



Net-Zero America - Connecticut data

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See the [Data Sheet Guide](#) for explanations of the contents of this document. The data herein underlie graphs and tables found in Princeton's Net-Zero America report:

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Table 1: E+ scenario - IMPACTS - Health

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Coal (deaths) | | 40.8 | 0.066 | 0.065 | 0.063 | 0.038 | 0.001 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 25.2 | 13.4 | 9.36 | 9.27 | 6.16 | 2.63 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 112 | 104 | 78.3 | 44.9 | 20.2 | 7.59 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 5.61 | 5.1 | 3.79 | 2.19 | 1.02 | 0.428 |
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 27.5 | 23.3 | 16.2 | 9.11 | 4.35 | 1.65 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 38 | 29.8 | 19.6 | 10.9 | 4.57 | 1.32 |
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 3.63 | 3.27 | 2.53 | 1.69 | 0.947 | 0.487 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.835 | 0.796 | 0.756 | 0.712 | 0.669 | 0.622 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 22.7 | 20.5 | 16.2 | 11.3 | 7.18 | 3.93 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 9.36 | 7.56 | 5.23 | 3.15 | 2.06 | 1.49 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 1.84 | 1.54 | 1.25 | 0.967 | 0.702 | 0.456 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.346 | 0.182 | 0.18 | 0.177 | 0.178 | 0.176 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 23.3 | 21.2 | 18.4 | 14.2 | 9.99 | 5.94 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 361 | 0.582 | 0.58 | 0.562 | 0.335 | 0.01 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 224 | 119 | 82.9 | 82.1 | 54.6 | 23.3 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 995 | 923 | 697 | 399 | 179 | 67.5 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 49.7 | 45.2 | 33.6 | 19.4 | 8.99 | 3.79 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 244 | 206 | 143 | 80.7 | 38.5 | 14.6 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 337 | 264 | 173 | 96.3 | 40.5 | 11.7 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 32.1 | 29 | 22.5 | 14.9 | 8.39 | 4.32 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 7.39 | 7.05 | 6.69 | 6.31 | 5.92 | 5.51 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 201 | 181 | 144 | 100 | 63.6 | 34.8 |

Table 1: *E+ scenario - IMPACTS - Health (continued)*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 82.9 | 66.9 | 46.3 | 27.9 | 18.3 | 13.2 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 16.3 | 13.6 | 11.1 | 8.56 | 6.22 | 4.04 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 3.05 | 1.61 | 1.59 | 1.56 | 1.57 | 1.55 |
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 207 | 188 | 163 | 126 | 88.7 | 52.7 |

Table 2: *E+ scenario - IMPACTS - Jobs*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|--------|--------|--------|--------|--------|--------|
| By economic sector - Agriculture (jobs) | | 79.2 | 161 | 61.4 | 47.7 | 35 | 141 |
| By economic sector - Construction (jobs) | | 4,578 | 5,747 | 5,704 | 5,789 | 5,411 | 6,203 |
| By economic sector - Manufacturing (jobs) | | 1,639 | 2,119 | 2,512 | 2,320 | 2,542 | 3,336 |
| By economic sector - Mining (jobs) | | 1,037 | 732 | 463 | 271 | 142 | 70.8 |
| By economic sector - Other (jobs) | | 613 | 891 | 870 | 904 | 965 | 1,411 |
| By economic sector - Pipeline (jobs) | | 262 | 252 | 171 | 124 | 77.9 | 50.3 |
| By economic sector - Professional (jobs) | | 1,969 | 2,403 | 2,375 | 2,482 | 2,373 | 3,012 |
| By economic sector - Trade (jobs) | | 1,459 | 1,663 | 1,604 | 1,622 | 1,579 | 2,039 |
| By economic sector - Utilities (jobs) | | 3,777 | 4,443 | 5,593 | 6,460 | 5,867 | 5,514 |
| By resource sector - Biomass (jobs) | | 340 | 443 | 175 | 143 | 128 | 603 |
| By resource sector - CO2 (jobs) | | 0 | 258 | 0.7 | 1.78 | 1.77 | 1.31 |
| By resource sector - Coal (jobs) | | 54.1 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 3,803 | 5,465 | 8,497 | 9,801 | 9,183 | 8,943 |
| By resource sector - Natural Gas (jobs) | | 2,665 | 2,096 | 1,726 | 2,137 | 1,482 | 1,175 |
| By resource sector - Nuclear (jobs) | | 1,092 | 1,074 | 1,057 | 1,041 | 1,025 | 834 |
| By resource sector - Oil (jobs) | | 2,327 | 1,811 | 1,242 | 785 | 463 | 240 |
| By resource sector - Solar (jobs) | | 5,021 | 6,737 | 5,567 | 5,389 | 6,028 | 8,628 |
| By resource sector - Wind (jobs) | | 113 | 526 | 1,090 | 723 | 681 | 1,353 |
| By education level - All sectors - High school diploma or less (jobs) | | 6,508 | 7,880 | 8,262 | 8,504 | 8,074 | 9,287 |
| By education level - All sectors - Associates degree or some college (jobs) | | 4,815 | 5,811 | 6,200 | 6,479 | 6,149 | 7,016 |
| By education level - All sectors - Bachelors degree (jobs) | | 3,195 | 3,684 | 3,828 | 3,935 | 3,725 | 4,268 |
| By education level - All sectors - Masters or professional degree (jobs) | | 780 | 903 | 936 | 971 | 918 | 1,057 |
| By education level - All sectors - Doctoral degree (jobs) | | 115 | 132 | 129 | 131 | 125 | 151 |
| Related work experience - All sectors - None (jobs) | | 2,224 | 2,674 | 2,819 | 2,931 | 2,776 | 3,185 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 3,084 | 3,744 | 3,897 | 3,992 | 3,819 | 4,471 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 5,556 | 6,600 | 6,942 | 7,189 | 6,806 | 7,776 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 3,601 | 4,271 | 4,506 | 4,680 | 4,421 | 5,018 |
| Related work experience - All sectors - Over 10 years (jobs) | | 949 | 1,121 | 1,191 | 1,229 | 1,169 | 1,327 |
| On-the-Job Training - All sectors - None (jobs) | | 863 | 1,020 | 1,047 | 1,070 | 1,021 | 1,194 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 10,076 | 12,011 | 12,609 | 12,991 | 12,360 | 14,266 |

