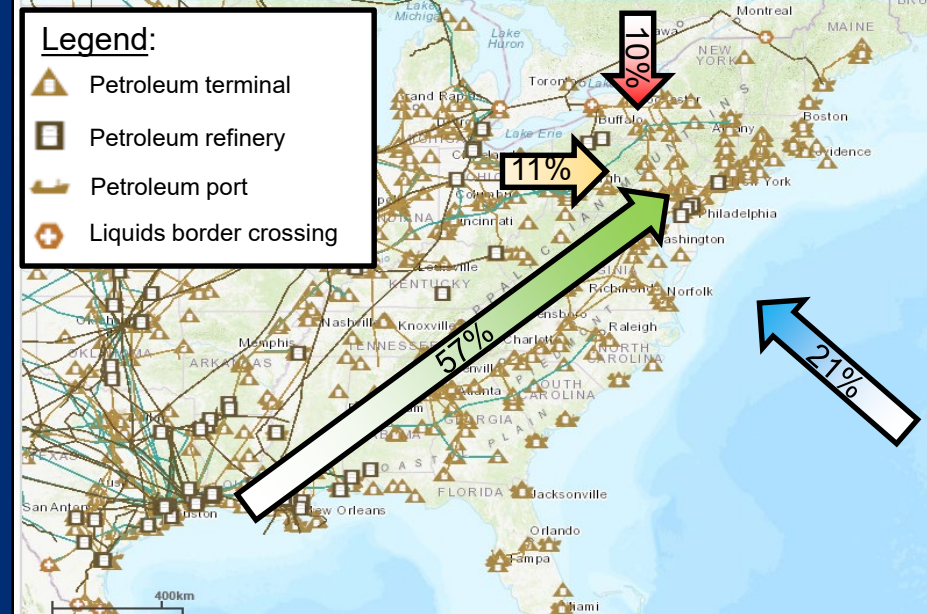
- New York is dependent on transport and delivery
  - Pipelines
  - Marine
  - Local/Regional Transport
- Major petroleum distribution points for New York:
  - Linden, NJ
  - NY/NJ Harbor and Hudson River
  - Macungie, PA

# East Coast Petroleum Supply System



Data source: USEIA (2018d,e)  
Data Analysis and Visualization by NYSERDA

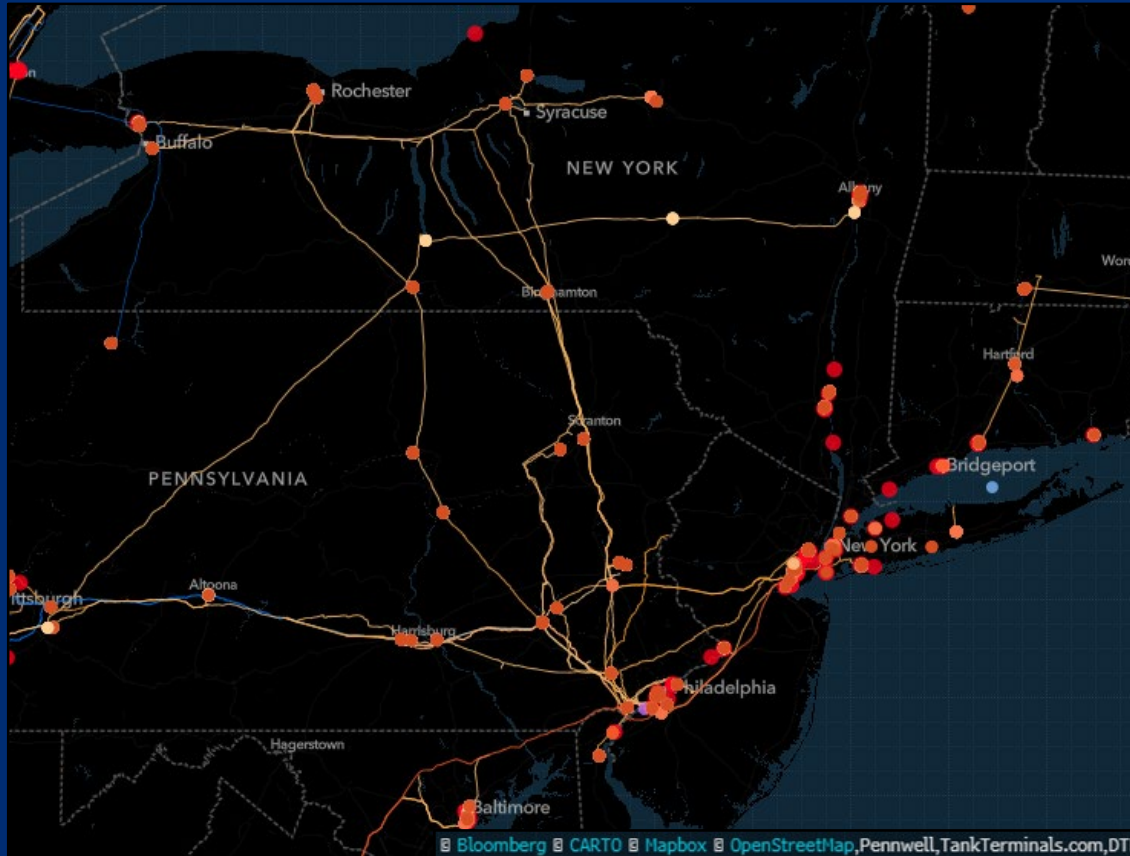
## U.S. Energy Mapping System



Mapping source: USEIA (2018c)  
Data source: USEIA (2018d,e)





