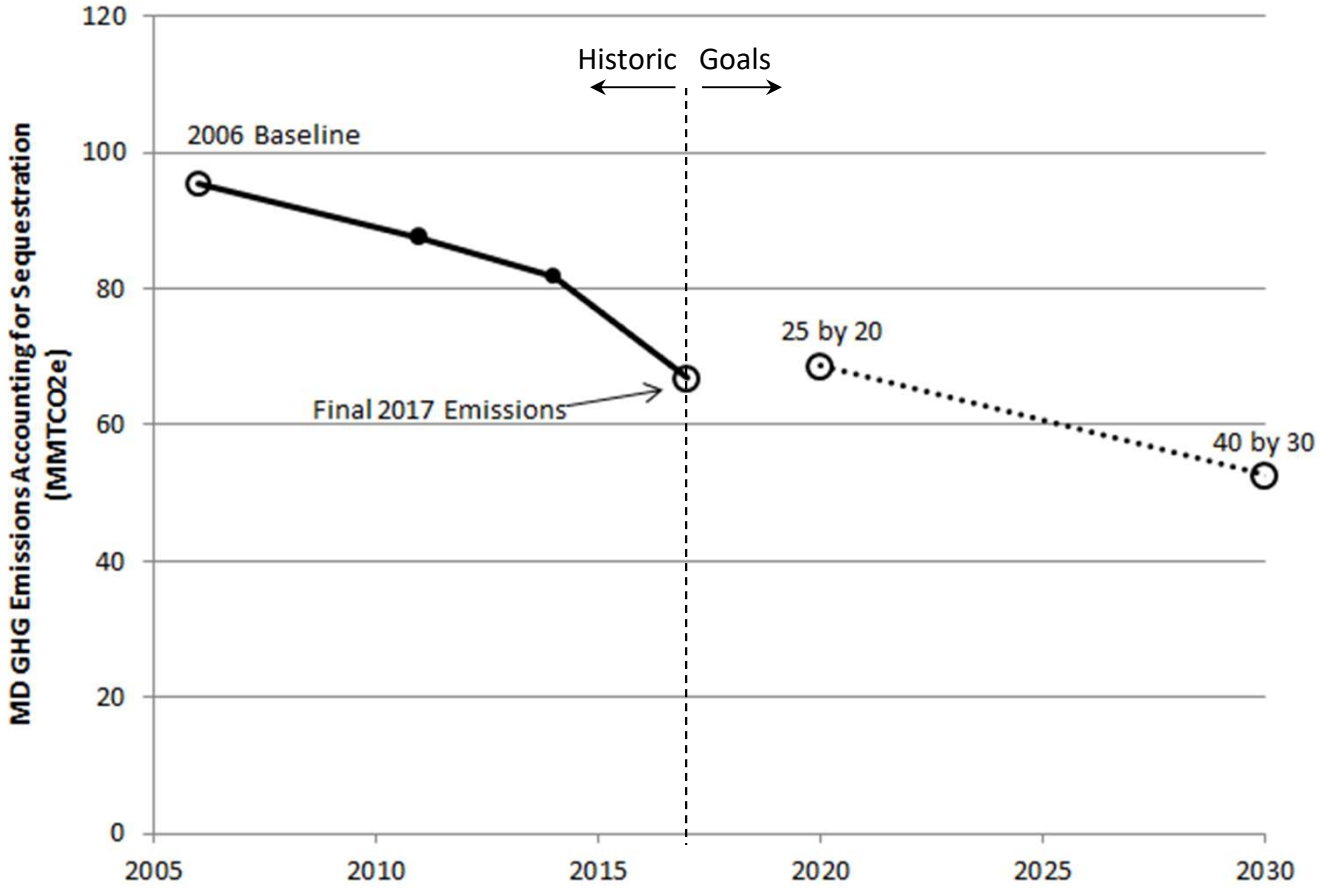
Maryland
Department of the Environment

2030 GGRA Plan: Electricity Strategy

Mitigation Working Group
May 18, 2021

The Greenhouse Gas Reduction Act

Maryland Law ("GGRA"): Reduce GHGs 25% by 2020 and 40% by 2030



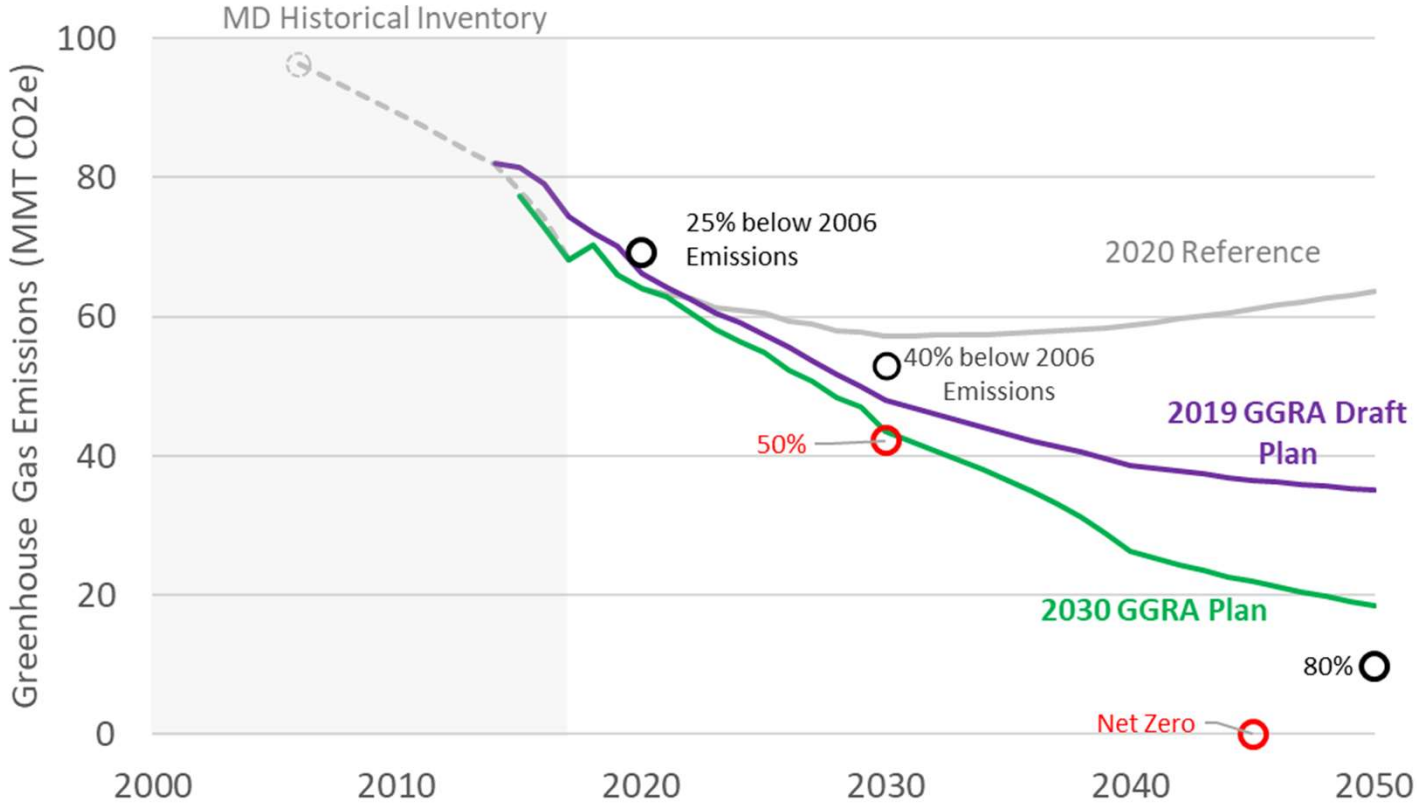
Maryland greenhouse gas emissions, accounting for sequestration. Please note favorable weather drove additional reductions in 2017.

MD GHG Emissions Breakdown (2017)

E3's PATHWAYS GHG model is calibrated to the 2017 inventory, plus electricity and building data through 2019.

The 2030 GGRA Plan

The 2030 Plan reduces substantially more than the 40-by-30 requirement, and nearly achieves 50-by-30 (~1.4MMT short).
Additional Federal action may make up the difference.



