Michigan - Model Results

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Haiku Baseline Assumptions

- Calibrated to EIA's AEO 2013
- Assume CAIR (like CSAPR) in place and Mercury MACT
- Model RGGI and AB32 in Baseline
- Model all existing state RPS policies and mercury policies
- Model federal renewable production tax credit and renewable investment tax credit

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Additional Baseline Specifications - Nation

- 26 regions with lots of state detail in upper Midwest
- Demand for rest of nation is calibrated to EIA's Annual Energy Outlook
- No programmatic energy efficiency in other states or regions beyond what is captured by EIA

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Additional Baseline Assumptions - Michigan

- Incorporated planned investment in wind
  - 1624 MW in place or planned
- Renewable Portfolio Standard is suspended in Michigan
- Demand growth is 0.5% per year beyond EIA forecast
- Energy Efficiency
  - Beginning 2015 and growing at 0.6% per year to 11.7% in 2035, replacing depreciated investments
  - Levelized program costs of $31.1/MWh
  - (Additional) Participant costs are equal to 73% of utility costs
- Full planned retirements and additions
  - Separated by upper and lower peninsula

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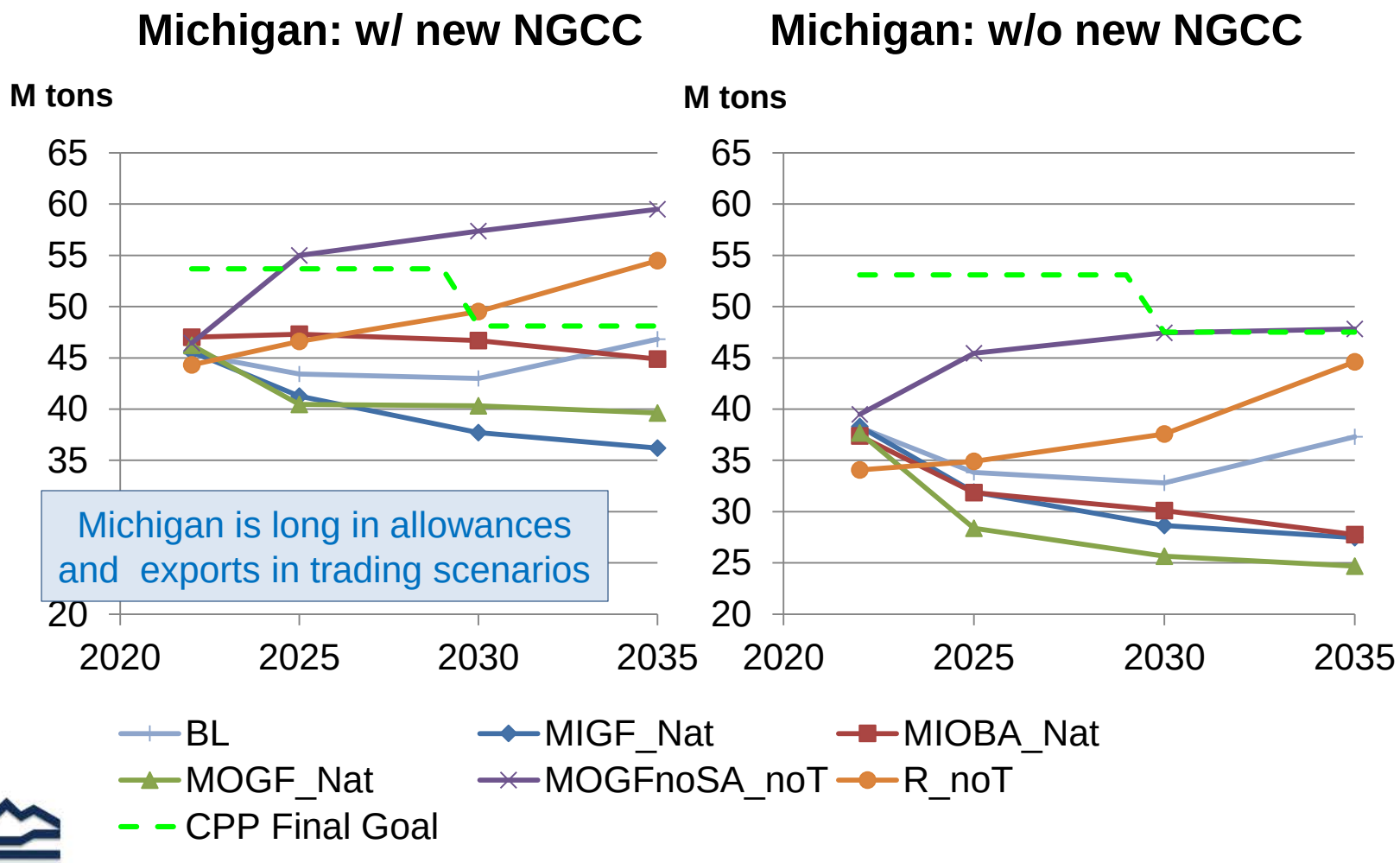
CO_2 Emissions



