Governor Cooper's Executive Order No. 80

March 29, 2019 - Asheville

Annual State of Our Air Briefing

Sushma Masemore, P.E.

Executive Order 80
NC's Commitment to Address Climate Change and Transition to a Clean Energy Economy

- By 2025
  - Reduce NC greenhouse gas emissions 40%
  - Increase ZEVs to 80,000
  - Reduce energy consumption per sq.ft. in state buildings by 40% from 2002-2003 levels
- DEQ to develop a NC Clean Energy Plan – facilitate a modern electric grid, collaborate with stakeholders, and increase clean energy, energy efficiency, & clean transportation
- DOC to support clean energy businesses and develop clean energy workforce assessments
- Cabinet agencies to integrate climate adaptation and resiliency planning into their work

For additional directives to cabinet agencies, see https://governor.nc.gov/documents/executive-order-no-80-north-carolinas-commitment-address-climate-change-and-transition

NORTH CAROLINA
Department of Environmental Quality

NC Climate Interagency Change Council

Council duties

A. Recommend goals and actions addressing climate change;

B. Develop and evaluate activities supporting statewide climate mitigation and adaptation practices

C. Consider stakeholder input developing programs and activities

D. Monitor and provide input on the development of plans and assessments

E. Review and submit to the Governor the plans and assessments

NORTH CAROLINA
Department of Environmental Quality

Inaugural Climate Council Meeting
Dec. 19, 2018

- Welcome by DEQ Secretary Michael Regan
- Opening Remarks by Governor Cooper
- Attended by all Cabinet secretaries and their designees
- 120+ in attendance – live streaming

Dec 19, 2018 Meeting Video

https://deq.nc.gov/energy-climate/climate-change/nc-climate-change-interagency-council

NORTH CAROLINA
Department of Environmental Quality

2nd Climate Council Meeting
Feb. 19, 2019

- Museum of the Albemarle, Elizabeth City
- Focused on coastal communities and update on action plans

NORTH CAROLINA
Department of Environmental Quality

Upcoming Climate Council Meeting
April 26, 2019

- State Archives Building, Raleigh
- Focus on developing NC Climate Science Assessment
- Examine nature based solutions to build ecosystem resiliency and sequester carbon

NORTH CAROLINA
Department of Environmental Quality

North Carolina's Greenhouse Gas (GHG) Inventory

Quick Facts: 2005 - 2017

Gross GHG Emissions by Economic Sector in 2017

Electricity	Transportation	Industry*	Agriculture	Waste	Commercial	Home
35.6%	31.4%	12.5%	7.1%	5.9%	3.9%	3.6%

2017 Gross GHG Emissions

147.8 million metric tons of CO_2e

CO_2 emissions from fossil fuel combustion: **80.4%** of total gross emissions

CO_2 emissions removed by forests & other lands: **24.8%** of total gross emissions

2005 - 2017 Change in Gross GHG Emissions

- ↓ 33.7% — Electric Generation
- ↓ 21.7% — Residential
- ↓ 16.0% — Transportation
- ↓ 3.9% — Industry*
- ↑ 13.0% — Commercial

Statewide Net GHG Reductions (2005-2017)

↓ 25.2%

*Industry includes fossil fuel combustion, natural gas and oil processes, and industrial processes.

Full GHG Report

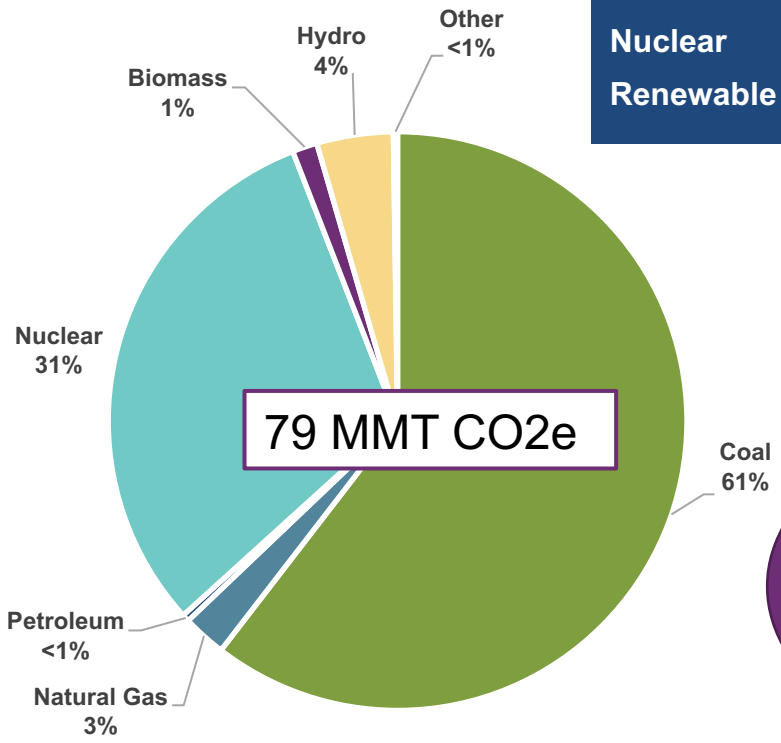
https://deq.nc.gov/energy-climate/climate-change/greenhouse-gas-inventory

By 2025, current path reduces emissions by 31%. Much of the reduction is a result of coal to gas switch, with help from REPS and H589. Need to get to 40% by 2025 for EO 80.