Table 2: *E+ scenario - IMPACTS - Jobs (continued)*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|--------|--------|--------|--------|--------|
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 3,261 | 3,911 | 4,157 | 4,341 | 4,096 | 4,619 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 1,060 | 1,284 | 1,354 | 1,430 | 1,333 | 1,487 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 154 | 184 | 188 | 189 | 181 | 212 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 2,515 | 3,002 | 3,117 | 3,205 | 3,053 | 3,549 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 9,161 | 10,921 | 11,486 | 11,847 | 11,263 | 12,963 |
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 2,527 | 3,032 | 3,219 | 3,354 | 3,169 | 3,586 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 1,082 | 1,297 | 1,364 | 1,434 | 1,336 | 1,488 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 130 | 158 | 171 | 180 | 170 | 191 |
| Wage income - All (million \$2019) | | 978 | 1,171 | 1,252 | 1,320 | 1,259 | 1,439 |

Table 3: *E+ scenario - IMPACTS - Fossil fuel industries*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Oil consumption - Annual (million bbls) | | 52.3 | 44.4 | 33 | 22.4 | 14.2 | 7.82 |
| Oil consumption - Cumulative (million bbls) | | | | | | | 1,024 |
| Oil production - Annual (million bbls) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Natural gas consumption - Annual (tcf) | | 215 | 181 | 145 | 109 | 68.9 | 47.8 |
| Natural gas consumption - Cumulative (tcf) | | | | | | | 4,381 |
| Natural gas production - Annual (tcf) | | 0 | 0 | 0 | 0 | 0 | 0 |

Table 4: *E+ scenario - PILLAR 1: Efficiency/Electrification - Overview*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 228 | 212 | 186 | 152 | 122 | 104 | 95.6 |
| Final energy use - Residential (PJ) | 155 | 143 | 130 | 112 | 94.5 | 81.6 | 73.9 |
| Final energy use - Commercial (PJ) | 120 | 114 | 109 | 101 | 93.4 | 88.1 | 84.9 |
| Final energy use - Industry (PJ) | 64.9 | 63.4 | 62.5 | 61.2 | 61.1 | 61.8 | 62.1 |

Table 5: *E+ scenario - PILLAR 1: Efficiency/Electrification - Electricity demand*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Electricity distribution capital invested - Cumulative 5-yr (billion \$2018) | | 1.3 | 1.34 | 3.78 | 4.11 | 3.37 | 3.57 |

Table 6: *E+ scenario - PILLAR 1: Efficiency/Electrification - Transportation*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|-------|-------|-------|
| Vehicle stocks - LDV – EV (1000 units) | 38.7 | 272 | 506 | 1,323 | 2,141 | 2,794 | 3,448 |
| Vehicle stocks - LDV – All others (1000 units) | 2,875 | 2,737 | 2,600 | 1,895 | 1,189 | 673 | 156 |
| Light-duty vehicle capital costs vs. REF - Cumulative 5-yr (million \$2018) | | 549 | 1,419 | 2,279 | 3,460 | 3,757 | 3,587 |
| Public EV charging plugs - DC Fast (1000 units) | 0.229 | | 0.879 | | 3.72 | | 5.99 |
| Public EV charging plugs - L2 (1000 units) | 0.794 | | 21.1 | | 89.3 | | 144 |