Maryland greenhouse gas emissions, accounting for sequestration. Projections from Draft Plan and 2030 GGRA Plan.

Major Mitigation Programs
(New Since 2019 Draft Plan)

Electricity Supply

Renewable Portfolio Standard (current)

Clean and Renewable Energy Standard (updated)

Regional Greenhouse Gas Initiative (RGGI) Long term 100% Clean Electricity

Expanded Net Metering (REDS Rpt)

SMART-POWER Offshore Wind Partnership

Transportation

Medium & Heavy Duty ZEV MOU

Greater telework post-COVID

State Fleet Innovation Plan (State EVs)

Public Transit & other infrastructure

Electric Vehicles: Clean Cars & ZEV Mandate

50% ZEV Transit Buses by 2030

Smart Growth & Compact Development

Transportation and Climate Initiative (TCI)

Building Energy Use

EmPOWER Maryland

Compact Development

State Building Efficiency EO

New Building Codes

Beneficial Electrification

Short-lived Climate Pollutants

HFC regulation (Final Rule)

Methane regulation (Final Rule)

Sustainable Materials Mgmt

Carbon Sequestration

Forest Management Programs

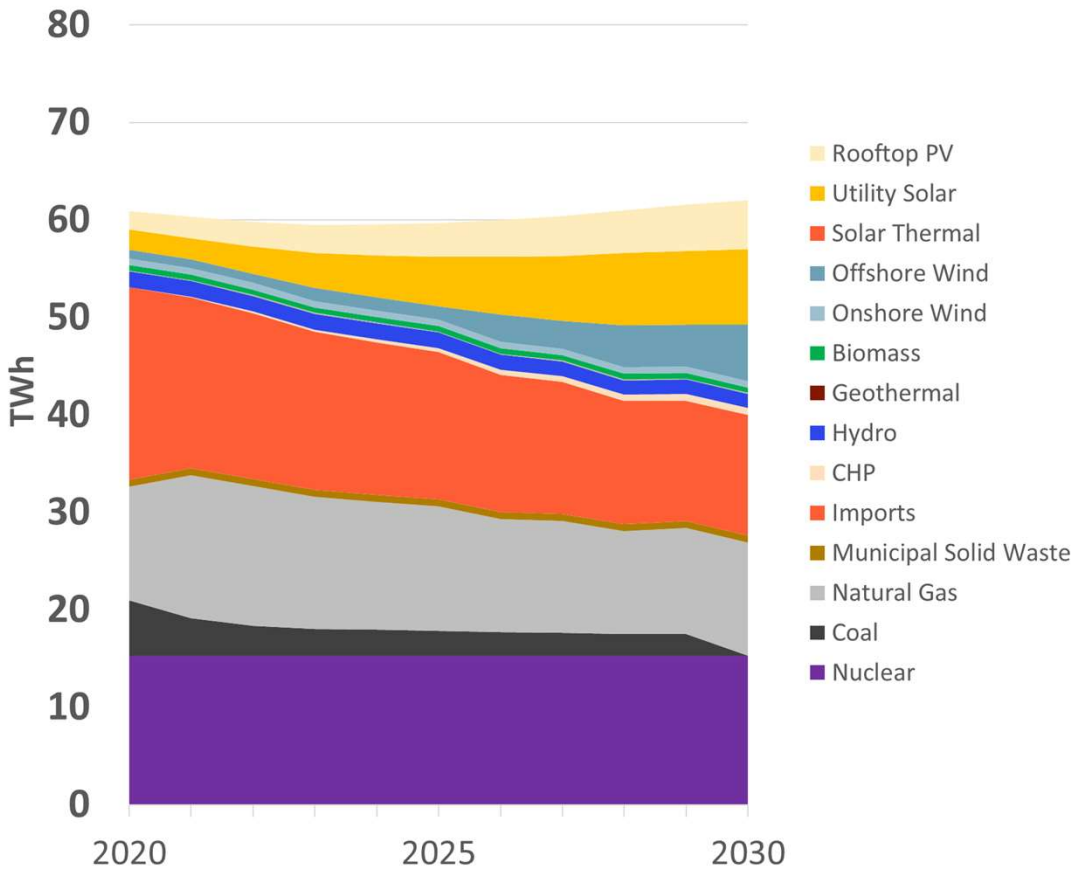
Healthy Soils Program

Electricity Supply Programs

Electricity strategy: 100% Clean Electricity by 2040 by building more clean energy and capping emissions from fossil energy.