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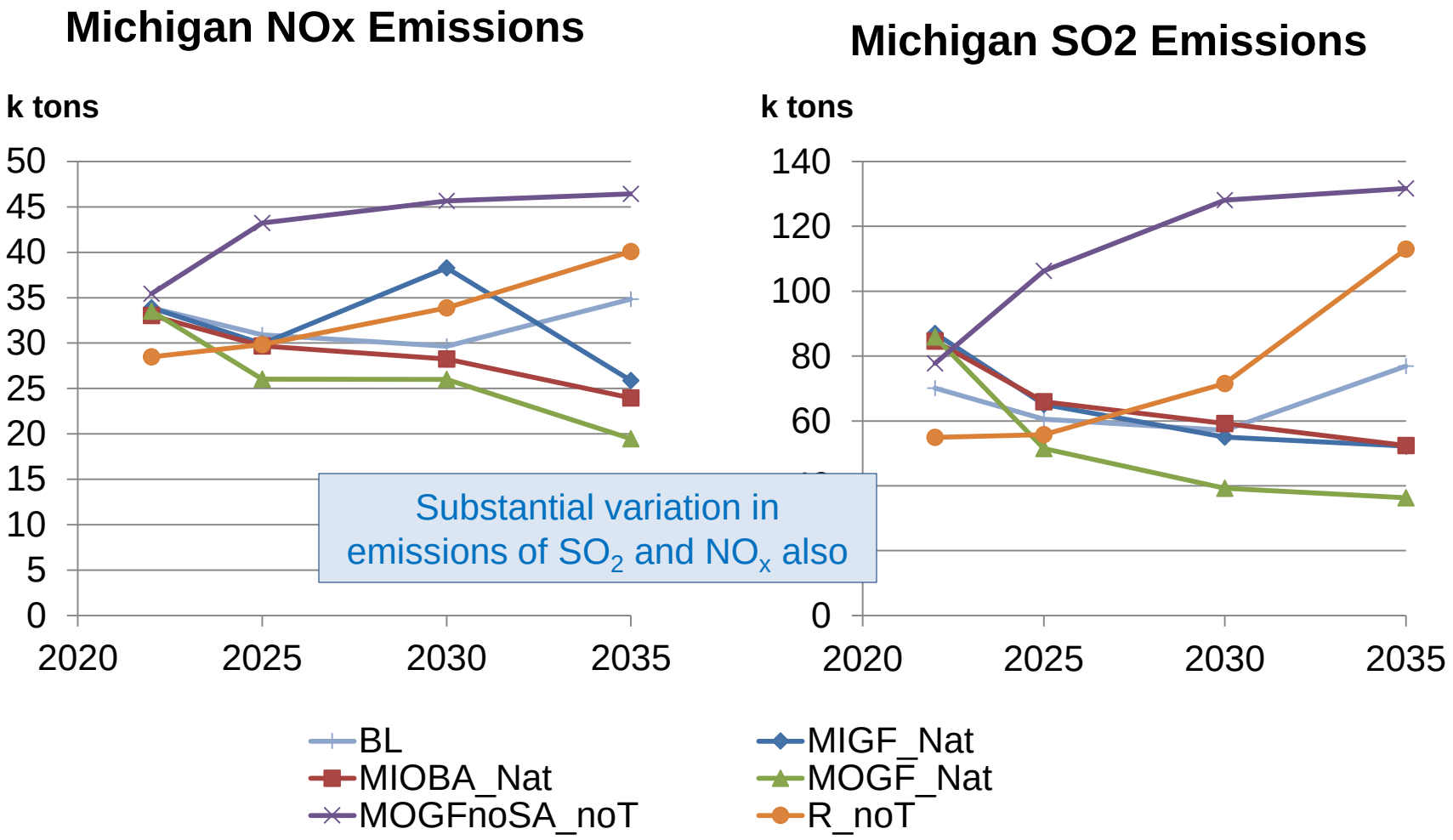