North Carolina Electricity Generation By Source Type (2005 & 2017)

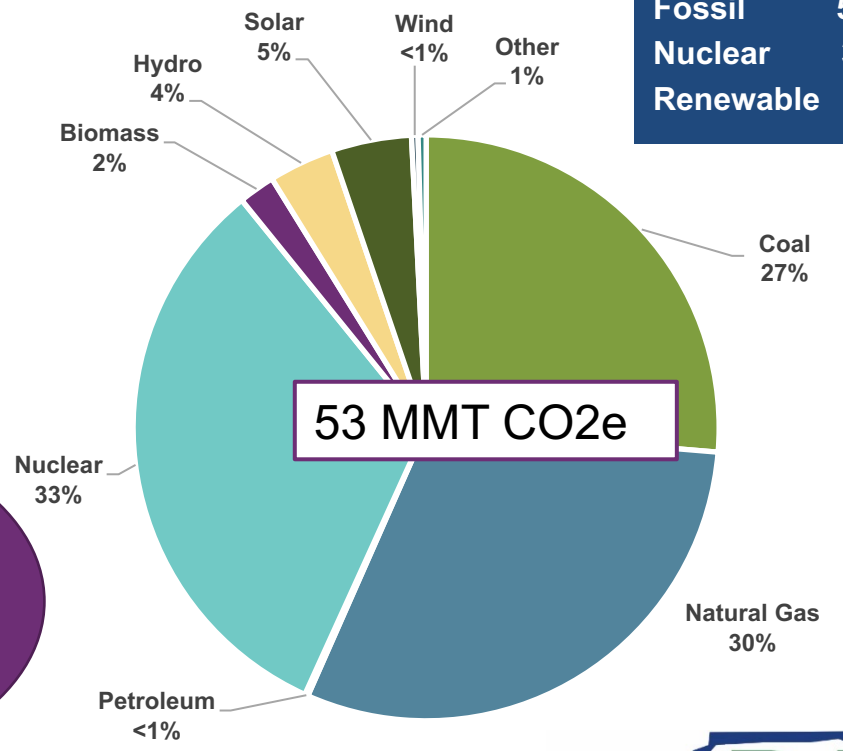
2005 Electricity Generation

Fossil	64%
Nuclear	31%
Renewable	4%



2017 Electricity Generation

Fossil	56%
Nuclear	32%
Renewable	9%



NC Reductions

34% GHG

90% SO_2

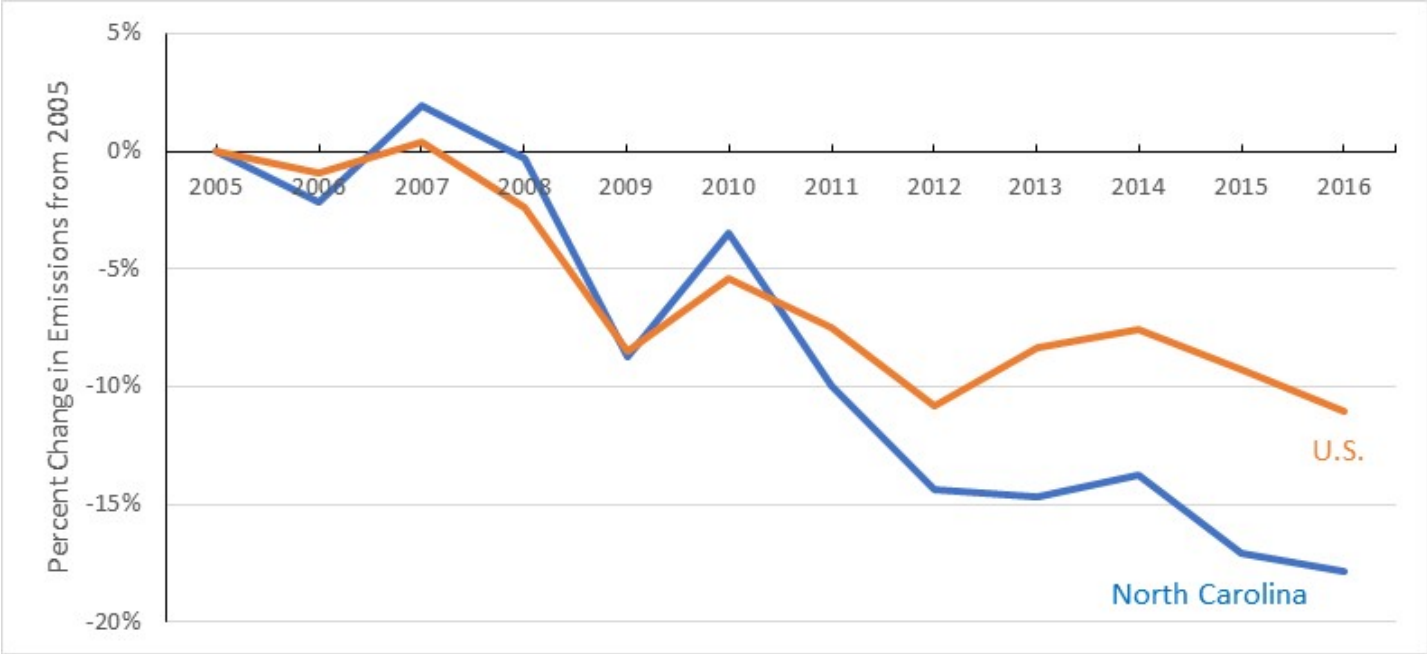
37% NO_x