Table 7: E+ scenario - PILLAR 1: Efficiency/Electrification - Residential

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|-------|-------|-------|-------|
| Sales of space heating units - Electric Heat Pump (%) | 7.5 | 14.9 | 62.3 | 88.8 | 92.4 | 92.6 | 92.6 |
| Sales of space heating units - Electric Resistance (%) | 4.92 | 6.44 | 5.03 | 2.19 | 1.67 | 1.64 | 1.81 |
| Sales of space heating units - Gas (%) | 34.4 | 19.8 | 14 | 2.38 | 0.3 | 0.169 | 0.163 |
| Sales of space heating units - Fossil (%) | 53.1 | 58.8 | 18.6 | 6.59 | 5.61 | 5.57 | 5.44 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 1.56 | 13.2 | 30.7 | 33.7 | 33.9 | 33.9 |
| Sales of water heating units - Electric Resistance (%) | 35.5 | 54.6 | 60.4 | 65.2 | 66 | 66 | 66 |
| Sales of water heating units - Gas Furnace (%) | 46.8 | 33.5 | 24.3 | 3.88 | 0.229 | 0 | 0 |
| Sales of water heating units - Other (%) | 17.6 | 10.3 | 2.05 | 0.206 | 0.126 | 0.127 | 0.126 |
| Sales of cooking units - Electric Resistance (%) | 71.8 | 77.8 | 96.2 | 99.8 | 100 | 100 | 100 |
| Sales of cooking units - Gas (%) | 28.2 | 22.2 | 3.79 | 0.191 | 0 | 0 | 0 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 3.13 | 3.5 | | | | |

Table 8: E+ scenario - PILLAR 1: Efficiency/Electrification - Commercial

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|------|------|
| Sales of space heating units - Electric Heat Pump (%) | 4.76 | 11 | 39.3 | 72.4 | 77.8 | 78.1 | 78.1 |
| Sales of space heating units - Electric Resistance (%) | 2.29 | 4.46 | 16.5 | 21.3 | 21.9 | 21.9 | 21.9 |
| Sales of space heating units - Gas Furnace (%) | 50.7 | 53.4 | 38.2 | 6.11 | 0.363 | 0 | 0 |
| Sales of space heating units - Fossil (%) | 42.2 | 31.2 | 5.99 | 0.253 | 0 | 0 | 0 |
| Sales of water heating units - Electric Heat Pump (%) | 2.81 | 3.52 | 15.9 | 41 | 45.5 | 45.9 | 45.9 |
| Sales of water heating units - Electric Resistance (%) | 13.8 | 12.6 | 24 | 48.1 | 52.3 | 52.5 | 52.5 |
| Sales of water heating units - Gas Furnace (%) | 78.2 | 80 | 58.2 | 9.28 | 0.549 | 0 | 0 |
| Sales of water heating units - Other (%) | 5.24 | 3.95 | 1.94 | 1.61 | 1.6 | 1.59 | 1.61 |
| Sales of cooking units - Electric Resistance (%) | 36.9 | 49.9 | 81.2 | 87.4 | 87.7 | 87.7 | 87.7 |
| Sales of cooking units - Gas (%) | 63.1 | 50.1 | 18.8 | 12.6 | 12.3 | 12.3 | 12.3 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 7,080 | 7,732 | | | | |

Table 9: E+ scenario - PILLAR 2: Clean Electricity - Generating capacity

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 400 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 4,965 | 4,265 | 4,225 | 4,225 | 6,216 | 6,159 | 5,600 |
| Installed thermal - Nuclear (MW) | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 1,253 |
| Installed renewables - Rooftop PV (MW) | 770 | 1,341 | 1,570 | 1,838 | 2,141 | 2,479 | 2,857 |
| Installed renewables - Solar - Base land use assumptions (MW) | 81.5 | 81.5 | 3,031 | 4,770 | 5,779 | 6,889 | 6,889 |
| Installed renewables - Wind - Base land use assumptions (MW) | 5.8 | 5.8 | 321 | 472 | 551 | 551 | 590 |
| Installed renewables - Solar - Constrained land use assumptions (MW) | 67.9 | 162 | 3,583 | 5,869 | 7,560 | 8,281 | 8,407 |
| Installed renewables - Wind - Constrained land use assumptions (MW) | 5.8 | 5.8 | 349 | 388 | 438 | 438 | 438 |
| Capital invested - Solar PV - Base (billion \$2018) | | 0 | 3.53 | 1.92 | 1.05 | 1.09 | 0 |

Table 9: E+ scenario - PILLAR 2: Clean Electricity - Generating capacity (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|-------|-------|-------|------|-------|
| Capital invested - Wind - Base (billion \$2018) | | 0 | 0.755 | 0.336 | 0.169 | 0 | 0.073 |
| Capital invested - Solar PV - Constrained (billion \$2018) | | 0.09 | 2.85 | 0.72 | 0.909 | 1.6 | 0 |
| Capital invested - Wind - Constrained (billion \$2018) | | 0 | 0.822 | 0.087 | 0.108 | 0 | 0 |
| Capital invested - Biomass power plant (billion \$2018) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital invested - Biomass w/ccu allam power plant (billion \$2018) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital invested - Biomass w/ccu power plant (billion \$2018) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 10: E+ scenario - PILLAR 2: Clean Electricity - Generation