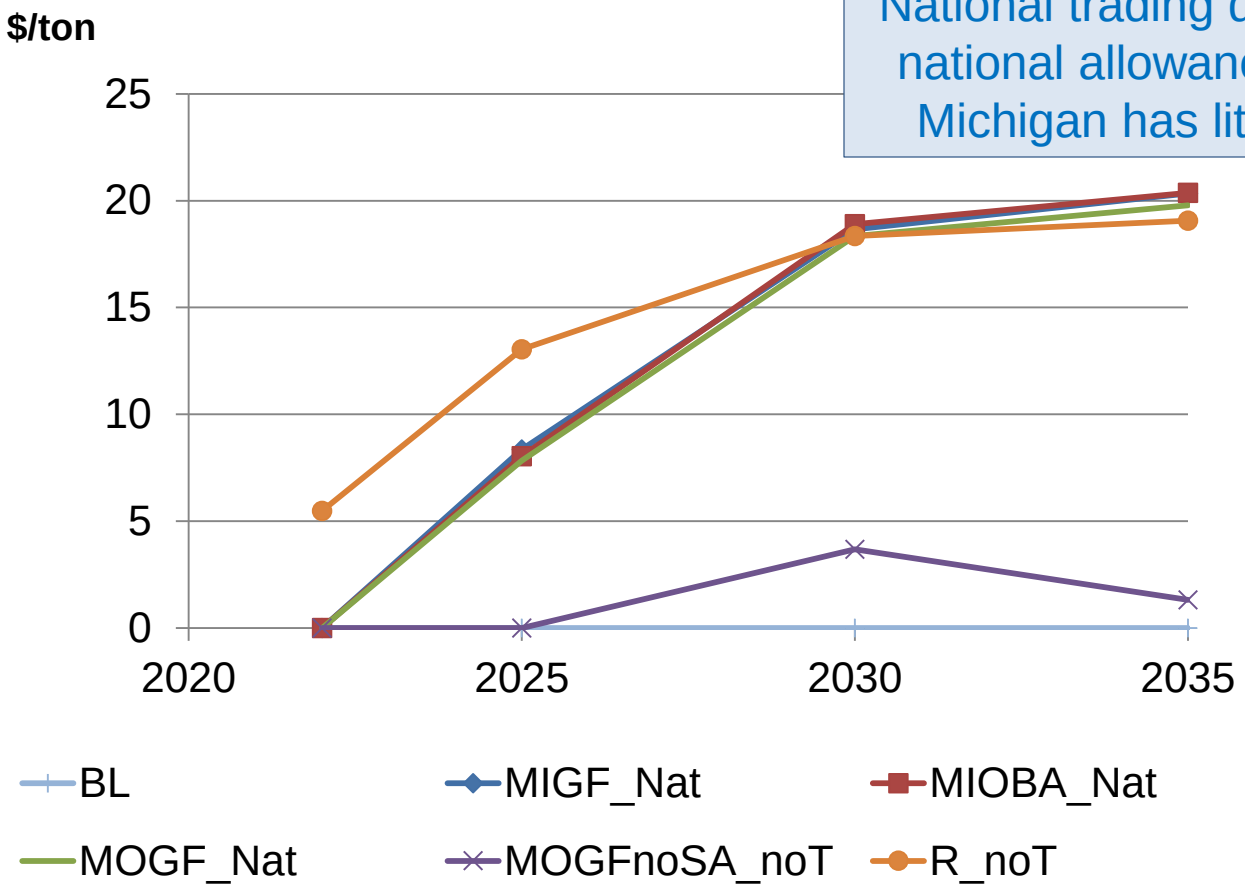
NO_x & SO_2 Emissions