# New York Petroleum Supply System



- Overall system highlights
- New York Petroleum Regions
  - Southern/Central/Western
  - Hudson Valley/Northern
  - Downstate (NYC/Long Island)
- Importance of the regional distribution
  - Truck
  - Rail

## Legend:

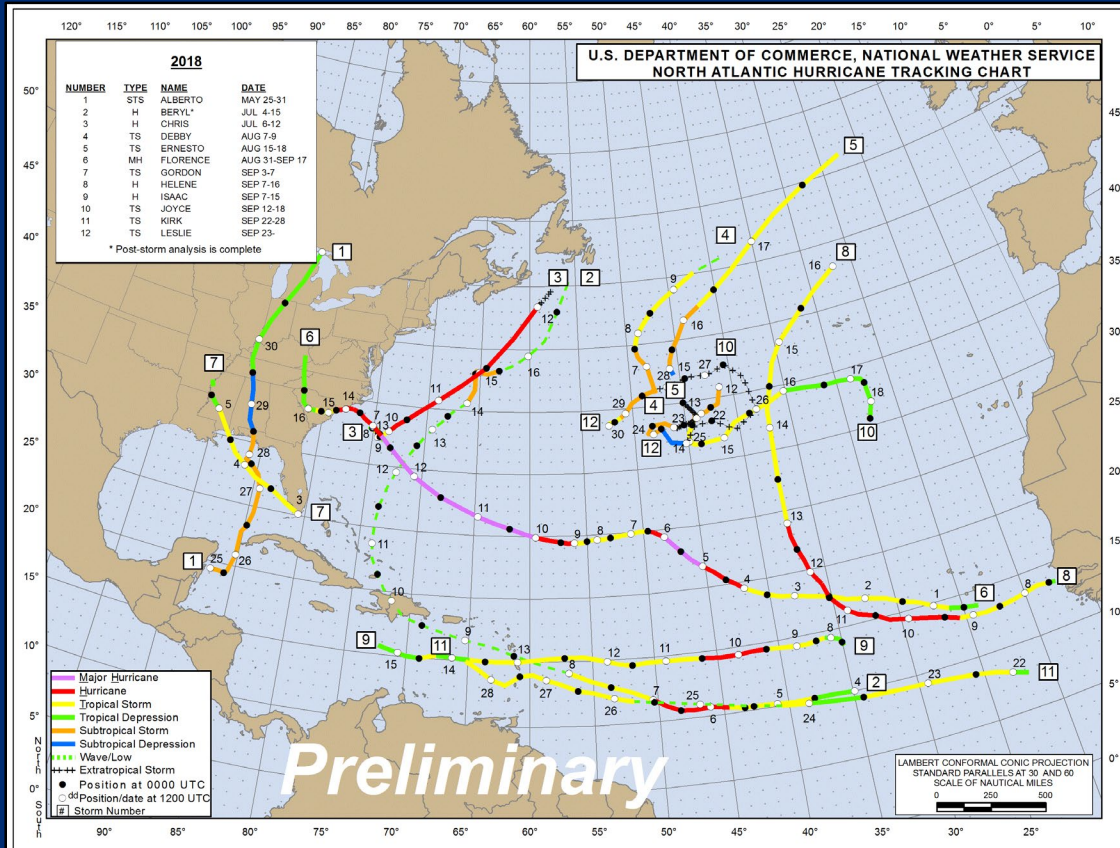
-  Pipelines (Crude, LNG/NGL, Refined Products)
-  Terminals (Storage, Berth, Diesel, Gasoline, Other)

Mapping source: Bloomberg (2018)  
 Bloomberg | CARTO | Mapbox | OpenStreetMap, Pennwell, TankTerminals.com, DTN