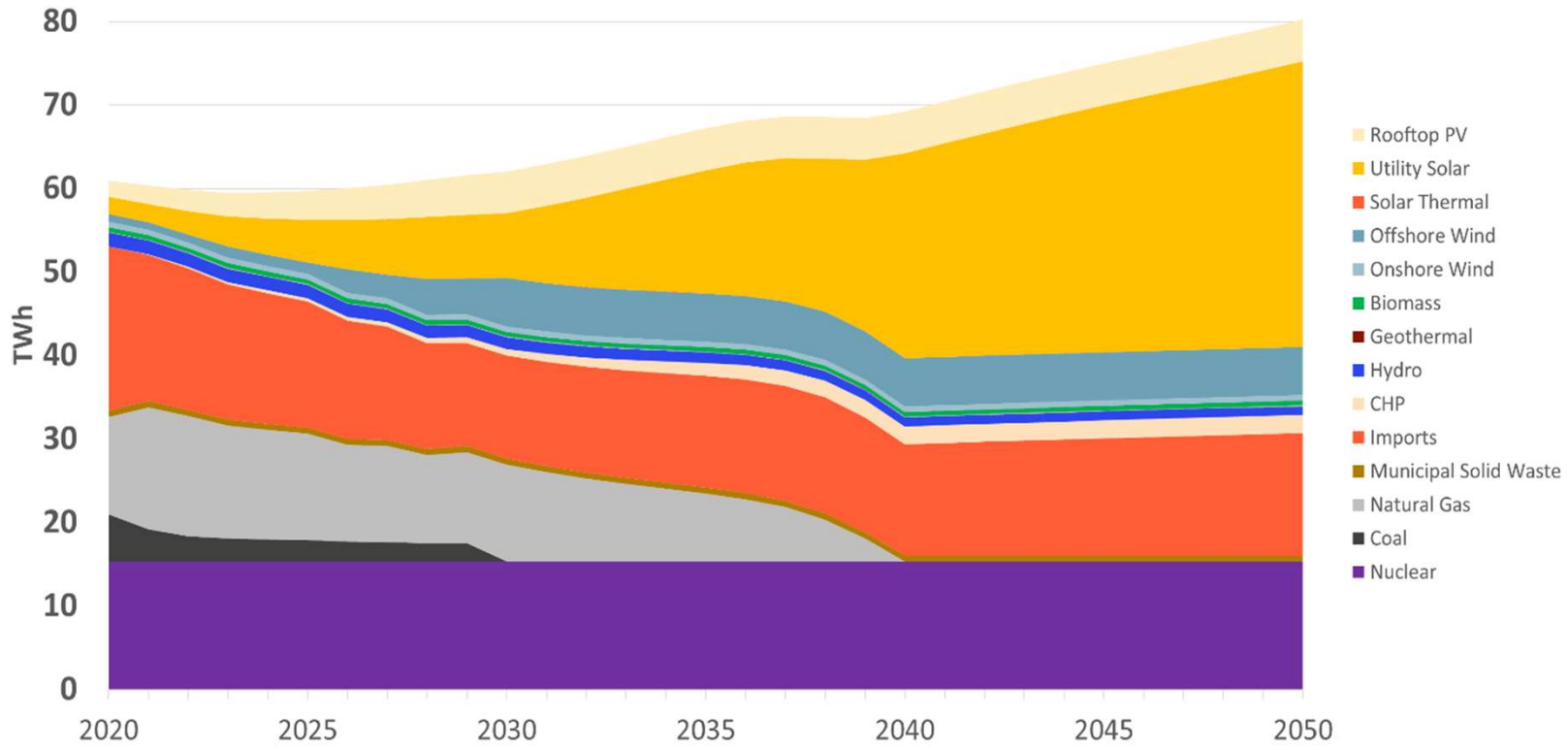
- CARES
  - Bills in 2020 and 2021 sessions
  - Builds upon existing RPS; 100% Clean Electricity by 2040
  - Our numbers drawn from analysis by Resources for the Future (RFF), which estimates substantial MD solar builds.