NC Imports about 10% of its electricity each year

Source: NC GHG Inventory, 2019

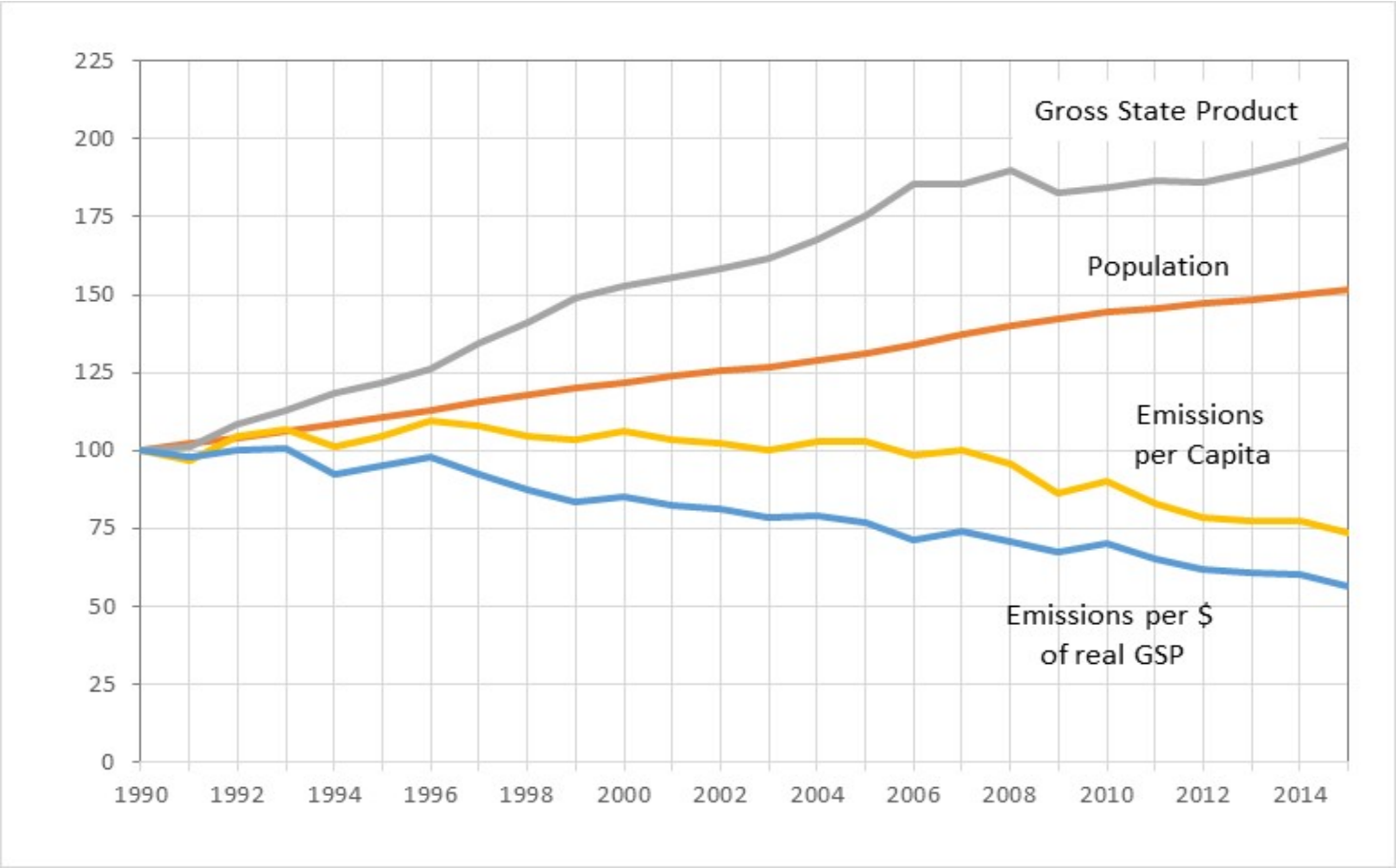
NORTH CAROLINA Department of Environmental Quality

Trends in GHG Emissions Decrease (% Relative to 2005)



NORTH CAROLINA
Department of Environmental Quality

NC's Change in Total GHG Emissions Per Capita and Per Dollar of State Gross Product