# 2018 Atlantic Hurricane Season Summary

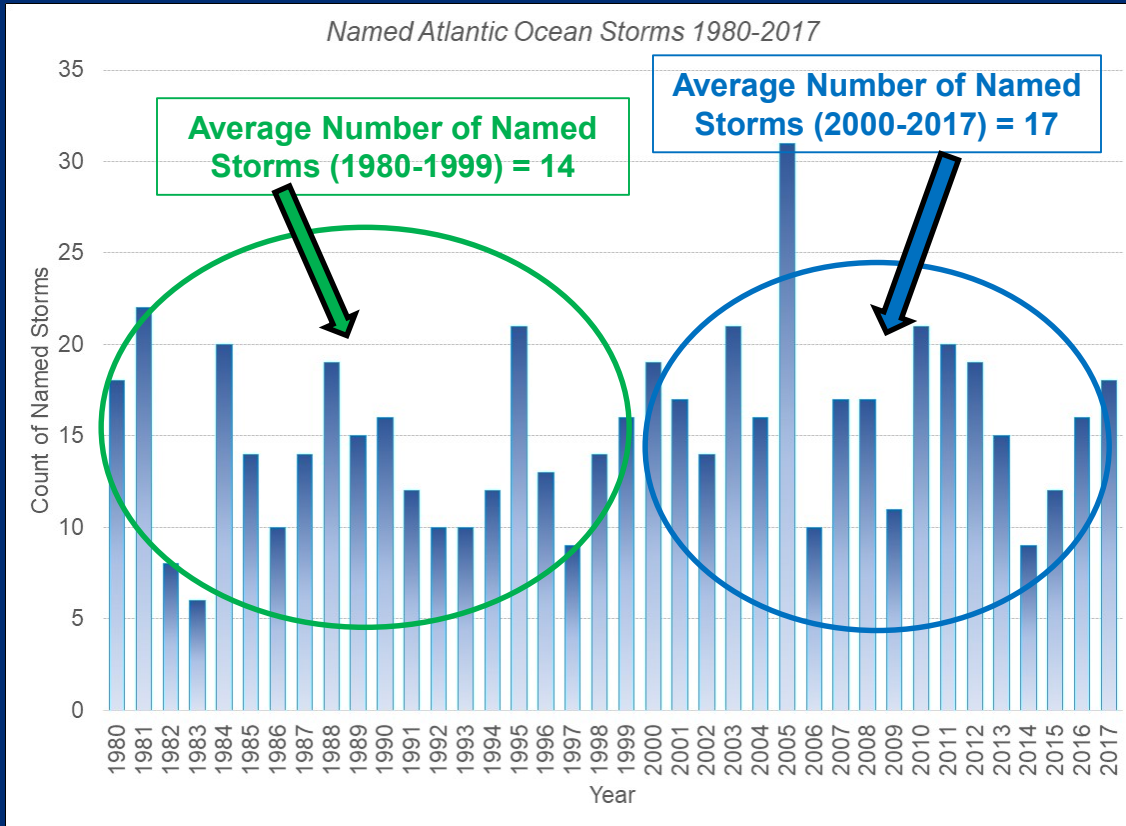
\*thus far...

# 2018 Atlantic Hurricanes (thus far...)



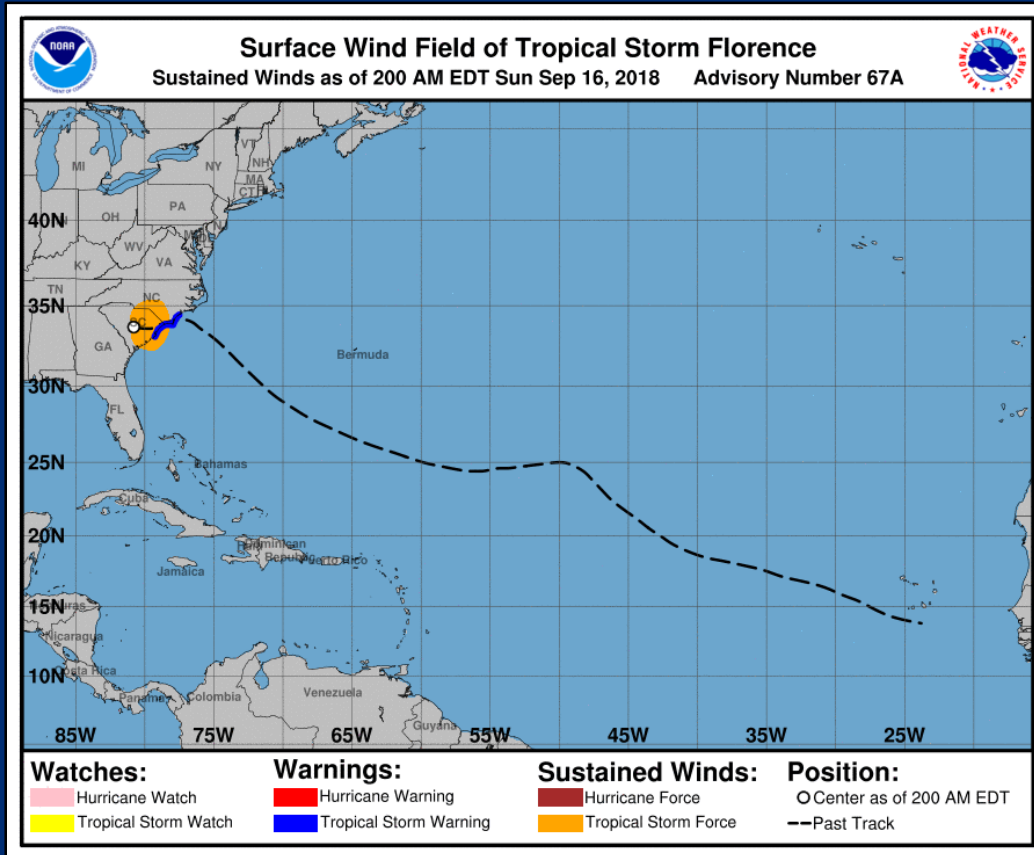
- Very active September
- 15 Named Storms
  - 1 Tropical Depression (unnamed-not on map)
  - 7 Tropical/Subtropical Storms
  - 8 Hurricanes
    - 2 Major Hurricane (Florence, Michael)
- Northeast/New York
  - No direct landfalls
  - Impacts from remnants have resulted in flooding