- RGGI
  - Carbon cap on power plants and state investment in clean energy (11 states participate now; 12 soon with PA)
  - Plan proposes long-term cap decline consistent with 100% Clean goal



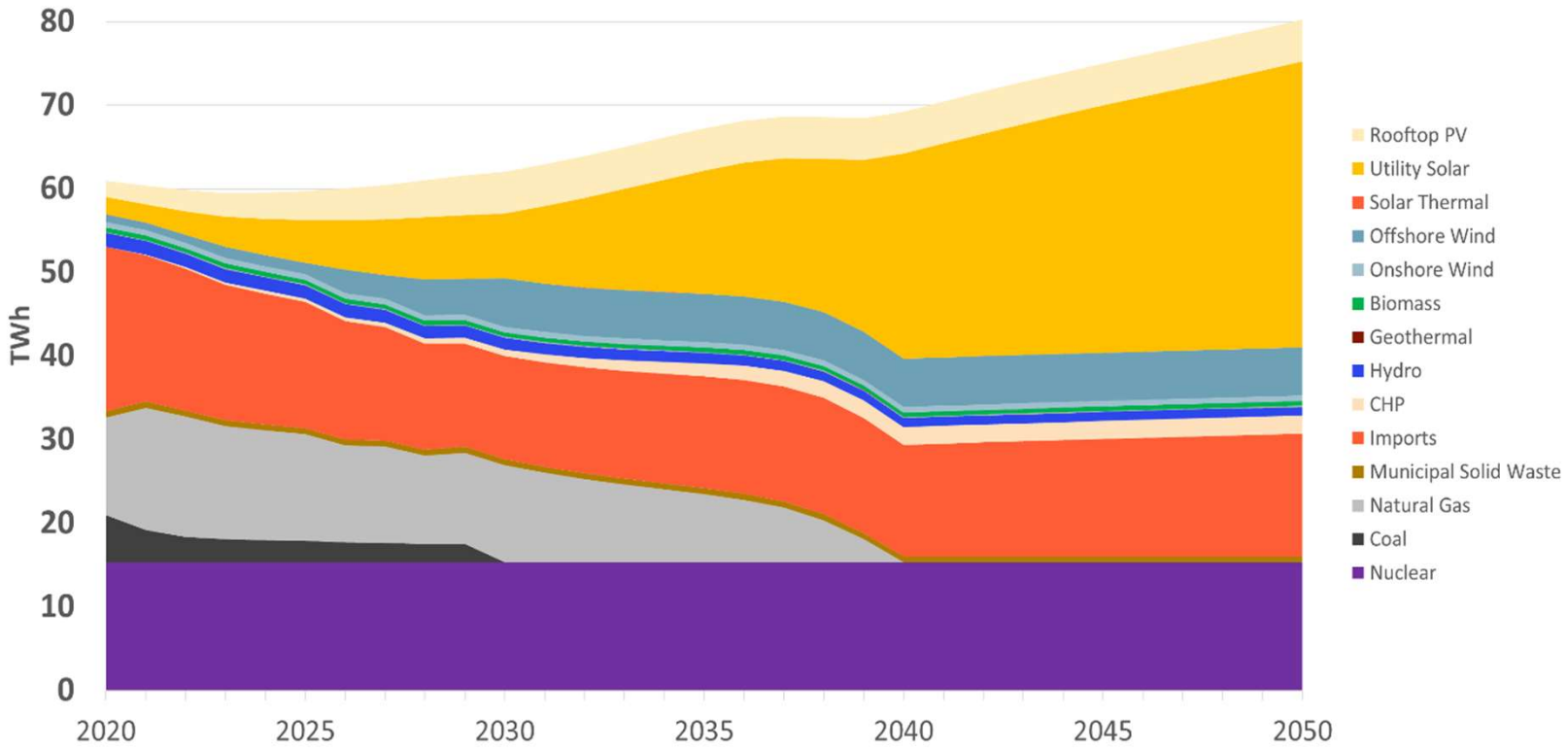
Maryland electricity generation and imports in GGRA Plan through 2030. CARES and RGGI reduce fossil generation and increase clean & renewable generation. **Analysis assumes no new nuclear or carbon capture before 2030**