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|-------|--------|--------|--------|--------|
| Solar - Base land use assumptions (GWh) | 169 | 169 | 5,420 | 8,477 | 10,241 | 12,184 | 12,184 |
| Wind - Base land use assumptions (GWh) | 24 | 24 | 1,153 | 1,676 | 1,955 | 1,955 | 2,088 |
| OffshoreWind - Base land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Solar - Constrained land use assumptions (GWh) | 112 | 279 | 6,394 | 10,430 | 13,385 | 14,650 | 14,870 |
| Wind - Constrained land use assumptions (GWh) | 24 | 24 | 1,259 | 1,400 | 1,572 | 1,572 | 1,572 |
| OffshoreWind - Constrained land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Biomass power plant (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Biomass w/ccu power plant (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Biomass w/ccu allam power plant (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 11: E+ scenario - PILLAR 3: Clean fuels - Bioenergy

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|-------|
| Number of facilities - Power (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Power ccu (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Allam power w ccu (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Beccs hydrogen (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Diesel (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Diesel ccu (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Pyrolysis (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Number of facilities - Pyrolysis ccu (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Sng (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Sng ccu (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conversion capital investment - Cumulative 5-yr (million \$2018) | | 0 | 0 | 0 | 0 | 0 | 1,600 |
| Biomass purchases (million \$2018/y) | | 0 | 0 | 0 | 0 | 0 | 55 |

Table 12: E+ scenario - PILLAR 4: CCUS - CO2 capture

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--------------------------------|------|------|------|------|------|------|------|
| Annual - All (MMT) | | 0 | 0 | 0 | 0 | 0 | 0.01 |
| Annual - BECCS (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Annual - NGCC (MMT) | | 0 | 0 | 0 | 0 | 0 | 0.01 |
| Annual - Cement and lime (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - All (MMT) | | 0 | 0 | 0 | 0 | 0 | 0.01 |
| Cumulative - BECCS (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |

Table 12: *E+ scenario - PILLAR 4: CCUS - CO2 capture (continued)*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|------------------------------------|------|------|------|------|------|------|------|
| Cumulative - NGCC (MMT) | | 0 | 0 | 0 | 0 | 0 | 0.01 |
| Cumulative - Cement and lime (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |

Table 13: *E+ scenario - PILLAR 4: CCUS - CO2 pipelines*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|-------|-------|-------|-------|-------|
| Trunk (km) | | 0 | 145 | 145 | 145 | 145 | 145 |
| Spur (km) | | 0 | 1.21 | 1.21 | 1.21 | 1.21 | 1.21 |
| All (km) | | 0 | 146 | 146 | 146 | 146 | 146 |
| Cumulative investment - Trunk (million \$2018) | | 0 | 262 | 262 | 262 | 262 | 262 |
| Cumulative investment - Spur (million \$2018) | | 0 | 0.702 | 0.702 | 0.702 | 0.702 | 0.703 |
| Cumulative investment - All (million \$2018) | | 0 | 262 | 262 | 262 | 262 | 262 |

Table 14: *E+ scenario - PILLAR 4: CCUS - CO2 storage*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|------|
| Annual (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Injection wells (wells) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Resource characterization, appraisal, permitting costs (million \$2020) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Wells and facilities construction costs (million \$2020) | | 0 | 0 | 0 | 0 | 0 | 0 |

Table 15: *E+ scenario - PILLAR 6: Land sinks - Forests*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -27.4 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -128 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -445 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -5.3 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -50.1 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -17 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -109 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -902 |
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -41 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) | | | | | | | -448 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) | | | | | | | -801 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) | | | | | | | -7.77 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -240 |

Table 15: E+ scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|--------|
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -96.7 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) | | | | | | | -121 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y) | | | | | | | -217 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -1,973 |
| Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -54.6 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y) | | | | | | | -768 |
| Carbon sink potential - High - Extend rotation length (1000 tCO2e/y) | | | | | | | -1,158 |
| Carbon sink potential - High - Improve plantations (1000 tCO2e/y) | | | | | | | -10.4 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -360 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -143 |
| Carbon sink potential - High - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - High - Reforest pasture (1000 tCO2e/y) | | | | | | | -224 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -3,043 |
| Carbon sink potential - High - Restore productivity (1000 tCO2e/y) | | | | | | | -325 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 4.47 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 97.6 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 226 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 1.92 |
| Land impacted for carbon sink potential - Low - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Low - Increase trees outside forests (1000 hectares) | | | | | | | 7.16 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 1.1 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 65.1 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 404 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 6.7 |

Table 15: *E+ scenario - PILLAR 6: Land sinks - Forests (continued)*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 101 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 408 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 2.89 |
| Land impacted for carbon sink potential - Mid - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Increase trees outside forests (1000 hectares) | | | | | | | 10.4 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 7.98 |
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 131 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 668 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 8.94 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 104 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 591 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 3.84 |
| Land impacted for carbon sink potential - High - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Increase trees outside forests (1000 hectares) | | | | | | | 13.6 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 6.37 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 108 |
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 835 |

Table 16: *E+ scenario - PILLAR 6: Land sinks - Agriculture*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|------|
| Carbon sink potential - Moderate deployment - Corn-ethanol to energy grasses (1000 tCO2e/y) | | | | | | | 0 |