# 2018 Hurricane Season Compared to Recent History



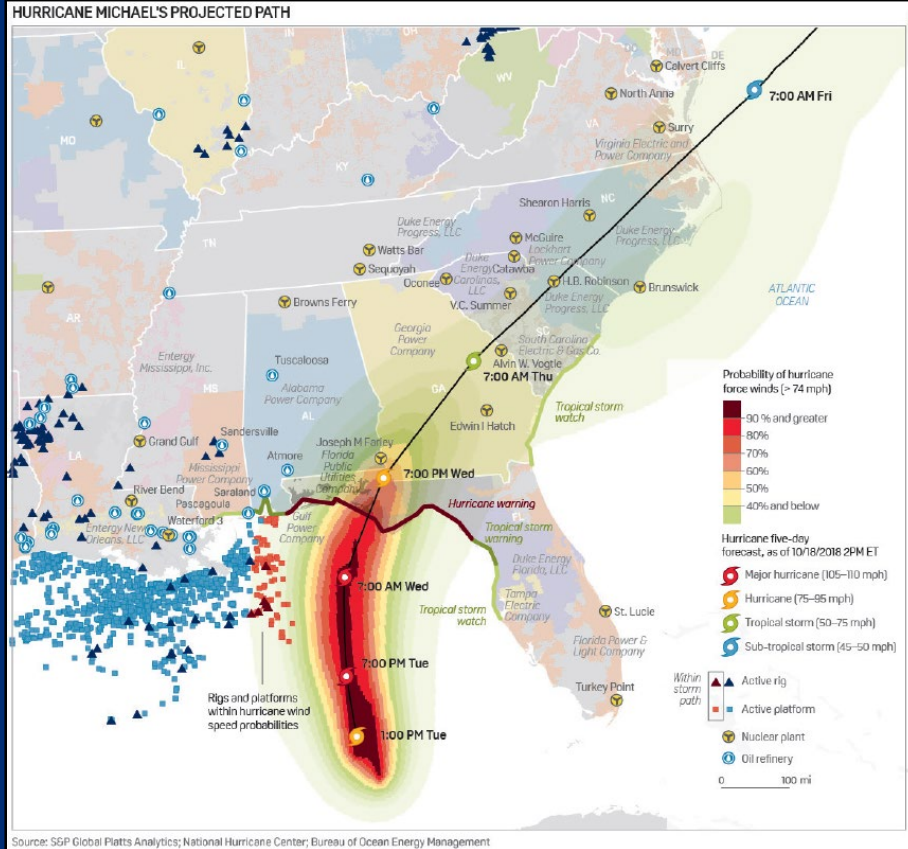
Average Number of Named Storms (1980-2017) = 15

# Hurricane Florence



- Maximum winds 140 miles per hour (sustained)
- “Slow mover” once landfall was made
- Devastating flooding along North Carolina Coast
- Petroleum infrastructure considerations
  - Damage
  - Port status
  - Supply chain interruptions