NORTH CAROLINA
Department of Environmental Quality

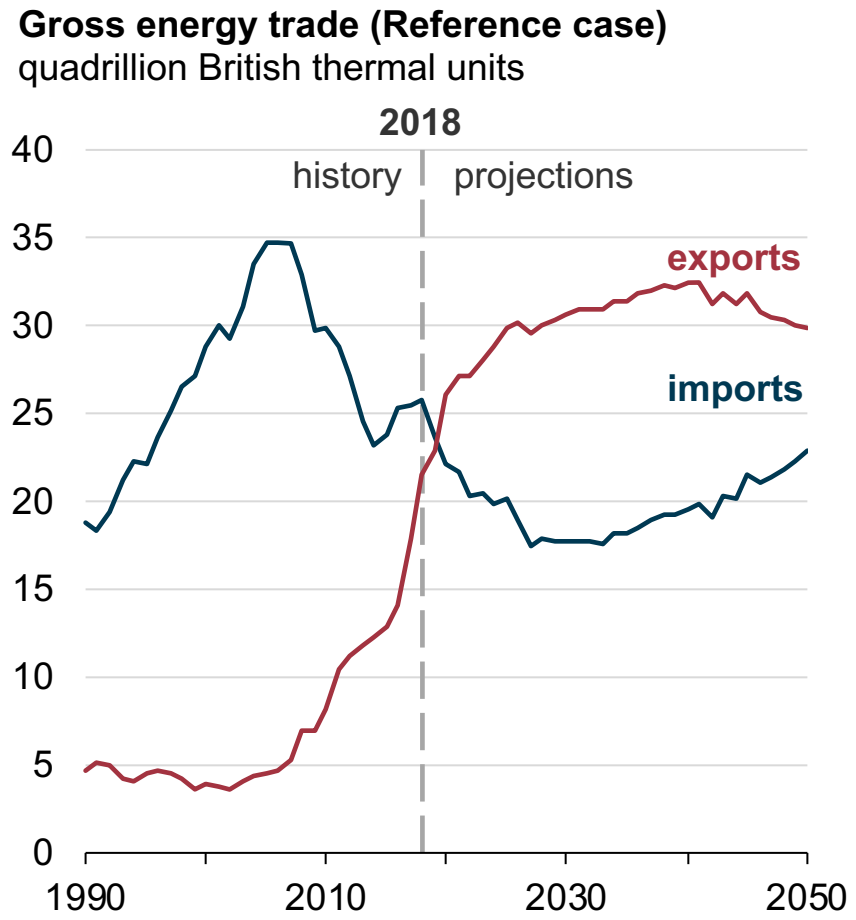
North Carolina's Ranking Nationally

	Ranking
Total Energy Production (trillion Btu)	29th
Total Net Electricity Generation (thousand MWh)	6th
Total Carbon Dioxide Emissions (million metric tons)	14th
Total Energy Expenditures per Capita, ($)	45th
Average Retail Price of Electricity to Residential Sector, January 2018 (cents/kWh)	42nd

https://www.eia.gov/state/rankings/?sid= #/series/31

NORTH CAROLINA
Department of Environmental Quality

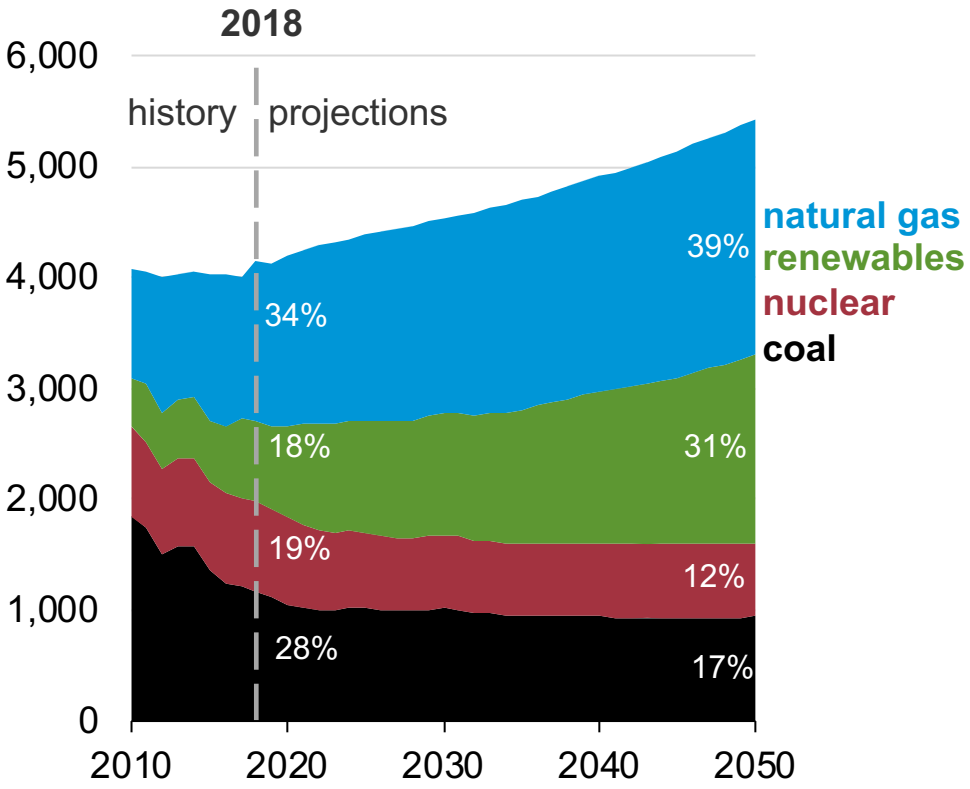
The United States becomes a net energy exporter after 2020 in the Reference case—



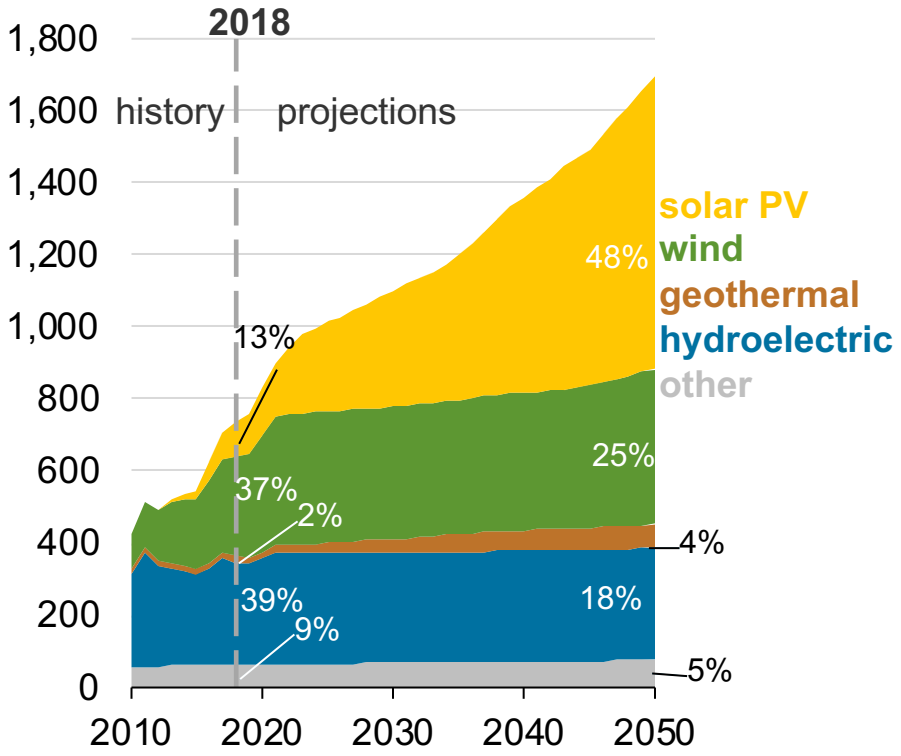
AEO (Annual Energy Outlook) 2019
www.eia.gov/aeo