More on Electricity (1)



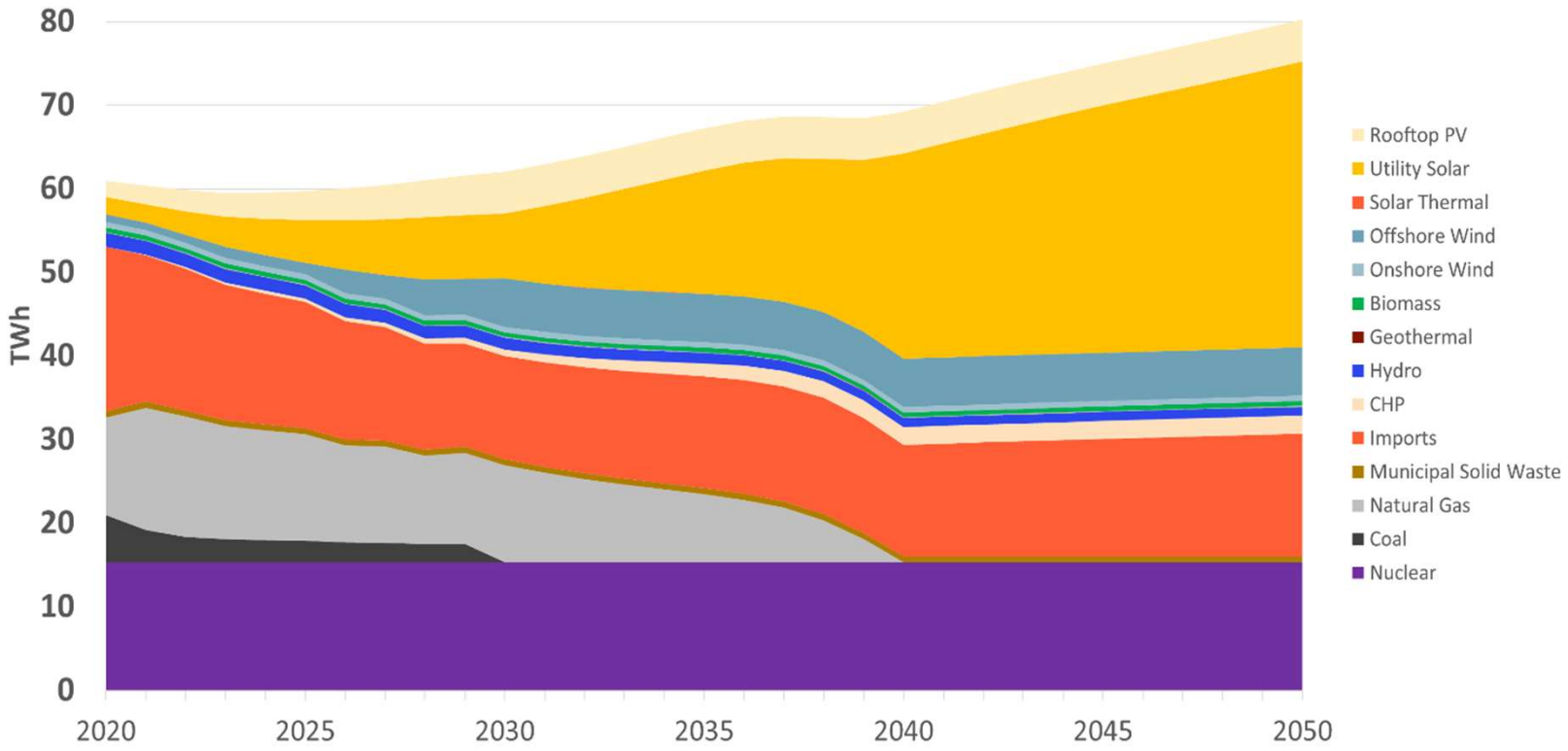
- We calibrate against sophisticated modeling from RFF and RGGI. Models estimate substantial or total coal retirement by 2030.
- By 2040, 100% Clean Electricity would mean no fossil power plant generation without carbon capture.