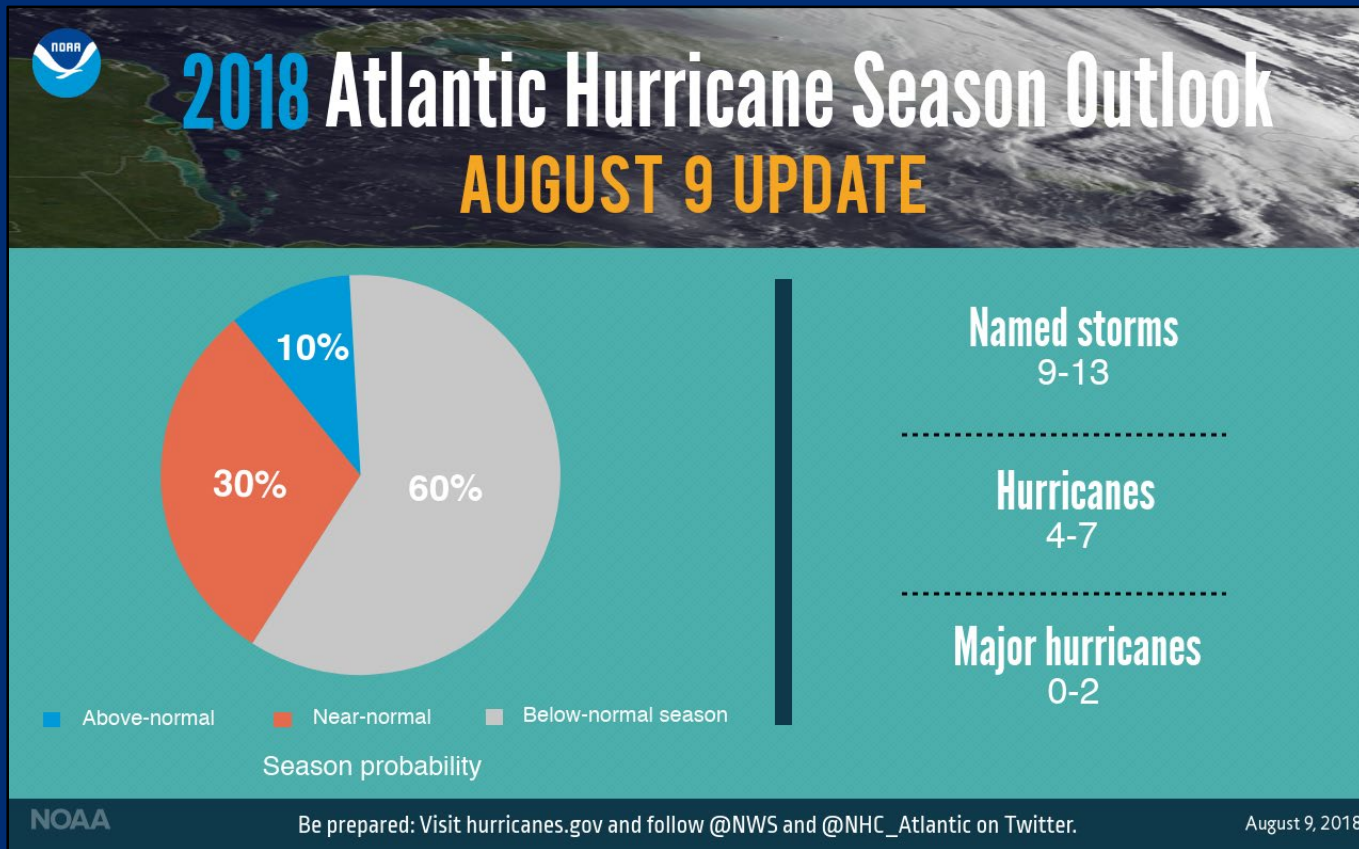
# Hurricane Michael



Mapping and Information source: S&P Global Platts (2018a, b)

- Rapidly intensified through the Gulf of Mexico
- Landfall as Category 4
  - Winds near 150+ miles per hour
- “Quick hit” with very strong winds
- Gulf platform evacuations and product shut-ins at peak of storm:
  - 13% of manned Gulf Platforms evacuated
  - 812 MMcf/d (32% Gulf production) natural gas
  - 719,000 b/d (42% Gulf output) crude
- On-shore pipelines monitoring and preparing for emergency response

## 2018 Atlantic Hurricanes (thus far...)



### 15 Named Storms

- 1 Tropical Depression (not named)
- 7 Tropical /Subtropical Storms
- 8 Hurricanes
  - 2 Major Hurricane (Florence, Michael)

# U.S. Department of Homeland Security

## Regional Resiliency Assessment Program (RRAP)



## RRAP Program Highlights

- Led by U.S. Department of Homeland Security (USDHS), Office of Infrastructure Protection
- Cooperative assessment
  - Federal
  - State
  - Local
  - Private Industry
- Emergency preparation
  - Partnership between public and private sectors
  - Enhance emergency management planning
  - Strengthen the resiliency of critical infrastructure
- Data/information collection and analyses
- Tabletop workshops

# RRAP Next Steps

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U.S. Department of Homeland Security  
 Protective Security Coordination Division  
 Office of Infrastructure Protection

March 2017



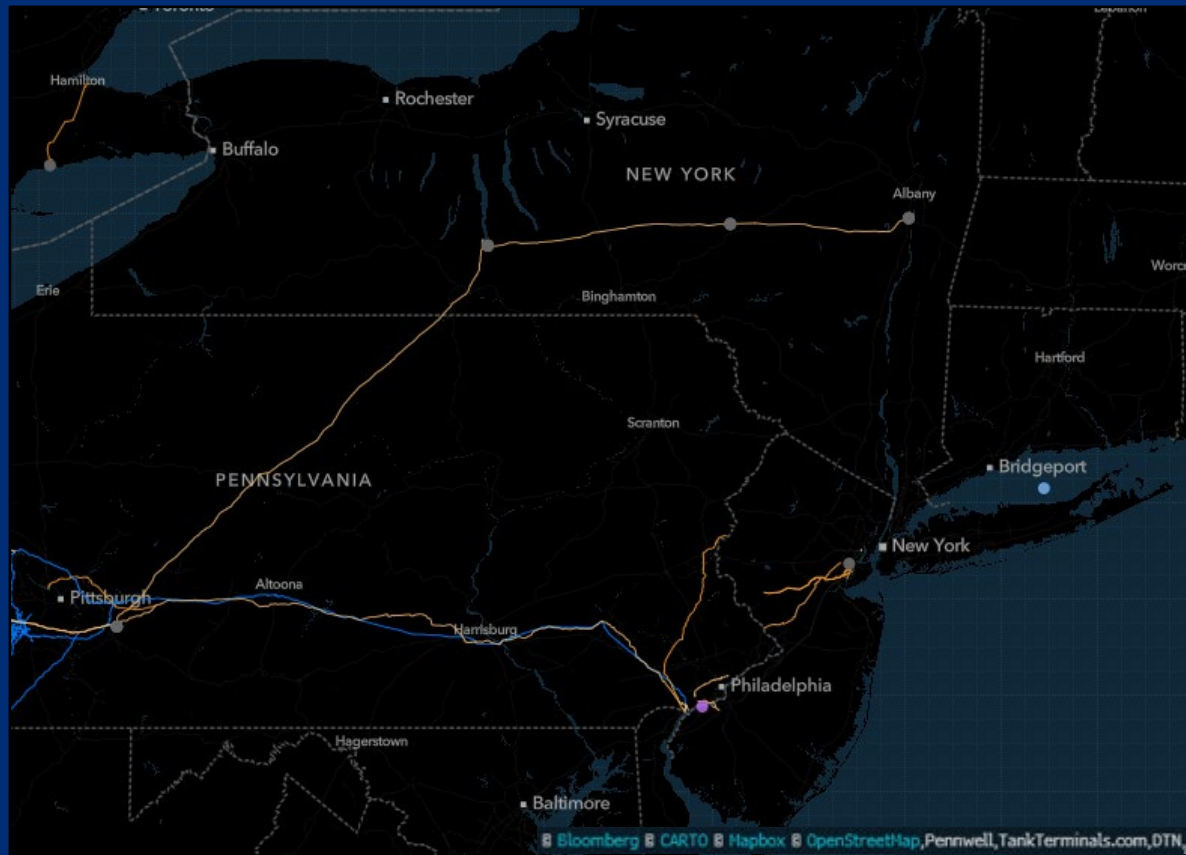
Facility Location/Elevation  
 Facility Highlights  
 Facility Description  
 Petroleum Transportation Modes  
 Electricity Service  
 Backup Power  
 Primary Hazards/Issues  
 Mitigation Measures  
 Response Agencies  
 Facility Points of Contact