Allowance Prices

National trading determines national allowance prices; Michigan has little effect



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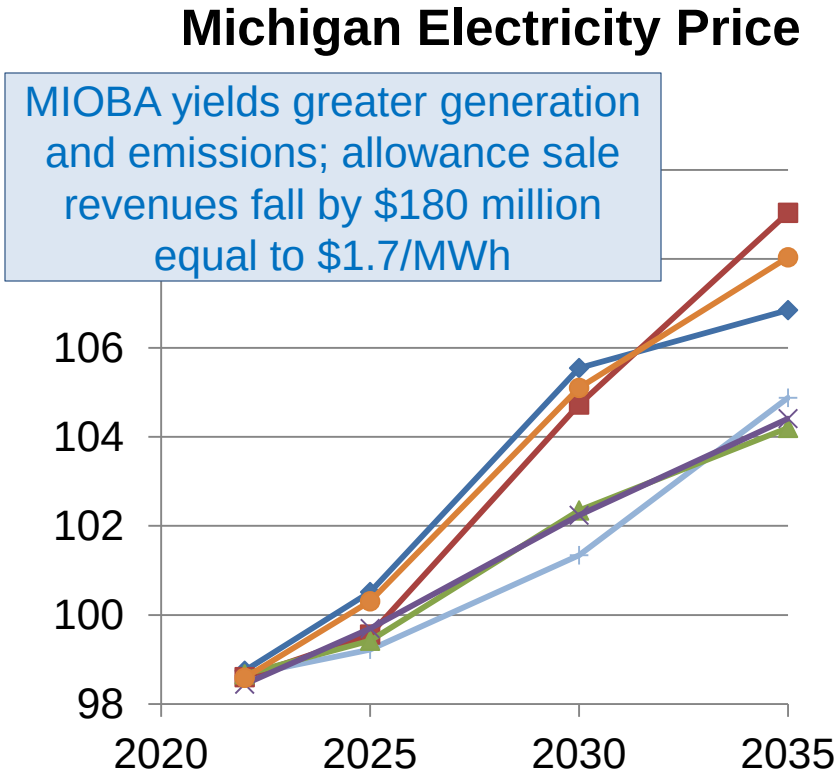
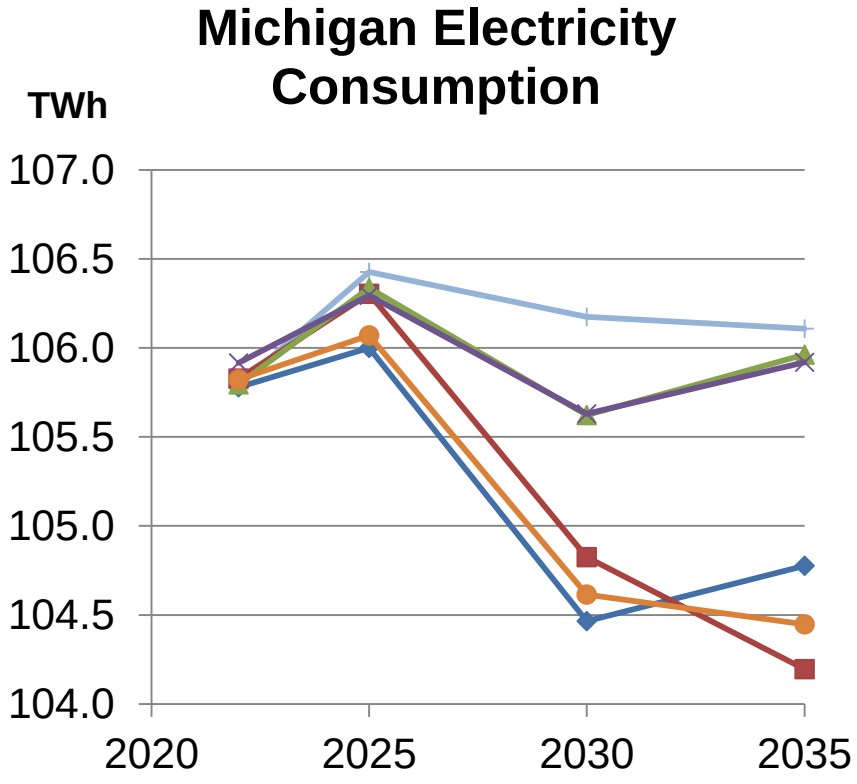
Retail Prices and Consumption