More on Electricity (2)



- The RFF model we looked to to estimate the balance of resources to meet CARES deployed much more solar than CHP, and no carbon capture or new nuclear, **but this is uncertain.**
- CARES would deploy the most cost-effective clean and renewable energy based on how technologies mature.

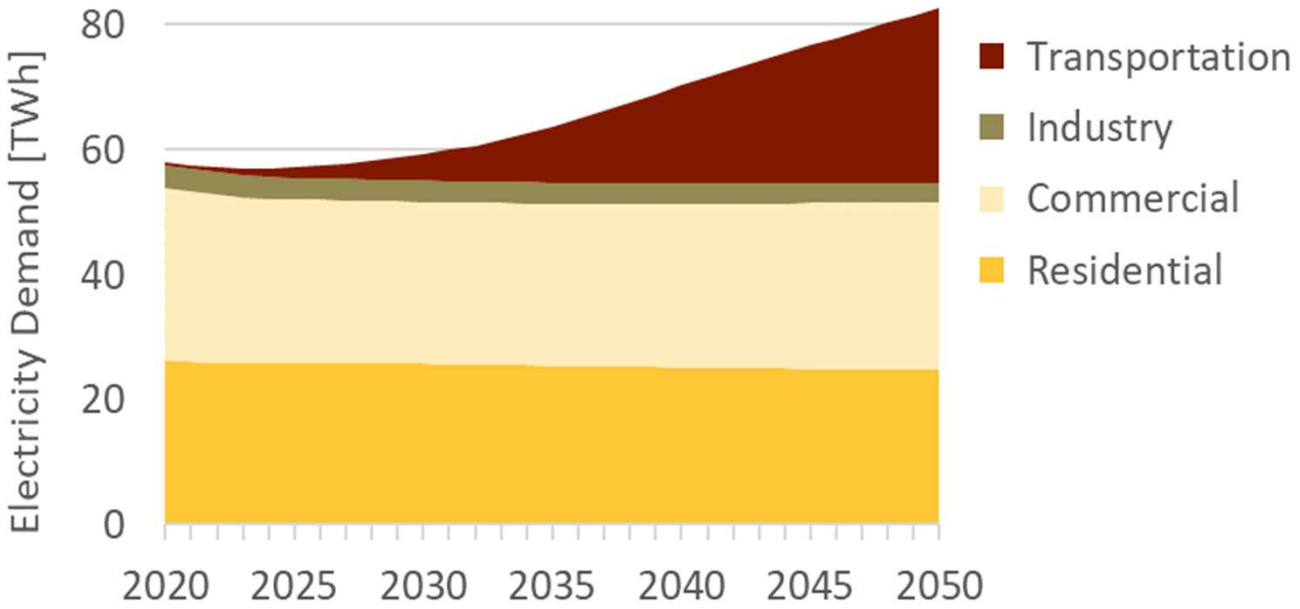
More on Electricity (3)



- We currently lack detailed electricity dispatch modeling that incorporates energy storage, so we do not have quantitative estimates of the need for battery storage, flexible load, and other measures to accommodate the long-term degree of renewable generation, but those improvements are necessary to deploy beginning in this decade.

(We may have opportunity to incorporate that later)

Effects of Electrification



- Overall annual electricity demand in buildings is flat or declining as efficiency counteracts electrification, but changes in timing of demand are important and must be managed.
- Long-term increase in overall electricity demand driven by EVs, but is not material until 2030s.

What does CARES do?