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- Current status
  - Final review by USDHS
  - Anticipated to be released late fall
- Application of the data/information
- Maintaining the network and communication



# New York State Natural Gas Liquids (NGL) Infrastructure

# New York State NGL Infrastructure



- NGL (propane and butane) pipelines
  - Enterprise Texas Eastern (formerly TEPPCO)
  - Mariner East (1,2)
- Regional distribution
- Ground transportation is

## Legend:

-  Pipelines (NGL, propane, butane)
-  Terminals (NGL, propane, butane)

# Mariner East Pipeline Summary



- Transports NGL
- Moves production from Marcellus/Utica shale
- Expansion underway
  - 345,000 b/d (Total)
  - Temporary bypass
- Ends at Marcus Hook Industrial Complex

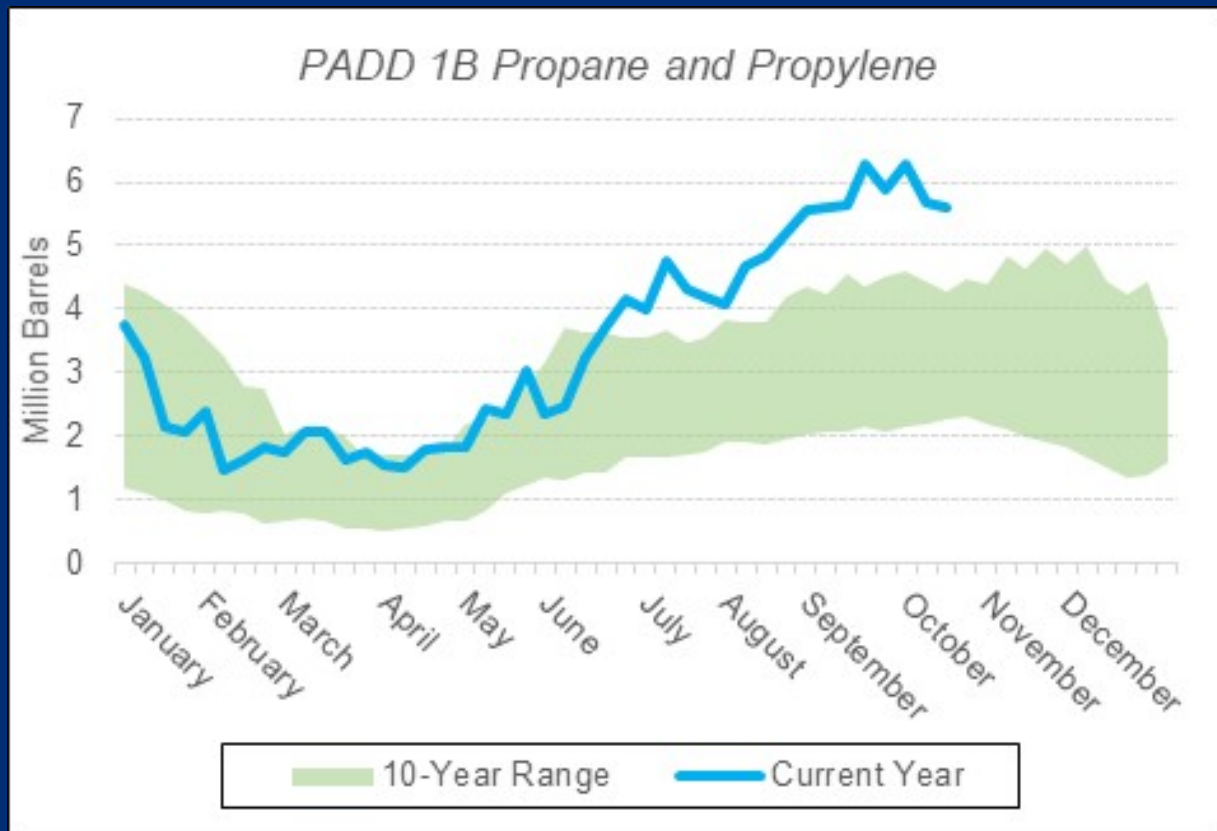
## Mariner East: NY Supply Influence

- Supplement to the Enterprise Texas Eastern pipeline (Enterprise Products Partners, LP)
- Todhunter Storage Cavern (Ohio) closure along Enterprise Texas Eastern pipeline

