# Supplemental Information (SI)

1. Model description

Figure S-1 presents the regions from ReEDS that are used in the subnational analysis (the different colors denote the balancing areas).

Map

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***Figure S-1:*** *ReEDS regions used in model evaluation with interconnects (red lines), balancing areas (fill colors, blue text), and wind/CSP resource regions (gray lines, gray text) identified*5*.*

Other than carbon policy implementations, no changes were made to the ReEDS' Mid\_Case' inputs defined in the model inputs. The ReEDS' Mid\_Case' uses the middle price assumptions for technologies. Relevant ReEDS 'Mid\_Case' inputs and assumptions include: sequential solve (solve one year before continuing to the next), price assumptions for all technologies are from the US Energy Information Administration (EIA) 's Annual Energy Outlook (AEO) reference and mid-case, and current policy assumptions (AB32, CSAPR, wind Production Tax Credit (PTC), RGGI, state RPS). These cost, policy, and solve assumptions stay the same throughout all the scenarios. See the ReEDS documentation for a more thorough explanation of assumptions and inputs5.

Table S-1 describes the carbon cap, national RPS, and low carbon technology mandates as input into ReEDS for each corresponding scenario.

***Table S-1:*** *Description of carbon cap (Mt CO2eq./year), renewable portfolio standards (percent renewable energy generation per year), and low carbon technology mandates (percent low carbon technology generation per year) for each scenario.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | No carbon policies | Carbon cap (Mt CO2eq./year) | | Renewable energy generation mandate (%) | | | Low carbon generation mandate (%) | |
| Year | A | B | C | D | E | F | G | H |
| 2010 | - | 4,808 | 4,808 | 0 | 0 | 0 | 0 | 0 |
| 2011 | - | 4,808 | 4,808 | 0 | 0 | 0 | 0 | 0 |
| 2012 | - | 4,808 | 4,808 | 0 | 0 | 0 | 0 | 0 |
| 2013 | - | 4,808 | 4,808 | 0 | 0 | 0 | 0 | 0 |
| 2014 | - | 4,808 | 4,808 | 0 | 0 | 0 | 0 | 0 |
| 2015 | - | 4,808 | 4,808 | 0 | 0 | 0 | 0 | 0 |
| 2016 | - | 4,808 | 4,808 | 0 | 0 | 0 | 0 | 0 |
| 2017 | - | 4,808 | 4,808 | 0 | 0 | 0 | 0 | 0 |
| 2018 | - | 4,808 | 4,808 | 0 | 0 | 0 | 0 | 0 |
| 2019 | - | 4,808 | 4,808 | 0 | 0 | 0 | 0 | 0 |
| 2020 | - | 1,341 | 1,341 | 20 | 20 | 20 | 20 | 20 |
| 2021 | - | 1,427 | 1,405 | 22 | 25 | 23 | 25 | 23 |
| 2022 | - | 1,329 | 1,258 | 24 | 31 | 25 | 31 | 25 |
| 2023 | - | 1,221 | 1,168 | 26 | 36 | 28 | 36 | 28 |
| 2024 | - | 1,116 | 1,092 | 28 | 41 | 31 | 41 | 31 |
| 2025 | - | 1,002 | 979 | 30 | 47 | 33 | 47 | 33 |
| 2026 | - | 973 | 889 | 32 | 52 | 36 | 52 | 36 |
| 2027 | - | 951 | 775 | 34 | 57 | 39 | 57 | 39 |
| 2028 | - | 928 | 649 | 36 | 63 | 41 | 63 | 41 |
| 2029 | - | 896 | 524 | 38 | 68 | 44 | 68 | 44 |
| 2030 | - | 844 | 464 | 40 | 73 | 47 | 73 | 47 |
| 2031 | - | 802 | 402 | 42 | 79 | 49 | 79 | 49 |
| 2032 | - | 766 | 323 | 44 | 84 | 52 | 84 | 52 |
| 2033 | - | 734 | 245 | 46 | 89 | 55 | 89 | 55 |
| 2034 | - | 700 | 178 | 48 | 95 | 57 | 95 | 57 |
| 2035 | - | 668 | 167 | 50 | 100 | 60 | 100 | 60 |
| 2036 | - | 637 | 160 | 52 | 100 | 63 | 100 | 63 |
| 2037 | - | 610 | 154 | 54 | 100 | 65 | 100 | 65 |
| 2038 | - | 586 | 146 | 56 | 100 | 68 | 100 | 68 |
| 2039 | - | 575 | 137 | 58 | 100 | 71 | 100 | 71 |
| 2040 | - | 582 | 126 | 60 | 100 | 73 | 100 | 73 |
| 2041 | - | 589 | 114 | 62 | 100 | 76 | 100 | 76 |
| 2042 | - | 594 | 103 | 64 | 100 | 79 | 100 | 79 |
| 2043 | - | 601 | 92 | 66 | 100 | 81 | 100 | 81 |
| 2044 | - | 608 | 80 | 68 | 100 | 84 | 100 | 84 |
| 2045 | - | 613 | 69 | 70 | 100 | 87 | 100 | 87 |
| 2046 | - | 619 | 57 | 72 | 100 | 89 | 100 | 89 |
| 2047 | - | 624 | 46 | 74 | 100 | 92 | 100 | 92 |
| 2048 | - | 629 | 34 | 76 | 100 | 95 | 100 | 95 |
| 2049 | - | 634 | 23 | 78 | 100 | 97 | 100 | 97 |
| 2050 | - | 639 | 11 | 80 | 100 | 100 | 100 | 100 |