Electricity generation from natural gas and renewables increases, and the shares of nuclear and coal generation decrease—

Electricity generation from selected fuels (Reference case)
billion kilowatthours



Renewable electricity generation, including end-use (Reference case)
billion kilowatthours

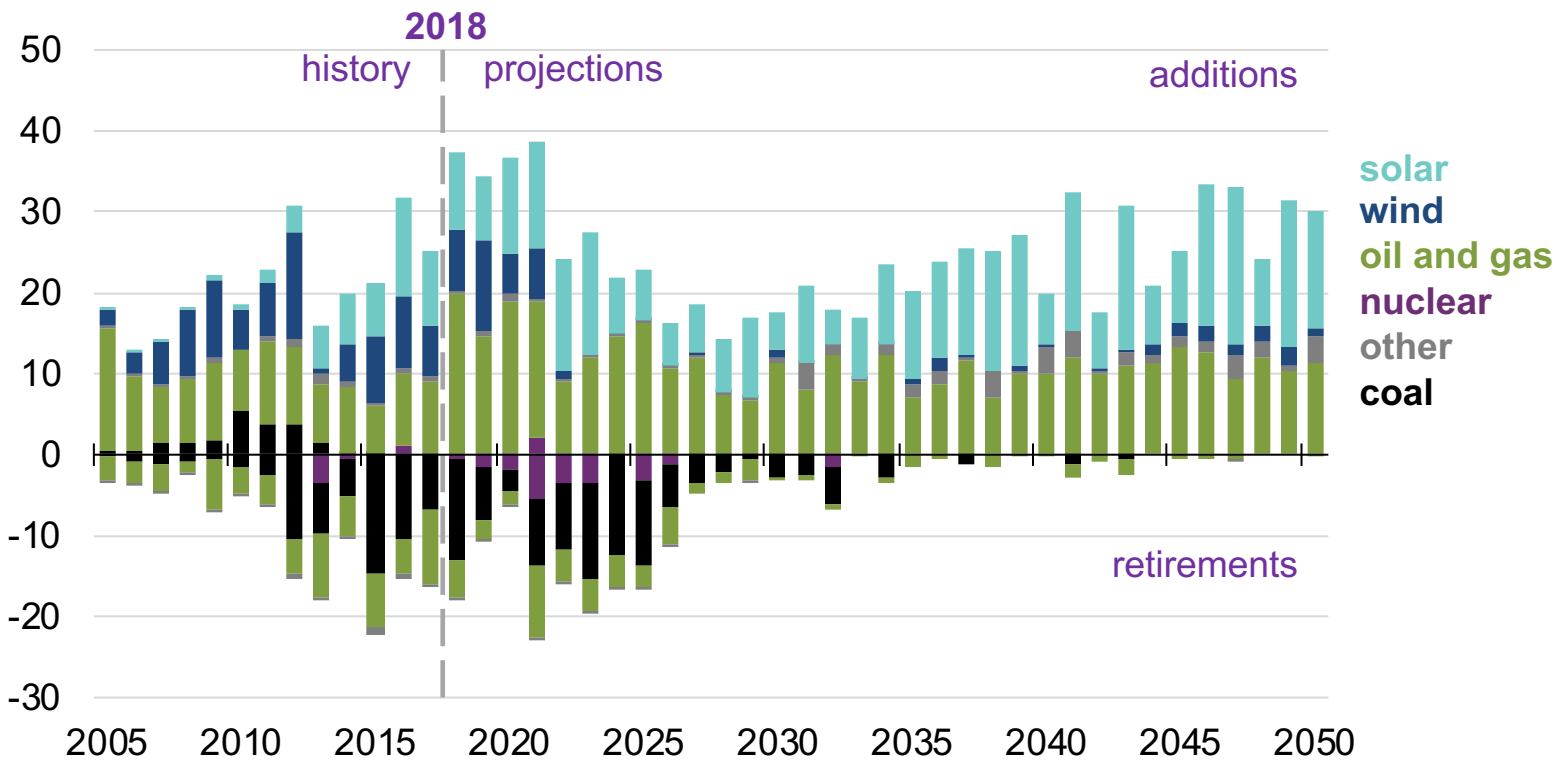


AEO 2019
www.eia.gov/aeo

NORTH CAROLINA
Department of Environmental Quality

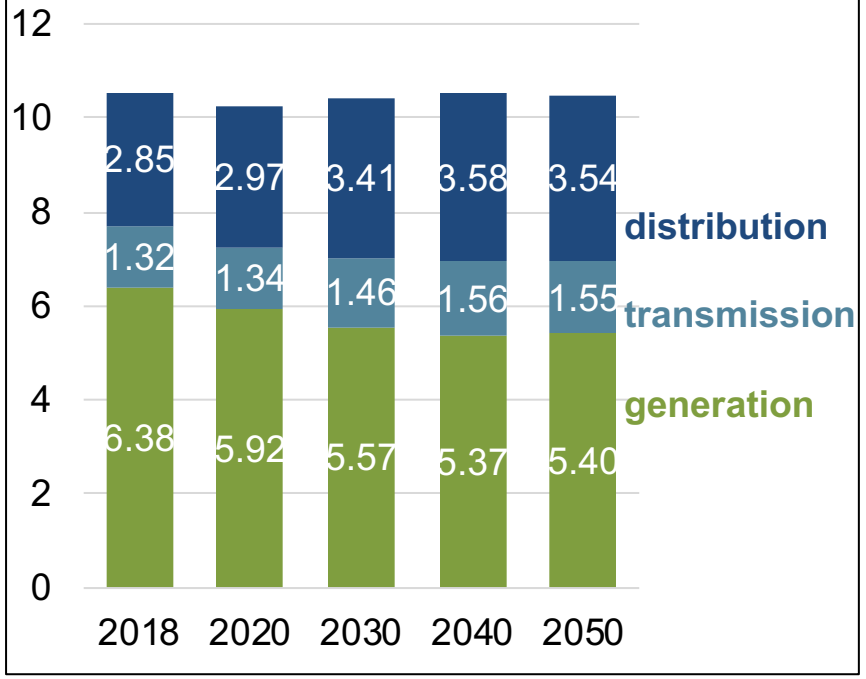
Expected new generating capacity will be met by renewables and natural gas—