MIOBA yields greater generation and emissions; allowance sale revenues fall by $180 million equal to $1.7/MWh





BL
MIGF_Nat
MIOBA_Nat
MOGF_Nat
MOGFnoSA_noT
R_noT

Electricity prices are higher when new sources are included and in the rate-based approach

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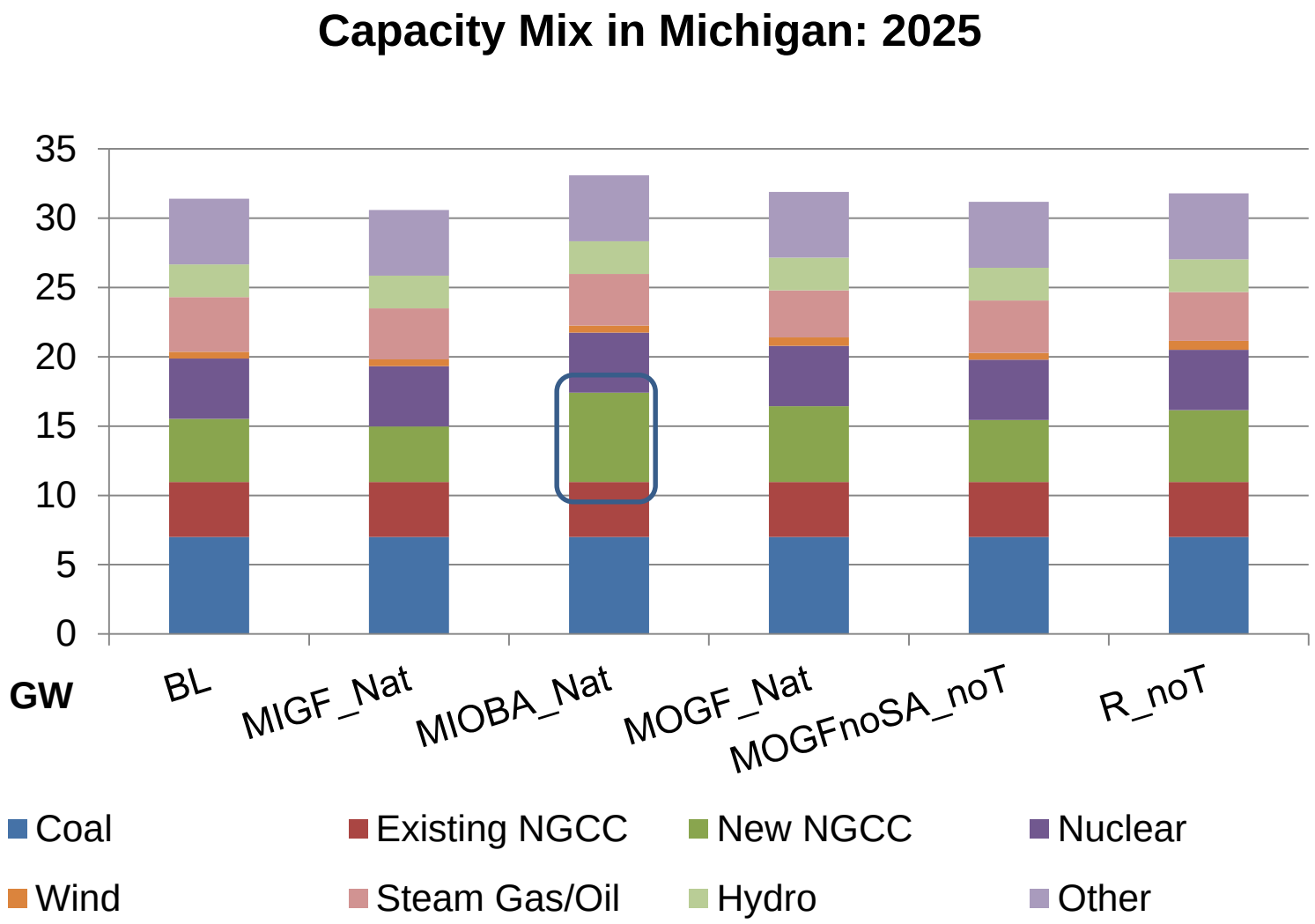
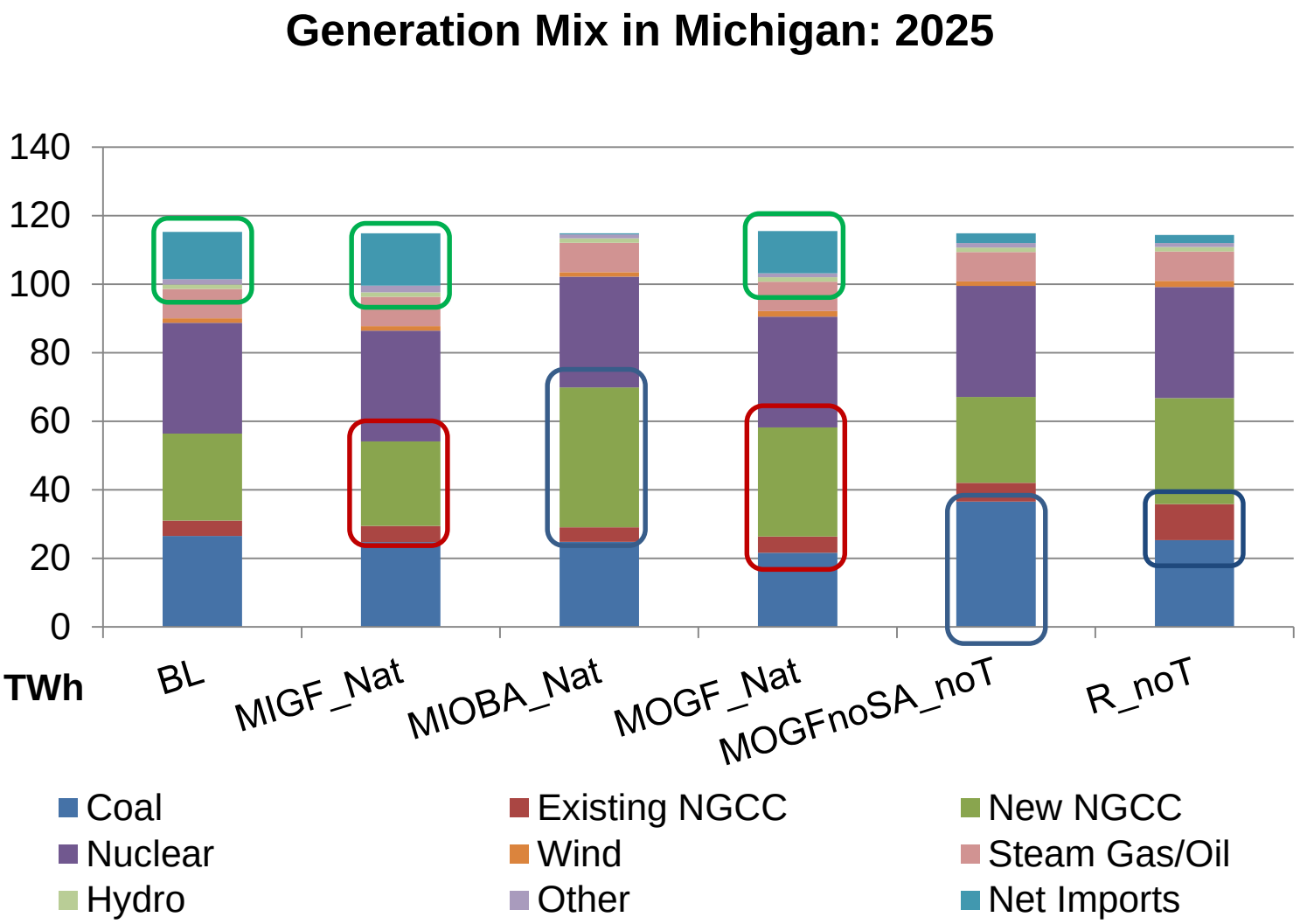
Capacity Mix: 2025