Table 16: E+ scenario - PILLAR 6: Land sinks - Agriculture (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|-------|
| Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -41.5 |
| Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -1.57 |
| Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y) | | | | | | | -43.1 |
| Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -79 |
| Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -3.14 |
| Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y) | | | | | | | -82.1 |
| Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares) | | | | | | | 28.7 |
| Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares) | | | | | | | 2.86 |
| Land impacted for carbon sink - Moderate deployment - Total (1000 hectares) | | | | | | | 31.5 |
| Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares) | | | | | | | 54.5 |
| Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares) | | | | | | | 5.72 |
| Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares) | | | | | | | 60.2 |

Table 17: E- scenario - IMPACTS - Health

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Coal (deaths) | | 40.8 | 0.066 | 0.065 | 0.063 | 0.038 | 0.001 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 25 | 10.8 | 4.57 | 1.88 | 0.543 | 0.675 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 114 | 115 | 111 | 99 | 78.2 | 53.2 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 5.74 | 5.76 | 5.51 | 4.89 | 3.84 | 2.61 |
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 27.7 | 25.5 | 22.6 | 18.6 | 13.9 | 9.21 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 38.6 | 35.9 | 33.4 | 28.3 | 20.5 | 12.5 |

Table 17: E- scenario - IMPACTS - Health (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 3.67 | 3.62 | 3.53 | 3.21 | 2.58 | 1.86 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.835 | 0.796 | 0.756 | 0.712 | 0.669 | 0.622 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 22.8 | 22.4 | 21.6 | 19.8 | 16.9 | 13.4 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 9.43 | 8.49 | 7.51 | 6.19 | 5.03 | 3.92 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 1.84 | 1.65 | 1.46 | 1.28 | 1.1 | 0.929 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.336 | 0.182 | 0.182 | 0.179 | 0.178 | 0.171 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 23.2 | 20 | 16.1 | 13.1 | 11 | 7.88 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 361 | 0.582 | 0.58 | 0.562 | 0.335 | 0.01 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 221 | 95.2 | 40.4 | 16.6 | 4.81 | 5.98 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 1,013 | 1,020 | 985 | 880 | 695 | 473 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 50.8 | 51 | 48.8 | 43.3 | 34 | 23.1 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 246 | 226 | 200 | 165 | 124 | 81.6 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 342 | 318 | 296 | 250 | 181 | 111 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 32.5 | 32.1 | 31.3 | 28.4 | 22.8 | 16.5 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 7.39 | 7.05 | 6.69 | 6.31 | 5.92 | 5.51 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 202 | 198 | 191 | 175 | 149 | 118 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 83.5 | 75.1 | 66.4 | 54.8 | 44.6 | 34.7 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 16.3 | 14.6 | 13 | 11.3 | 9.73 | 8.22 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 2.96 | 1.61 | 1.6 | 1.58 | 1.57 | 1.51 |
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 206 | 178 | 143 | 117 | 97.7 | 70 |

Table 18: E- scenario - IMPACTS - Jobs

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|--------|--------|--------|--------|--------|
| By economic sector - Agriculture (jobs) | | 96.4 | 124 | 47.2 | 30.4 | 27.5 | 141 |
| By economic sector - Construction (jobs) | | 4,522 | 5,806 | 4,819 | 4,654 | 5,340 | 6,155 |
| By economic sector - Manufacturing (jobs) | | 1,661 | 2,156 | 2,219 | 2,058 | 3,064 | 4,178 |
| By economic sector - Mining (jobs) | | 1,046 | 760 | 551 | 388 | 259 | 140 |
| By economic sector - Other (jobs) | | 610 | 912 | 765 | 786 | 962 | 1,397 |
| By economic sector - Pipeline (jobs) | | 263 | 270 | 175 | 147 | 119 | 83.6 |
| By economic sector - Professional (jobs) | | 1,951 | 2,359 | 2,031 | 2,001 | 2,326 | 2,976 |
| By economic sector - Trade (jobs) | | 1,452 | 1,696 | 1,475 | 1,433 | 1,630 | 2,061 |
| By economic sector - Utilities (jobs) | | 3,667 | 4,315 | 4,323 | 4,447 | 5,408 | 5,273 |
| By resource sector - Biomass (jobs) | | 366 | 332 | 157 | 128 | 117 | 584 |
| By resource sector - CO2 (jobs) | | 0 | 443 | 1.2 | 3.05 | 3.04 | 2.25 |
| By resource sector - Coal (jobs) | | 54.1 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 3,569 | 4,866 | 6,066 | 6,523 | 8,427 | 8,516 |
| By resource sector - Natural Gas (jobs) | | 2,665 | 2,178 | 1,458 | 1,245 | 1,329 | 1,149 |
| By resource sector - Nuclear (jobs) | | 1,092 | 1,074 | 1,057 | 1,041 | 1,025 | 834 |
| By resource sector - Oil (jobs) | | 2,357 | 1,961 | 1,635 | 1,293 | 959 | 552 |
| By resource sector - Solar (jobs) | | 5,046 | 6,993 | 5,062 | 5,009 | 6,287 | 8,643 |
| By resource sector - Wind (jobs) | | 119 | 551 | 968 | 704 | 991 | 2,125 |
| By education level - All sectors - High school diploma or less (jobs) | | 6,453 | 7,873 | 6,993 | 6,786 | 8,159 | 9,582 |
| By education level - All sectors - Associates degree or some college (jobs) | | 4,760 | 5,815 | 5,200 | 5,082 | 6,153 | 7,191 |
| By education level - All sectors - Bachelors degree (jobs) | | 3,168 | 3,681 | 3,295 | 3,186 | 3,780 | 4,407 |
| By education level - All sectors - Masters or professional degree (jobs) | | 773 | 898 | 802 | 781 | 919 | 1,074 |
| By education level - All sectors - Doctoral degree (jobs) | | 114 | 132 | 113 | 109 | 125 | 152 |
| Related work experience - All sectors - None (jobs) | | 2,202 | 2,672 | 2,379 | 2,319 | 2,787 | 3,266 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 3,060 | 3,740 | 3,315 | 3,215 | 3,871 | 4,622 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 5,503 | 6,593 | 5,889 | 5,725 | 6,855 | 7,993 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 3,563 | 4,272 | 3,810 | 3,705 | 4,439 | 5,149 |
| Related work experience - All sectors - Over 10 years (jobs) | | 940 | 1,120 | 1,011 | 981 | 1,184 | 1,377 |
| On-the-Job Training - All sectors - None (jobs) | | 856 | 1,023 | 903 | 873 | 1,035 | 1,229 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 9,991 | 11,991 | 10,730 | 10,412 | 12,522 | 14,754 |
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 3,222 | 3,913 | 3,486 | 3,401 | 4,088 | 4,717 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 1,045 | 1,285 | 1,124 | 1,102 | 1,304 | 1,484 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 153 | 186 | 162 | 155 | 187 | 222 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 2,494 | 3,004 | 2,657 | 2,575 | 3,087 | 3,661 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 9,081 | 10,904 | 9,763 | 9,480 | 11,396 | 13,390 |
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 2,498 | 3,033 | 2,705 | 2,638 | 3,171 | 3,670 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 1,067 | 1,299 | 1,138 | 1,113 | 1,314 | 1,492 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 128 | 158 | 141 | 139 | 168 | 194 |
| Wage income - All (million \$2019) | | 968 | 1,169 | 1,058 | 1,044 | 1,261 | 1,471 |