1. Emission Rates

The emissions rate sources for each technology type included in the environmental sustainability analysis are shown in Table S-2.

***Table S-2:*** *Emission rates sources.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Operating Emission Rates | | | |
|  | CO2eq. | NOx | SO2 | PM2.5 |
| Biopower | 5 | 5 | 5 |  |
| Solar photovoltaic | 5 | 5 | 5 |  |
| Concentrated solar power (CSP) | 5 | 5 | 5 |  |
| Onshore wind | 5 | 5 | 5 |  |
| Offshore wind | 5 | 5 | 5 |  |
| Nuclear | 5 | 5 | 5 |  |
| Natural gas combustion turbine (CT) | 5 | 5 | 5 | 53 |
| Natural gas combined cycle (CC) | 5 | 5 | 5 | 53 |
| Natural gas CCS | 5 | 5 | 5 | 53 |
| Hydropower | 5 | 5 | 5 |  |
| Geothermal | 5 | 5 | 5 |  |
| Oil-Gas-Steam | 5 | 5 | 5 | 53 |
| Coal | 5 | 5 | 5 | 53 |
| IGCC | 5 | 5 | 5 | 53 |
| Coal CCS | 5 | 5 | 5 | 53 |
| Battery storage | 5 | 5 | 5 |  |
| Pumped hydropower | 5 | 5 | 5 |  |

Table S-3 presents the heat rates for each fossil fuel plant used to estimate the emissions rate. Since renewable technologies do not convert fuel to electricity, they do not have a heat rate.

***Table S-3:*** *Heat rates for power plants in MMBtu/MWh.*5

|  |  |
| --- | --- |
| Technology | Heat Rate [MMBtu/MWh] |
| Coal | 9.669 |
| Cofire | 10.112 |
| Coal CCS | 10.157 |
| Coal IGCC | 7.920 |
| Gas CC | 6.341 |
| Gas CCS | 7.505 |
| Gas CT | 9.36 |
| Oil-Gas-Steam | 10.648 |
| Biopower | 13.5 |
| Nuclear | 10.461 |

1. InMAP specifications

InMAP uses area-weighting to distribute emissions at the ReEDS level (134 regions) to the InMAP level (squares with 1 to 48 km sides). Equations S-10a and S-10b display the two-step process for area-weighting 54. In Equation S-10a, the areal weight for each InMAP region is calculated, where is the areal weight for the InMAP region i (in km2), is the area of the InMAP region (in km2), and is the area of the ReEDS region j. Equation S-10b calculates the areal weighted air pollution value in each InMAP region, where is the estimated air pollution magnitude in each InMAP region and is the PM, NOx, or SO2 air pollution (in kilograms) in each ReEDS region j.