## Mariner East Pipeline Terminus: Marcus Hook Industrial Complex

- Originally built in 1902 as a petroleum processing refinery; idled early 2010s.
- Repurposed as a natural gas liquids storage and export facility (ethane, propane, butane)
- Local, regional, and international market distribution
- Multiple transportation options:
  - Port access for marine transport
  - Pipeline access (Mariner East)
  - Truck distribution

## Regional Propane/Propylene Stocks

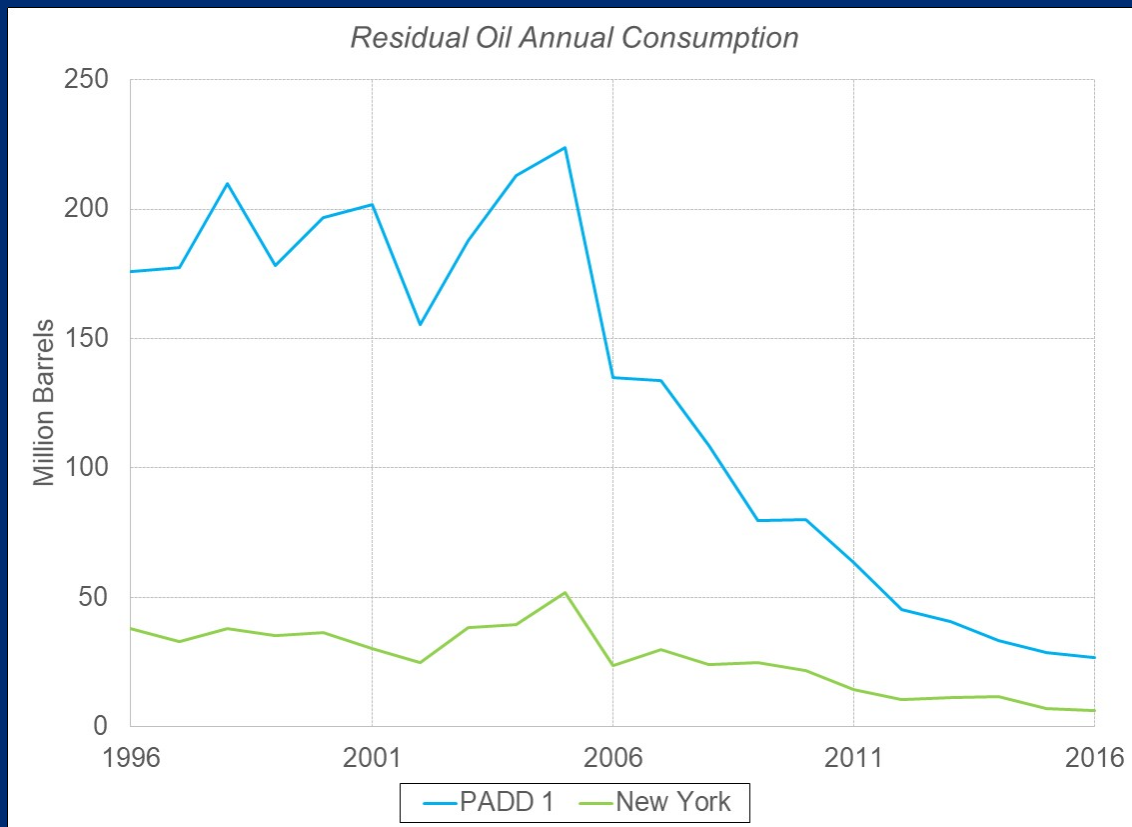


- Growing stocks over the summer
- Supporting the export operations out of Marcus Hook
- International demand
  - Drives the prices



# Residual Fuel Oils Discussion

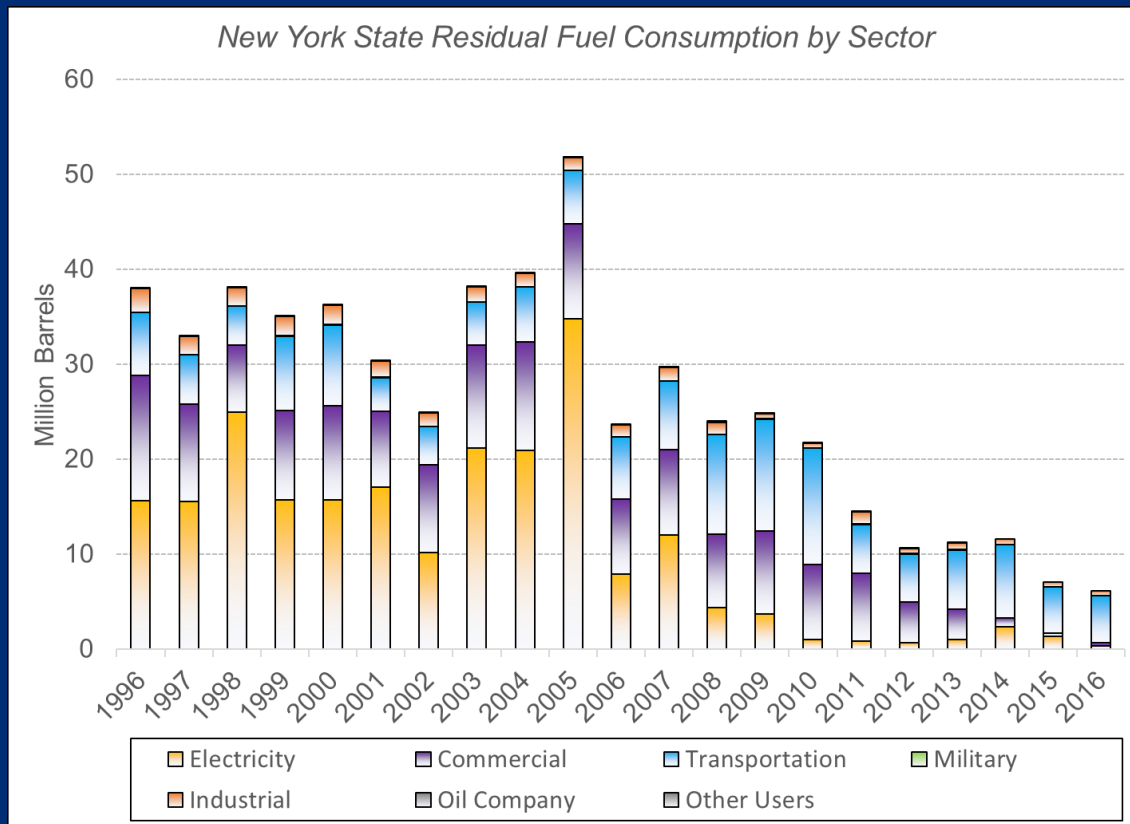
# Residual Fuel Oil Historic Consumption