Annual electricity generating capacity additions and retirements (Reference case)
gigawatts



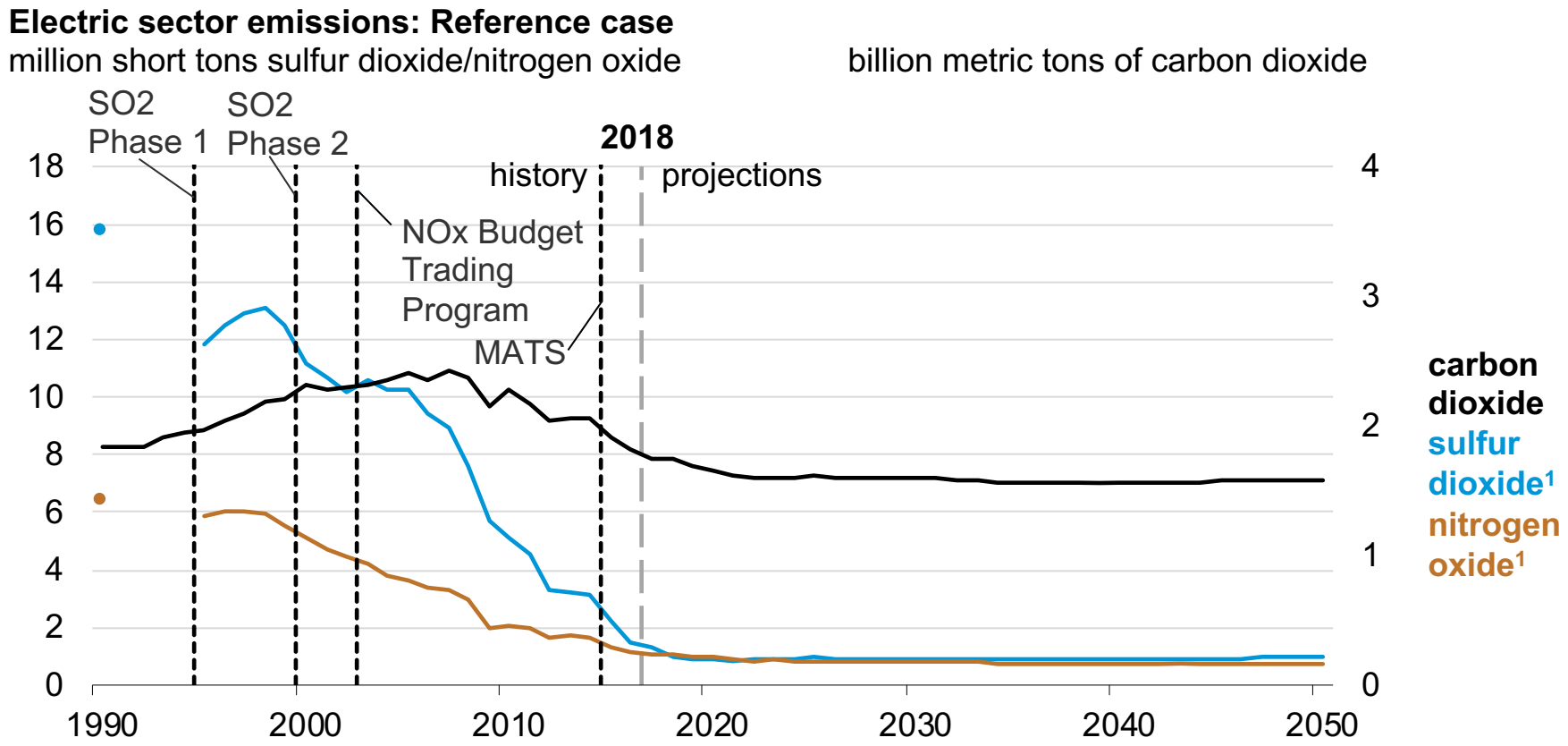
AEO 2019
www.eia.gov/aeo

Electricity prices by service category (Reference case)
2018 cents per kilowatthours



NORTH CAROLINA
Department of Environmental Quality

Electric sector emissions in the United States closely track decreasing dependence on coal—