(Eq. S-1a)

(Eq. S-1b)

InMAP requires emissions inputs in shapefile form at the ReEDS region to perform this area weighting. Figure S-2(a-c) below shows the NOx, SO2, and PM emissions inputs, respectively (in metric tonnes) for InMAP, which show the total emissions in each region in 2020, 2035, and 2050.

Diagram, timeline

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*(a) NOx*

Background pattern

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*(b) SO2*

Background pattern

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*(c) PM*

***Figure S-2:*** *Total emissions in each ReEDS region 2020, 2035, and 2050 for each scenario.*

1. Generation

Table S-4 summarizes the percent of annual generation and the magnitude of generation for the main technologies across scenarios and by decade.

***Table S-4****: Summary of percent and magnitude of generation from main technologies by year and scenario.*

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 2010 | | 2020 | | 2030 | | 2040 | | 2050 | |
|  | Technology | % | PWh | % | PWh | % | PWh | % | PWh | % | PWh |
| A: Base | Coal | 50.6 | 2.05 | 26.3 | 1.10 | 23.9 | 1.07 | 18.6 | 0.91 | 7.46 | 0.41 |
| Natural Gas | 18.7 | 0.76 | 35.1 | 1.46 | 32.6 | 1.46 | 26.5 | 1.29 | 19.9 | 1.08 |
| Natural Gas CCS | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 |
| Nuclear | 19.7 | 0.80 | 17.7 | 0.74 | 15.1 | 0.68 | 12.0 | 0.58 | 6.9 | 0.37 |
| Solar PV | 0.1 | 0.00 | 3.6 | 0.15 | 7.9 | 0.35 | 14.1 | 0.69 | 20.9 | 1.14 |
| CSP | 0.0 | 0.00 | 0.06 | 0.0 | 0.24 | 0.01 | 0.52 | 0.03 | 0.48 | 0.03 |
| Onshore Wind | 2.6 | 0.11 | 8.4 | 0.35 | 10.6 | 0.48 | 19.1 | 0.93 | 33.8 | 1.83 |
| Offshore Wind | 0.0 | 0.00 | 0.0 | 0.00 | 1.3 | 0.06 | 1.6 | 0.08 | 3.1 | 0.17 |
| B: US NDC | Coal | 50.6 | 2.05 | 16.2 | 0.67 | 5.5 | 0.25 | 1.7 | 0.08 | 4.7 | 0.25 |
| Natural Gas | 18.7 | 0.76 | 40.3 | 1.68 | 35.2 | 1.58 | 27.5 | 1.35 | 19.7 | 1.07 |
| Natural Gas CCS | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 |
| Nuclear | 19.7 | 0.80 | 17.7 | 0.74 | 15.0 | 0.68 | 11.9 | 0.58 | 6.9 | 0.37 |
| Solar PV | 0.1 | 0.00 | 3.9 | 0.16 | 9.6 | 0.43 | 14.8 | 0.73 | 20.3 | 1.11 |