Table 19: E- scenario - PILLAR 1: Efficiency/Electrification - Overview

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 228 | 214 | 195 | 179 | 167 | 152 | 134 |
| Final energy use - Residential (PJ) | 155 | 144 | 135 | 128 | 118 | 105 | 91.1 |
| Final energy use - Commercial (PJ) | 120 | 114 | 111 | 108 | 105 | 101 | 96.5 |
| Final energy use - Industry (PJ) | 64.9 | 63.5 | 62.9 | 62.4 | 62.9 | 63.5 | 63.2 |

Table 20: E- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|------|------|------|------|------|
| Electricity distribution capital invested - Cumulative 5-yr (billion \$2018) | | 0.975 | 0.97 | 1.63 | 1.7 | 3.09 | 3.32 |

Table 21: E- scenario - PILLAR 1: Efficiency/Electrification - Transportation

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|-------|-------|-------|
| Vehicle stocks - LDV – EV (1000 units) | 29.9 | 98.5 | 167 | 485 | 802 | 1,505 | 2,208 |
| Vehicle stocks - LDV – All others (1000 units) | 2,886 | 2,886 | 2,886 | 2,738 | 2,589 | 1,995 | 1,401 |
| Light-duty vehicle capital costs vs. REF - Cumulative 5-yr (million \$2018) | | 0 | 91 | 186 | 634 | 1,979 | 2,888 |
| Public EV charging plugs - DC Fast (1000 units) | 0.229 | | 0.29 | | 1.39 | | 3.84 |
| Public EV charging plugs - L2 (1000 units) | 0.794 | | 6.97 | | 33.5 | | 92.2 |

Table 22: E- scenario - PILLAR 1: Efficiency/Electrification - Residential

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|------|------|------|------|-------|
| Sales of space heating units - Electric Heat Pump (%) | 7.5 | 7.1 | 12.5 | 28.5 | 55.7 | 78.2 | 88.3 |
| Sales of space heating units - Electric Resistance (%) | 4.92 | 6.49 | 6.23 | 5.8 | 4.6 | 2.99 | 2.13 |
| Sales of space heating units - Gas (%) | 34.4 | 20.1 | 19.4 | 17.2 | 12.1 | 5.68 | 1.98 |
| Sales of space heating units - Fossil (%) | 53.1 | 66.3 | 61.9 | 48.5 | 27.6 | 13.1 | 7.61 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 0.484 | 1.83 | 6.09 | 15.2 | 25.5 | 31.2 |
| Sales of water heating units - Electric Resistance (%) | 35.5 | 53.7 | 54.4 | 56.4 | 60.1 | 63.5 | 65.2 |
| Sales of water heating units - Gas Furnace (%) | 46.8 | 33.9 | 32.8 | 29.2 | 20.5 | 9.58 | 3.12 |
| Sales of water heating units - Other (%) | 17.6 | 11.9 | 11 | 8.3 | 4.13 | 1.41 | 0.461 |
| Sales of cooking units - Electric Resistance (%) | 71.7 | 72.5 | 75.1 | 81.9 | 91.4 | 97.2 | 99.2 |
| Sales of cooking units - Gas (%) | 28.3 | 27.5 | 24.9 | 18.1 | 8.64 | 2.79 | 0.75 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 3.14 | 3.73 | | | | |