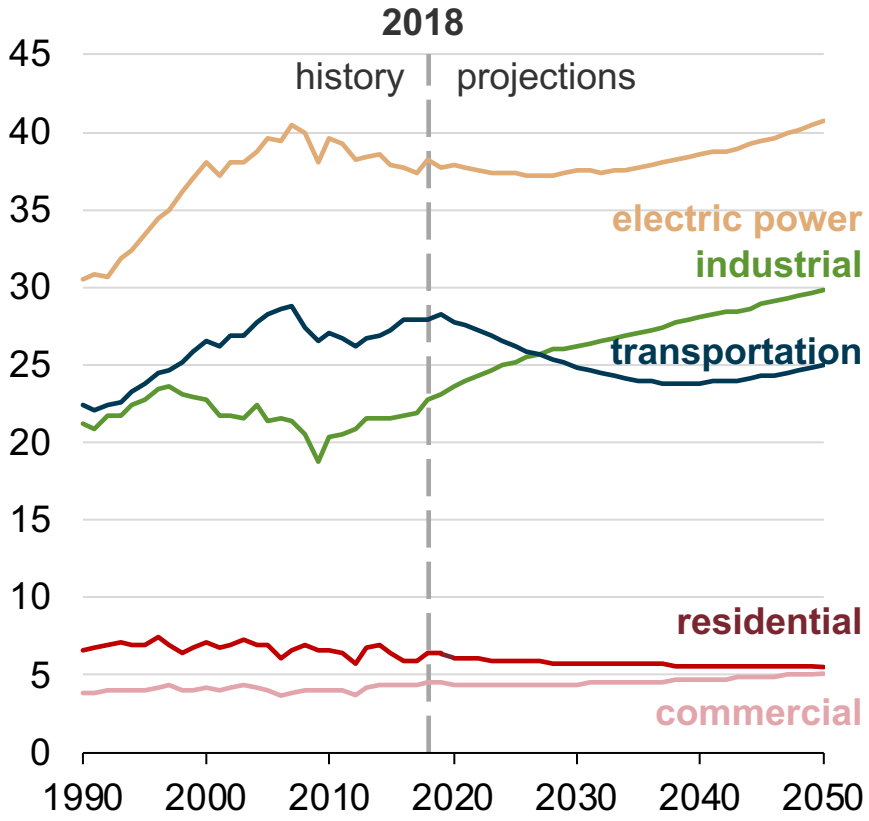


[1]Annual sulfur dioxide and nitrogen oxide data unavailable prior to 1995

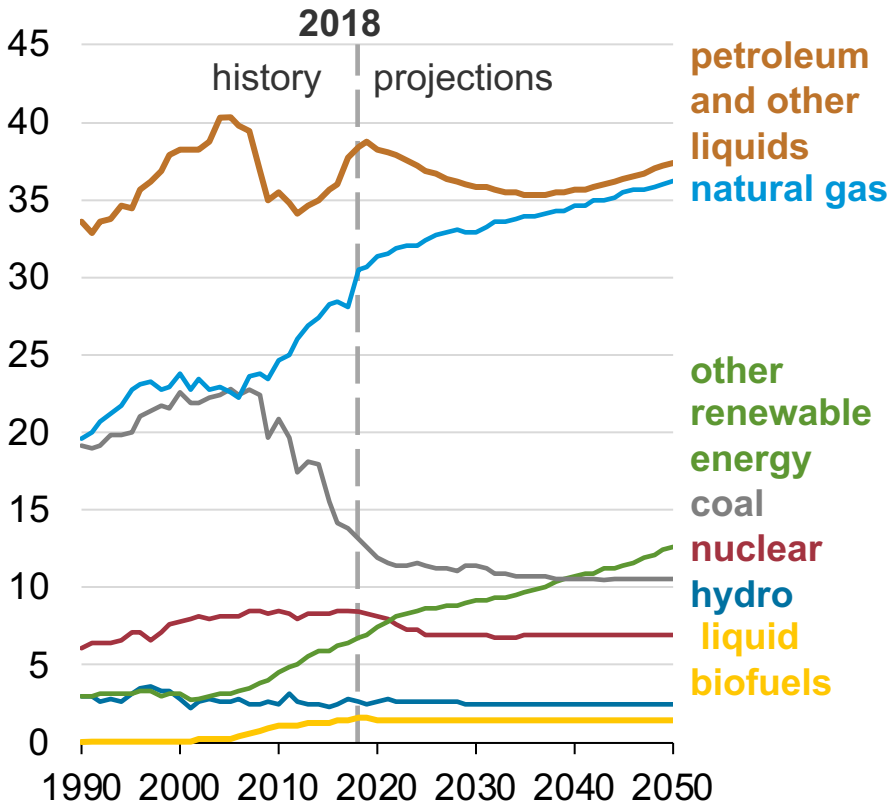
AEO 2019
www.eia.gov/aeo

Energy Consumption Forecast

By sector (Reference case)
quadrillion British thermal units



By fuel (Reference case)
quadrillion British thermal units



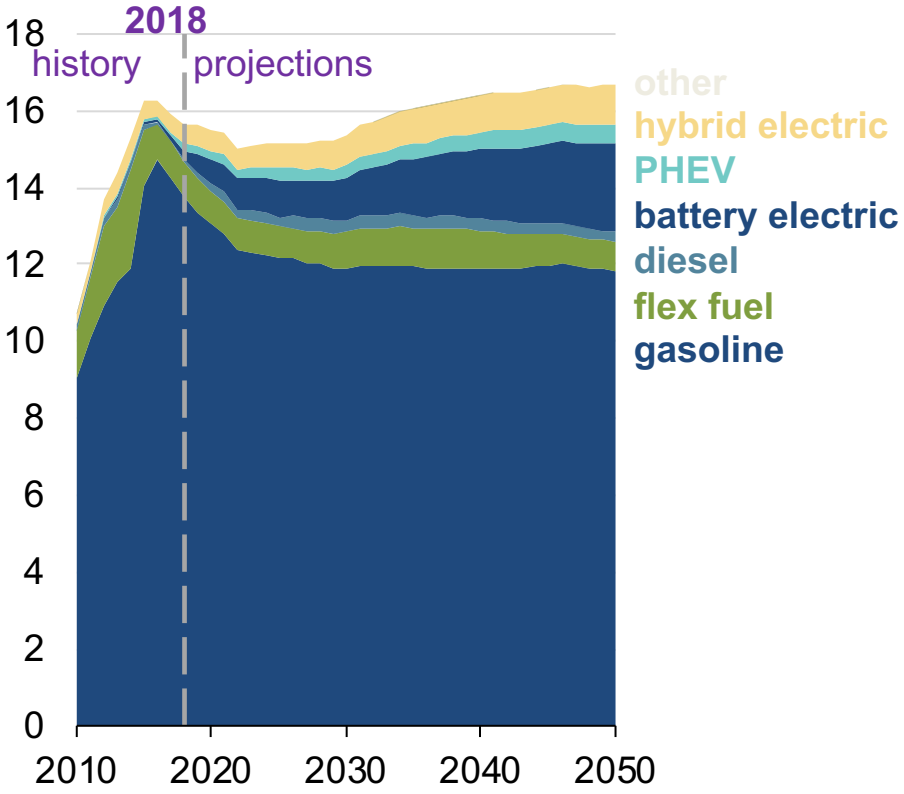
AEO 2019
www.eia.gov/aeo

NORTH CAROLINA
Department of Environmental Quality

Alternative and electric vehicles gain market share in the Reference case—

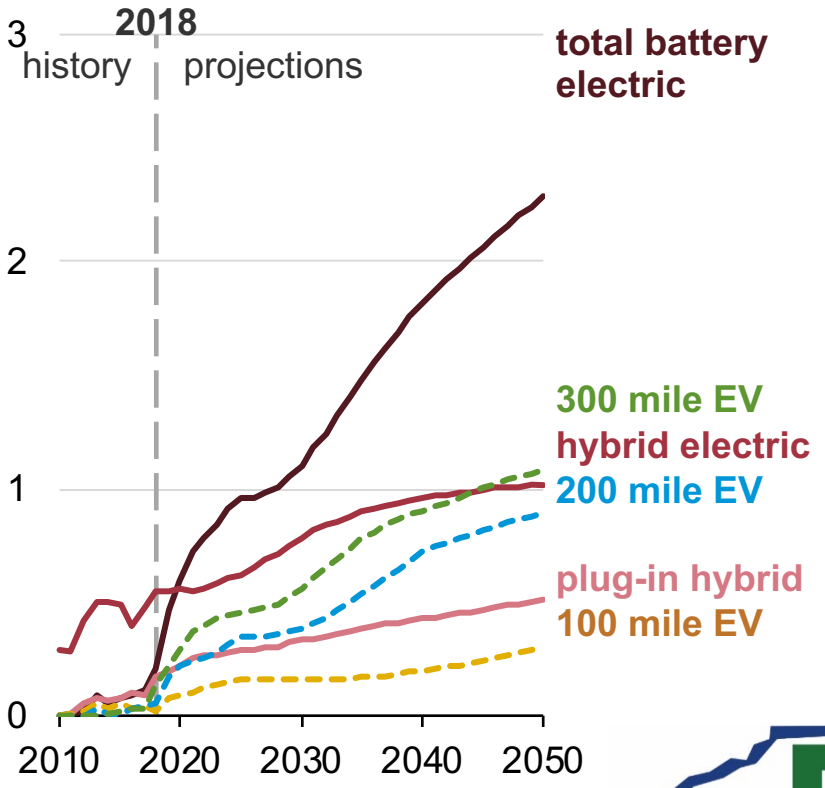
Light-duty vehicle sales by fuel type (Reference case)

millions of vehicles



New vehicle sales of battery powered vehicles (Reference case)

millions of vehicles



AEO 2019
www.eia.gov/aeo

DEQ Directive: Develop a NC Clean Energy Plan

- Open and inclusive stakeholder driven process
- General Description of Approach
  1. Vision building and assessing current landscape in NC
  2. Examine evolving and changing landscape in the power sector
  3. Develop policy, regulatory, administrative, and program recommendations to achieve the vision

North Carolina
Clean Energy Plan Development

Clean Energy Plan Development Process

A. Engagement with stakeholders

B. Technical analysis
   - NC energy landscape
   - NC energy resources
   - Use of predictive energy modeling
     - Natural Resources Defense Council - IPM
     - Resources for the Future - Haiku
     - NCSU – Temoa

C. Action areas