| CSP | 0.0 | 0.00 | 0.1 | 0.00 | 0.2 | 0.01 | 0.8 | 0.04 | 0.7 | 0.04 |
| Onshore Wind | 2.6 | 0.11 | 13.0 | 0.54 | 24.5 | 1.10 | 33.8 | 1.66 | 37.0 | 2.01 |
| Offshore Wind | 0.0 | 0.00 | 0.0 | 0.00 | 1.3 | 0.06 | 1.6 | 0.08 | 3.1 | 0.17 |
| C: 1.5C Pathway | Coal | 50.6 | 2.05 | 16.2 | 0.67 | 0.2 | 0.01 | 0.0 | 0.00 | 0.0 | 0.00 |
| Natural Gas | 18.7 | 0.76 | 40.3 | 1.68 | 26.8 | 1.21 | 6.1 | 0.30 | 0.2 | 0.01 |
| Natural Gas CCS | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 7.1 | 0.35 | 3.1 | 0.17 |
| Nuclear | 19.7 | 0.80 | 0.74 | 17.7 | 0.68 | 15.0 | 11.5 | 0.58 | 5.5 | 0.30 |
| Solar PV | 0.1 | 0.00 | 3.9 | 0.16 | 14.1 | 0.64 | 19.5 | 0.97 | 27.8 | 1.55 |
| CSP | 0.0 | 0.00 | 0.1 | 0.00 | 0.2 | 0.01 | 1.2 | 0.06 | 1.4 | 0.08 |
| Onshore Wind | 2.6 | 0.11 | 13.0 | 0.54 | 33.7 | 1.52 | 44.2 | 2.21 | 49.9 | 2.78 |
| Offshore Wind | 0.0 | 0.00 | 0.0 | 0.00 | 1.2 | 0.06 | 1.7 | 0.09 | 4.2 | 0.23 |
| D: 80% RE 2050 | Coal | 50.6 | 2.05 | 26.3 | 1.10 | 18.4 | 0.83 | 7.7 | 0.38 | 2.6 | 0.14 |
| Natural Gas | 18.7 | 0.76 | 35.1 | 1.46 | 26.5 | 1.19 | 20.2 | 0.99 | 10.8 | 0.60 |
| Natural Gas CCS | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 |
| Nuclear | 19.7 | 0.80 | 17.7 | 0.74 | 15.0 | 0.68 | 11.9 | 0.58 | 6.3 | 0.35 |
| Solar PV | 0.1 | 0.00 | 3.6 | 0.15 | 10.2 | 0.46 | 16.5 | 0.81 | 22.1 | 1.22 |
| CSP | 0.0 | 0.00 | 0.1 | 0.00 | 0.3 | 0.01 | 0.7 | 0.03 | 0.6 | 0.03 |
| Onshore Wind | 2.6 | 0.11 | 8.4 | 0.35 | 19.8 | 0.89 | 33.4 | 1.64 | 44.9 | 2.49 |
| Offshore Wind | 0.0 | 0.00 | 0.0 | 0.00 | 1.3 | 0.06 | 1.6 | 0.08 | 4.4 | 0.24 |
| E: 100% RE 2035 | Coal | 50.6 | 2.05 | 26.3 | 1.10 | 0.9 | 0.04 | 0.0 | 0.00 | 0.0 | 0.00 |
| Natural Gas | 18.7 | 0.76 | 35.1 | 1.46 | 15.83 | 0.73 | 0.0 | 0.00 | 0.0 | 0.00 |
| Natural Gas CCS | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 |
| Nuclear | 19.7 | 0.80 | 17.7 | 0.74 | 9.7 | 0.44 | 0.0 | 0.00 | 0.0 | 0.00 |
| Solar PV | 0.1 | 0.00 | 3.6 | 0.15 | 16.8 | 0.77 | 35.0 | 1.84 | 31.0 | 1.78 |
| CSP | 0.0 | 0.00 | 0.1 | 0.00 | 0.4 | 0.02 | 9.6 | 0.51 | 9.8 | 0.56 |