Table 23: E- scenario - PILLAR 1: Efficiency/Electrification - Commercial

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Sales of space heating units - Electric Heat Pump (%) | 4.76 | 7.71 | 11 | 20.9 | 40.9 | 61.8 | 73 |
| Sales of space heating units - Electric Resistance (%) | 2.29 | 2.3 | 3.61 | 7.63 | 14.2 | 19.1 | 21 |
| Sales of space heating units - Gas Furnace (%) | 50.7 | 53.9 | 51.7 | 46 | 32.5 | 15.2 | 4.94 |
| Sales of space heating units - Fossil (%) | 42.2 | 36.1 | 33.8 | 25.4 | 12.4 | 3.94 | 1.03 |
| Sales of water heating units - Electric Heat Pump (%) | 2.81 | 2.92 | 4.33 | 9.01 | 20.1 | 33.9 | 42 |
| Sales of water heating units - Electric Resistance (%) | 13.8 | 12 | 13 | 17.7 | 28.2 | 41.2 | 48.8 |

Table 23: E- scenario - PILLAR 1: Efficiency/Electrification - Commercial (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|------|------|------|------|
| Sales of water heating units - Gas Furnace (%) | 78.2 | 80.8 | 78.7 | 69.9 | 49.2 | 23 | 7.51 |
| Sales of water heating units - Other (%) | 5.24 | 4.31 | 3.95 | 3.35 | 2.49 | 1.86 | 1.68 |
| Sales of cooking units - Electric Resistance (%) | 36.9 | 40.7 | 44.7 | 56.5 | 72.7 | 82.9 | 86.4 |
| Sales of cooking units - Gas (%) | 63.1 | 59.3 | 55.3 | 43.5 | 27.3 | 17.1 | 13.6 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 7,079 | 7,740 | | | | |

Table 24: E- scenario - PILLAR 2: Clean Electricity - Generating capacity

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 400 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 4,965 | 4,265 | 3,174 | 3,176 | 3,179 | 3,421 | 3,503 |
| Installed thermal - Nuclear (MW) | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 1,253 |

Table 25: E- scenario - PILLAR 6: Land sinks - Forests

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|--------|
| Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -27.4 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -128 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -445 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -5.3 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -50.1 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -17 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -109 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -902 |
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -41 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) | | | | | | | -448 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) | | | | | | | -801 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) | | | | | | | -7.77 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -240 |
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -96.7 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) | | | | | | | -121 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y) | | | | | | | -217 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -1,973 |

Table 25: E- scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|--------|
| Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -54.6 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y) | | | | | | | -768 |
| Carbon sink potential - High - Extend rotation length (1000 tCO2e/y) | | | | | | | -1,158 |
| Carbon sink potential - High - Improve plantations (1000 tCO2e/y) | | | | | | | -10.4 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -360 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -143 |
| Carbon sink potential - High - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - High - Reforest pasture (1000 tCO2e/y) | | | | | | | -224 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -3,043 |
| Carbon sink potential - High - Restore productivity (1000 tCO2e/y) | | | | | | | -325 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 4.47 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 97.6 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 226 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 1.92 |
| Land impacted for carbon sink potential - Low - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Low - Increase trees outside forests (1000 hectares) | | | | | | | 7.16 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 1.1 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 65.1 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 404 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 6.7 |
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 101 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 408 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 2.89 |

Table 25: E- scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Land impacted for carbon sink potential - Mid - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Increase trees outside forests (1000 hectares) | | | | | | | 10.4 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 7.98 |
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 131 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 668 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 8.94 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 104 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 591 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 3.84 |
| Land impacted for carbon sink potential - High - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Increase trees outside forests (1000 hectares) | | | | | | | 13.6 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 6.37 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 108 |
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 835 |

Table 26: E- scenario - PILLAR 6: Land sinks - Agriculture

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - Moderate deployment - Corn-ethanol to energy grasses (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -41.5 |
| Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -1.57 |
| Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y) | | | | | | | -43.1 |

Table 26: E- scenario - PILLAR 6: Land sinks - Agriculture (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|-------|
| Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -79 |
| Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -3.14 |
| Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y) | | | | | | | -82.1 |
| Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares) | | | | | | | 28.7 |
| Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares) | | | | | | | 2.86 |
| Land impacted for carbon sink - Moderate deployment - Total (1000 hectares) | | | | | | | 31.5 |
| Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares) | | | | | | | 54.5 |
| Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares) | | | | | | | 5.72 |
| Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares) | | | | | | | 60.2 |