Before 2030:

1. Build upon current RPS (CEJA) Solar and Offshore Wind

2. Disqualify black liquor* and municipal waste combustion from Tier 1

3. Replace that with Maryland clean and renewable energy

Through 2040:

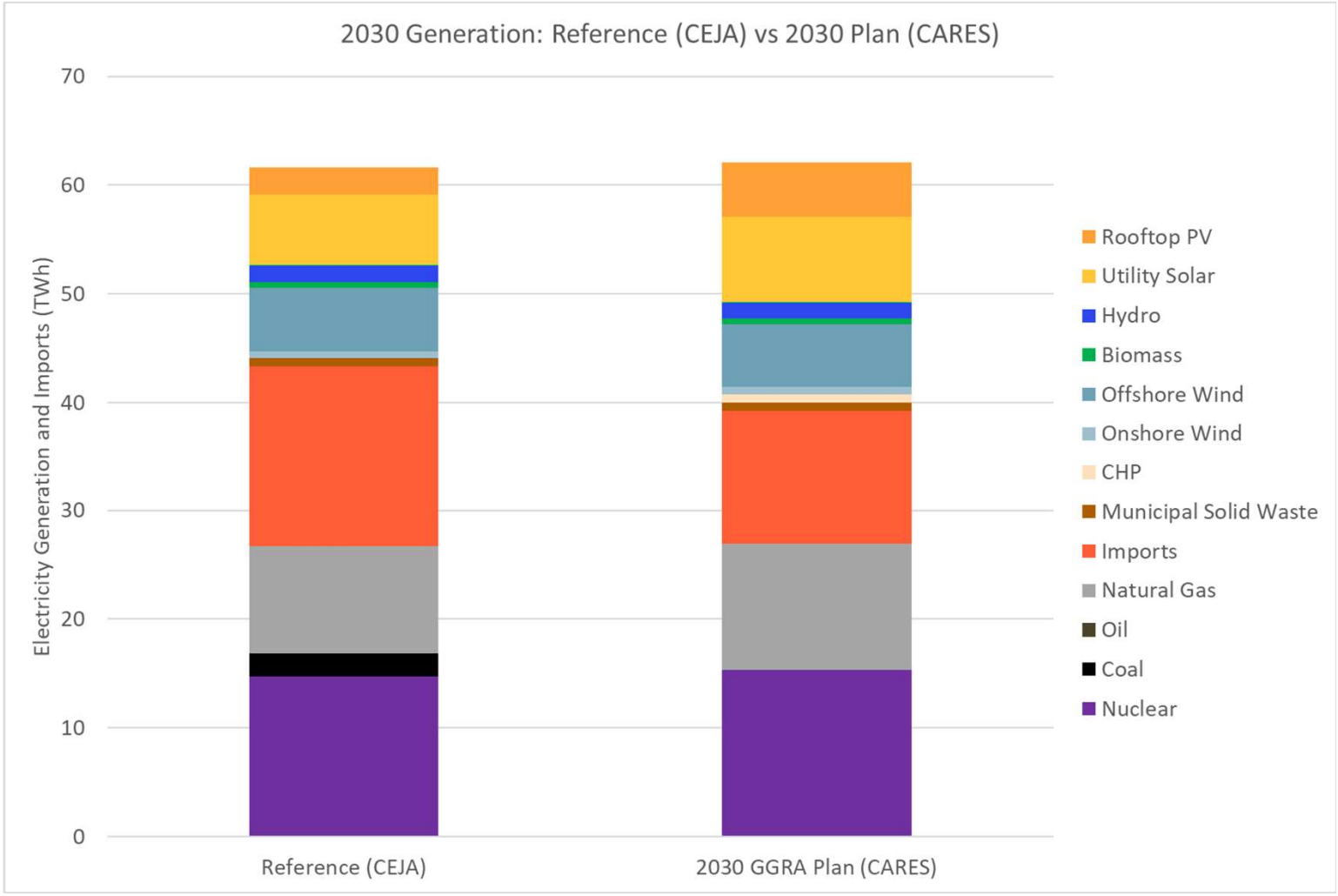
4. Count existing nuclear (Calvert Cliffs), but don't provide credits.

5. Get to 100% by 2040

*Legislation that passed this year (SB65) disqualifies BLQ and makes other changes to the solar and Tier 2 carve-outs. CARES will be revised accordingly if that bill becomes law.

2030 Generation Effects

- CARES expected to deploy significantly more solar, some CHP



RGGI Program Review

- The GGRA Plan calls for reducing the RGGI CO2 cap to zero by 2040, with cost controls. MDE will bring that into this year's **Program Review.**
- Program Review will begin with listening sessions in the fall through winter, with a focus on environmental justice.
- Policy deliberations will start after the listening sessions in 2022.

Contact

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