| Onshore Wind | 2.6 | 0.11 | 8.4 | 0.35 | 45.9 | 2.10 | 45.3 | 2.39 | 48.4 | 2.78 |
| Offshore Wind | 0.0 | 0.00 | 0.0 | 0.00 | 1.2 | 0.05 | 1.5 | 0.08 | 3.5 | 0.20 |
| F: 100% RE 2050 | Coal | 50.6 | 2.05 | 26.3 | 1.10 | 13.0 | 0.59 | 2.1 | 0.11 | 0.0 | 0.00 |
| Natural Gas | 18.7 | 0.76 | 35.1 | 1.46 | 25.2 | 1.14 | 13.7 | 0.68 |  |  |
| Natural Gas CCS | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 |
| Nuclear | 19.7 | 0.80 | 17.7 | 0.74 | 15.0 | 0.68 | 10.7 | 0.53 | 0.0 | 0.00 |
| Solar PV | 0.1 | 0.00 | 3.6 | 0.15 | 10.8 | 0.49 | 16.8 | 0.83 | 35.9 | 2.05 |
| CSP | 0.0 | 0.00 | 0.1 | 0.00 | 0.3 | 0.01 | 1.1 | 0.05 | 3.3 | 0.19 |
| Onshore Wind | 2.6 | 0.11 | 8.4 | 0.35 | 25.7 | 1.16 | 45.7 | 2.26 | 49.3 | 2.81 |
| Offshore Wind | 0.0 | 0.00 | 0.0 | 0.00 | 1.3 | 0.06 | 1.7 | 0.08 | 4.6 | 0.26 |
| G: Low Carbon 2035 | Coal | 50.6 | 2.05 | 26.3 | 1.10 | 4.8 | 0.22 | 0.0 | 0.00 | 0.0 | 0.00 |
| Natural Gas | 18.7 | 0.76 | 35.1 | 1.46 | 21.8 | 0.98 | 0.0 | 0.00 | 0.0 | 0.00 |
| Natural Gas CCS | 0.0 | 0.00 | 0.0 | 0.00 | 0.2 | 0.01 | 13.7 | 0.69 | 11.0 | 0.61 |
| Nuclear | 19.7 | 0.80 | 17.7 | 0.74 | 15.0 | 0.68 | 11.4 | 0.58 | 6.5 | 0.36 |
| Solar PV | 0.1 | 0.00 | 3.6 | 0.15 | 14.0 | 0.63 | 22.7 | 1.15 | 23.7 | 1.32 |
| CSP | 0.0 | 0.00 | 0.1 | 0.00 | 0.2 | 0.01 | 1.3 | 0.07 | 1.2 | 0.07 |
| Onshore Wind | 2.6 | 0.11 | 8.4 | 0.35 | 34.2 | 1.54 | 40.1 | 2.03 | 45.1 | 2.52 |
| Offshore Wind | 0.0 | 0.00 | 0.0 | 0.00 | 1.2 | 0.06 | 1.6 | 0.08 | 3.8 | 0.02 |
| H: Low Carbon 2050 | Coal | 50.6 | 2.05 | 26.3 | 1.10 | 22.3 | 1.00 | 6.1 | 0.30 | 0.0 | 0.00 |
| Natural Gas | 18.7 | 0.76 | 35.1 | 1.46 | 31.0 | 1.39 | 20.5 | 1.00 | 0.0 | 0.00 |
| Natural Gas CCS | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 6.7 | 0.37 |
| Nuclear | 19.7 | 0.80 | 17.7 | 0.74 | 15.1 | 0.68 | 11.9 | 0.58 | 5.7 | 0.32 |
| Solar PV | 0.1 | 0.00 | 3.6 | 0.15 | 7.8 | 0.35 | 15.5 | 0.76 | 26.5 | 1.48 |
| CSP | 0.0 | 0.00 | 0.1 | 0.00 | 0.3 | 0.01 | 0.8 | 0.04 | 0.8 | 0.05 |
| Onshore Wind | 2.6 | 0.11 | 8.4 | 0.35 | 13.9 | 0.62 | 35.8 | 1.75 | 47.7 | 2.67 |
| Offshore Wind | 0.0 | 0.00 | 0.0 | 0.00 | 1.3 | 0.06 | 1.6 | 0.08 | 4.4 | 0.24 |