   - Recommendations on policies, regulatory changes, administrative actions, incentives, etc.

Public Engagement Methods:

Method 1. Six Facilitated Workshops, Raleigh

Method 2. Regional Listening Sessions

Charlotte	Asheville
Rocky Mount	Wilmington
Hickory	Fayetteville
Elizabeth City	Wilmington

Method 3. Combined with Other Statewide Events

Method 4. Online Input

Dates and locations posted at https://deq.nc.gov/cleanenergy

NC Clean Energy Plan (CEP) -Help From Outside

- Regulatory Assistance Project and Rocky Mountain Institute – help organizing & facilitating workshops and listening sessions
- Assistance from NC University Energy Centers with technical information
- Energy system modeling
  - Natural Resources Defense Council
  - Resources for the Future
  - NCSU
  - Environmental Protection Agency & Department of Energy
- Studies & reports from a variety of organizations
  - Utility Integrated Resource Plans
  - NC storage study
  - NC greenhouse gas inventory
  - NC clean energy economic impact study

NC CEP - Status

- Second workshop will be held April 1st
- 1/2 way through the Regional Listening Sessions
- Comments received from >400 stakeholders – many common themes
- DEQ staff are reviewing information sources to be used developing NC CEP report

NC CEP is due to Governor Cooper Oct 1, 2019.

Thank you.

Questions?

Sushma Masemore, P.E.
Deputy Assistant Secretary for Environment &
State Energy Director
919-707-8700
Sushma.Masemore@ncdenr.gov

Department of Environmental Quality