Generation Mix: 2025



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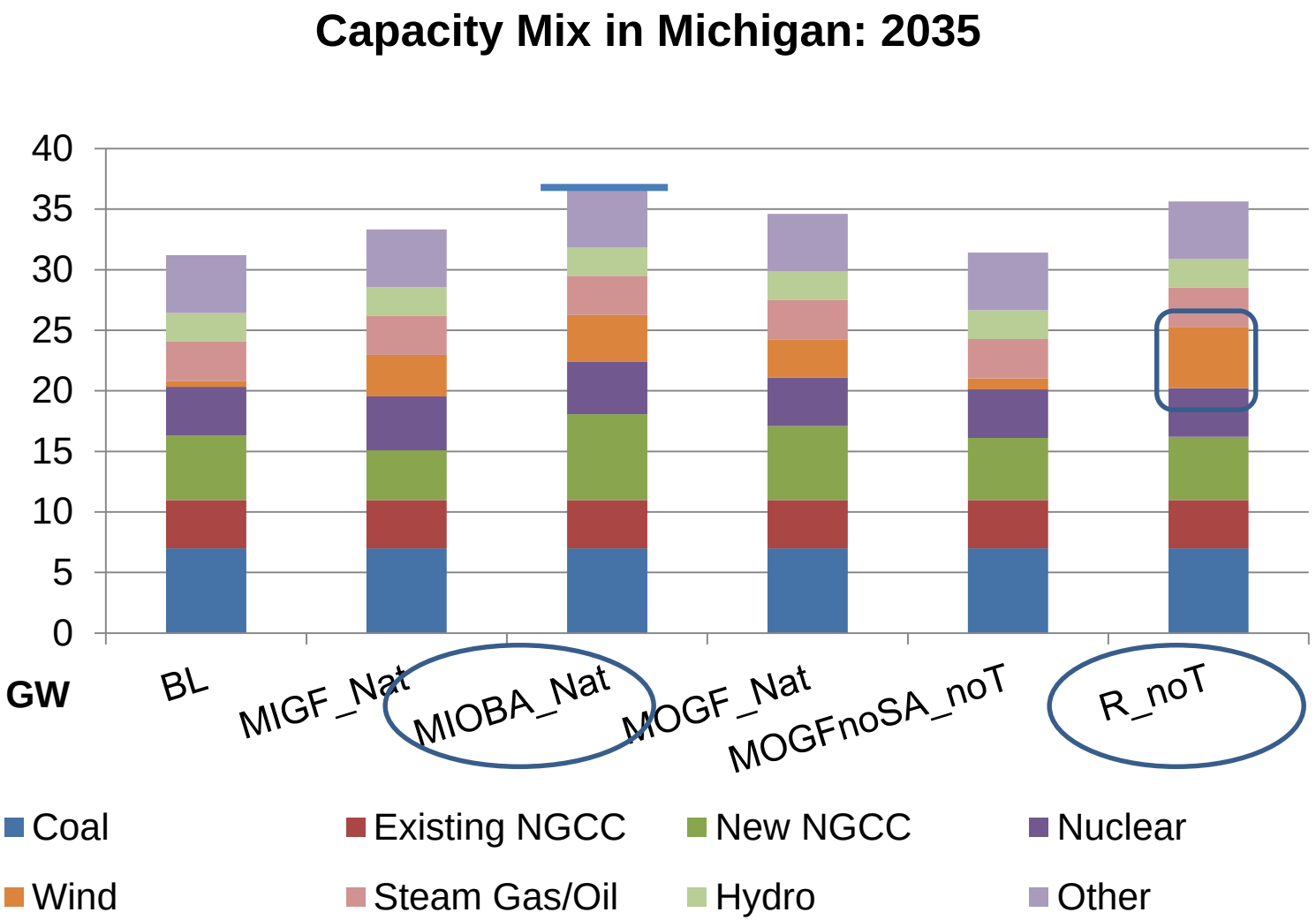
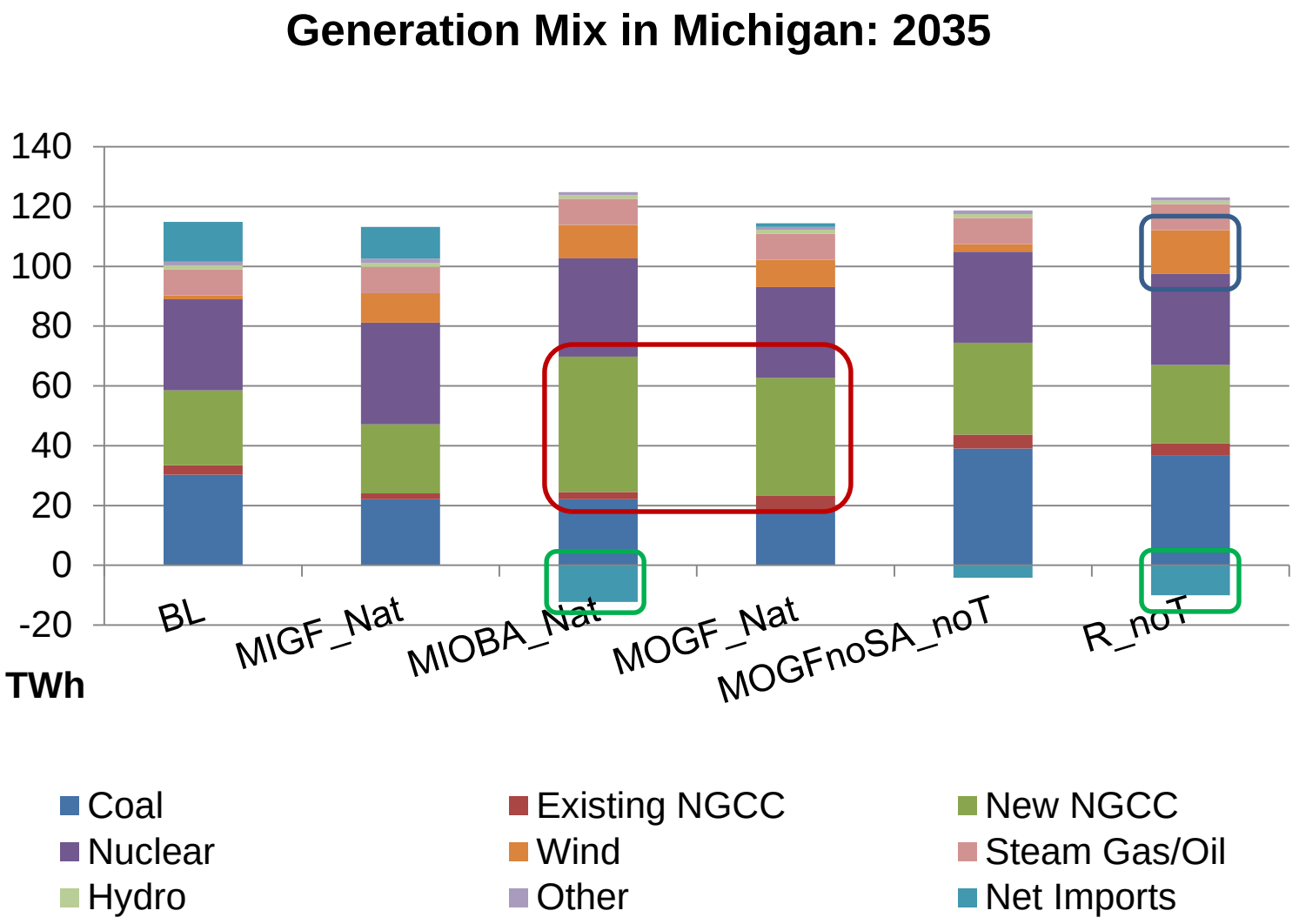
Capacity Mix: 2035



Generation Mix: 2035



Some Observations

- Michigan is potentially an exporter of allowances which brings revenue and lowers retail prices.
- Michigan's CO_2 emissions are higher than even the baseline when there is no trade. This affects conventional pollutants also.
- Under national allowance trading, electricity price is greater when new sources are included because of reduced allowance export revenue.
- The capacity mix is balanced. Capacity grows under updating OBA (new wind and NGCC) and the rate-based approach with no trading (new wind).
- Michigan can be a power exporter under updating output based allocation or the rate-based approach with no trading.

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