1. National Emissions

**Operating emissions.** Figures S-3 – S-6 display the national operating emission by technology 2010 – 2050 across each scenario and for each pollutant. For operating emissions, natural gas and coal technologies contribute most emissions. For SO2 and PM emissions, coal technologies contribute to 99% of operating emissions across all technologies.

Chart, surface chart

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***Figure S-3:*** *National operating CO2eq. emissions by technology 2010 – 2050.*

Chart, histogram, waterfall chart

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***Figure S-4:*** *National operating NOx emissions by technology 2010 – 2050.*

Chart, diagram, histogram

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***Figure S-5:*** *National operating SO2 emissions by technology 2010 – 2050.*

Chart, histogram

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***Figure S-6:*** *National operating PM emissions by technology 2010 – 2050.*

1. Regional Air Pollution Analysis

Figures S-7 and S-8 show the NOx and SO2 emissions distribution in 2020, 2035, and 2050.

A picture containing text, refrigerator, drinking water

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***Figure S-7:*** *Distribution of NOx emissions 2020, 2035, and 2050.*

Diagram

Description automatically generated***Figure S-8:*** *Distribution of SO2 emissions 2020, 2035, and 2050.*

1. Air Pollution Equality Assessments

Table S-5 shows the groups and respective sample sizes for the equality analysis.

***Table S-5:*** *Equality groups and their respective sample sizes. Emission concentrations were averaged over these groups to get the mean concentration in each group.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Groups | | Sample size | | | | | |
| Population of a Race or Ethnicity (%) | | [0, 10%]  (10%, 20%]  (20%, 30%]  (30%, 50%]  (50%, 70%]  (70%, 100%] | | *White*  2,814  1,779  2,130  6,846  11,746  46,695 | *Black*  48,589  8,423  4,111  4,194  2,338  3,973 | *Latinx/*  *Hispanic*  44,448  10,748  5,059  5,269  3,220  3,170 | *Asian*  62,970  4,849  1,519  1,089  348  87 | *Indigenous*  69,805  411  113  64  40  130 |
| Population below the Poverty Line (%) | | [0, 10%]  (10%, 20%]  (20%, 30%]  (30%, 50%]  (50%, 70%]  (70%, 100%] | | 26,850  22,897  11,611  8,621  1,389  189 |  |  |  |  |
| Median Income | | [0, $25k]  ($25k, $50k]  ($50k, $75k]  ($75k, $100k]  ($100k, $125k]  ($125k, $150k]  ($150k, ] | | 4,458  29,389  22,710  8,942  3,843  1,294  890 |  |  |  |  |

Figure S-9 shows the average PM2.5 concentration across racial or ethnic groups in all scenarios for the years 2020, 2035, and 2050. The x-axis shows groups of percentages population in a census tract that is of a certain race or ethnicity. The y-axis shows the average concentration of PM2.5 within the percentage groups. Figures S-10 and S-11 show the same trends for NOx and SO2 respectively. Figure S-12 shows the average concentration of PM2.5, NOx, and SO2 across all scenarios and the years 2020, 2035, and 2050.

Calendar

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***Figure S-9:*** *Average PM2.5 concentration across different racial or ethnic groups in all scenarios 2020, 2035, and 2050.*

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***Figure S-10:*** *Average NOx concentration (µg/m3) based on the percentage of the population of a specified race or ethnicity within census tracts across years 2020, 2035, and 2050 for each scenario.*

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Description automatically generated

***Figure S-11:*** *Average SO2 concentration (µg/m3) based on the percentage of the population of a specified race or ethnicity within census tracts across years 2020, 2035, and 2050 for each scenario.*

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***Figure S-12:*** *All scenarios, the average concentration of PM2.5, NOx, and SO2 (µg/m3) over time versus median income groups.*

In addition to median income, percent of poverty within a region can identify regional vulnerability. Poverty groups were identified by the percent of the population in a region experiencing poverty, which the US Office of Management and Budget classifies as a family under a certain threshold given their family makeup55. Figure S-13 summarizes the average annual PM2.5 concentration versus the percent of a population in poverty (<10%, 10-20%, 20-30%, 30-50%, 50-70%, and >70% poverty) for the years 2020, 2035, and 2050 across each scenario. In 2020, regions with a population over 50% in poverty had higher amounts of PM2.5. In Scenario A, where no carbon policies are implemented, there is no change in magnitude of PM2.5 across percent poverty groups, with regions with over 50% of poverty exposed to more PM2.5. Alternatively, across scenarios that implement a carbon cap or technology mandate (B – H), PM2.5 decreases across all poverty groups in 2035 and 2050, with PM2.5 exposures across poverty groups flattening out to not have much difference across groups.

Figure S-14 shows the average concentration of PM2.5, NOx, and SO2 across percent rural groups, each scenario, and across the years 2020, 2035, and 2050.

Calendar

Description automatically generated***Figure S-13:*** *Average concentrations (µg/m3) across regions with different levels of poverty shown for 2020, 2035, 2050 across each scenario.*

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***Figure S-14:*** *Rural population vs. pollutant concentration (µg/m3) across scenarios and the years 2020, 2035, and 2050.*