Data and Information Source: USEIA (2018f);  
Data Analysis and Visualization by NYSERDA

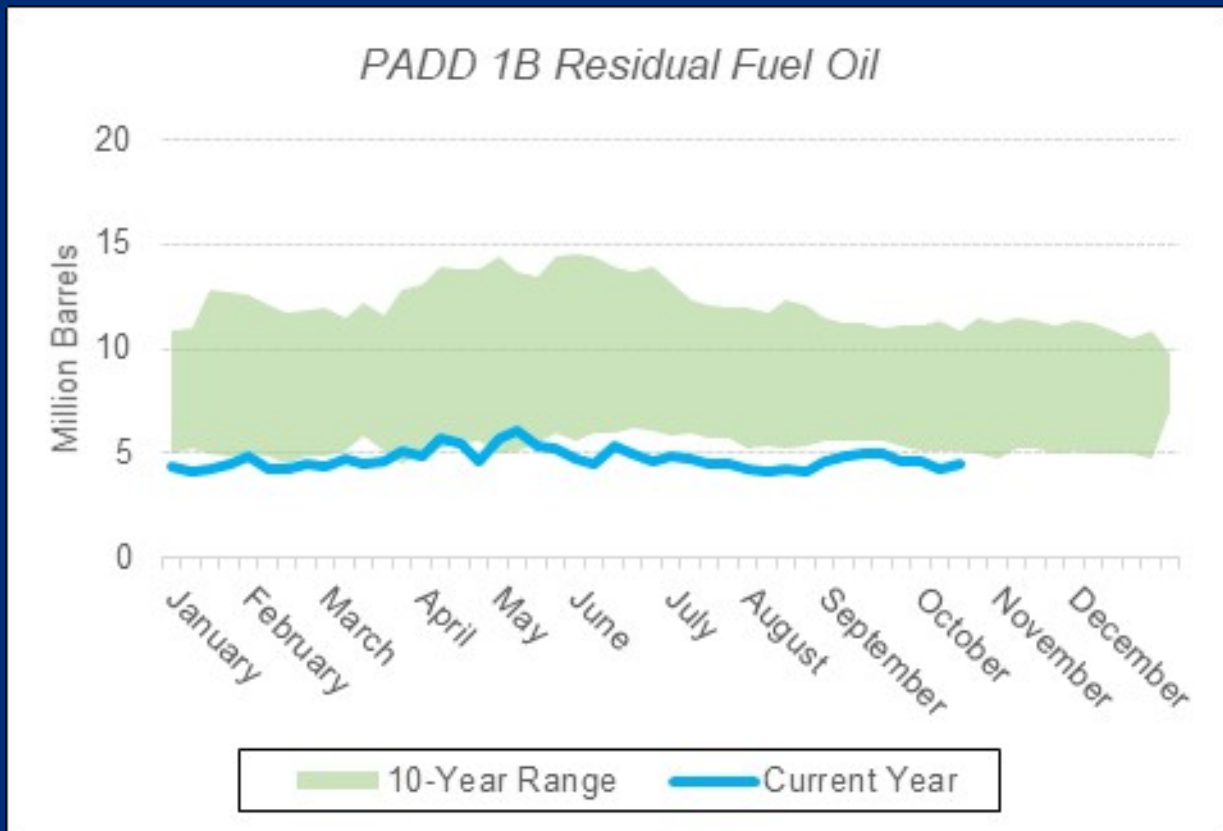
- Primary Uses
  - Vessel Bunkering
  - Electric Power
  - Industrial/Commercial
- New technology with newer, cheaper fuel types
- Environmental regulations

# Residual Fuel Oil Historic Consumption



- Primary Uses
  - Vessel Bunkering
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- New technology with newer, cheaper fuel types
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## Residual Fuel Oil Stocks



- Current stocks status
- Declining demand
  - Now the backup fuel
- Challenges obtaining supply
- Winter season
  - “interruptible” customers

# Questions?

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