Table 27: E+RE+ scenario - IMPACTS - Health

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Coal (deaths) | | 40.8 | 0.066 | 0.065 | 0.063 | 0.038 | 0.001 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 23.8 | 12.1 | 6.86 | 5.66 | 2.12 | 0.685 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 112 | 104 | 78.3 | 44.9 | 20.2 | 7.59 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 5.61 | 5.1 | 3.79 | 2.19 | 1.02 | 0.428 |
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 27.5 | 23.3 | 16.2 | 9.11 | 4.35 | 1.65 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 38 | 29.8 | 19.6 | 10.9 | 4.57 | 1.32 |
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 3.63 | 3.27 | 2.53 | 1.69 | 0.947 | 0.487 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.835 | 0.796 | 0.756 | 0.712 | 0.669 | 0.622 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 22.7 | 20.5 | 16.2 | 11.3 | 7.18 | 3.93 |

Table 27: *E+RE+ scenario - IMPACTS - Health (continued)*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 9.36 | 7.56 | 5.23 | 3.15 | 2.06 | 1.49 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 1.84 | 1.54 | 1.25 | 0.967 | 0.702 | 0.456 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.372 | 0.182 | 0.18 | 0.176 | 0.178 | 0.165 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 22.7 | 20.7 | 16.8 | 11.8 | 6.63 | 0.644 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 361 | 0.582 | 0.58 | 0.562 | 0.335 | 0.01 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 210 | 108 | 60.8 | 50.2 | 18.8 | 6.07 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 995 | 923 | 697 | 399 | 179 | 67.5 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 49.7 | 45.2 | 33.6 | 19.4 | 8.99 | 3.79 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 244 | 206 | 143 | 80.7 | 38.5 | 14.6 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 337 | 264 | 173 | 96.3 | 40.5 | 11.7 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 32.1 | 29 | 22.5 | 14.9 | 8.39 | 4.32 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 7.39 | 7.05 | 6.69 | 6.31 | 5.92 | 5.51 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 201 | 181 | 144 | 100 | 63.6 | 34.8 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 82.9 | 66.9 | 46.3 | 27.9 | 18.3 | 13.2 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 16.3 | 13.6 | 11.1 | 8.56 | 6.22 | 4.04 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 3.29 | 1.61 | 1.59 | 1.56 | 1.57 | 1.45 |
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 202 | 184 | 149 | 105 | 58.9 | 5.72 |

Table 28: *E+RE+ scenario - IMPACTS - Jobs*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|-------|
| By economic sector - Agriculture (jobs) | | 79.6 | 165 | 61.1 | 38.9 | 31.4 | 139 |
| By economic sector - Construction (jobs) | | 4,554 | 5,438 | 4,870 | 4,681 | 4,549 | 6,537 |
| By economic sector - Manufacturing (jobs) | | 1,700 | 2,266 | 3,362 | 2,601 | 3,265 | 4,223 |
| By economic sector - Mining (jobs) | | 1,025 | 713 | 421 | 213 | 81.8 | 15.3 |
| By economic sector - Other (jobs) | | 613 | 861 | 699 | 734 | 731 | 1,348 |
| By economic sector - Pipeline (jobs) | | 255 | 211 | 145 | 90.4 | 46.9 | 21.6 |
| By economic sector - Professional (jobs) | | 1,949 | 2,349 | 2,041 | 2,006 | 1,949 | 3,035 |

Table 28: E+RE+ scenario - IMPACTS - Jobs (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|--------|--------|--------|--------|--------|--------|
| By economic sector - Trade (jobs) | | 1,447 | 1,615 | 1,374 | 1,318 | 1,256 | 2,003 |
| By economic sector - Utilities (jobs) | | 3,744 | 4,159 | 5,103 | 5,089 | 5,306 | 6,258 |
| By resource sector - Biomass (jobs) | | 310 | 466 | 164 | 127 | 117 | 610 |
| By resource sector - CO2 (jobs) | | 0 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Coal (jobs) | | 54.1 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 3,790 | 5,210 | 7,970 | 7,954 | 8,982 | 11,391 |
| By resource sector - Natural Gas (jobs) | | 2,590 | 1,998 | 1,485 | 1,752 | 1,194 | 1,078 |
| By resource sector - Nuclear (jobs) | | 1,092 | 1,074 | 875 | 603 | 594 | 344 |
| By resource sector - Oil (jobs) | | 2,327 | 1,785 | 1,186 | 655 | 254 | 0.017 |
| By resource sector - Solar (jobs) | | 5,108 | 6,720 | 4,811 | 4,802 | 4,941 | 7,943 |
| By resource sector - Wind (jobs) | | 97.5 | 522 | 1,586 | 879 | 1,133 | 2,215 |
| By education level - All sectors - High school diploma or less (jobs) | | 6,493 | 7,603 | 7,737 | 7,153 | 7,367 | 10,125 |
| By education level - All sectors - Associates degree or some college (jobs) | | 4,801 | 5,591 | 5,788 | 5,435 | 5,597 | 7,651 |
| By education level - All sectors - Bachelors degree (jobs) | | 3,183 | 3,577 | 3,581 | 3,281 | 3,344 | 4,545 |
| By education level - All sectors - Masters or professional degree (jobs) | | 776 | 876 | 857 | 797 | 804 | 1,109 |
| By education level - All sectors - Doctoral degree (jobs) | | 114 | 129 | 114 | 106 | 103 | 150 |
| Related work experience - All sectors - None (jobs) | | 2,216 | 2,575 | 2,623 | 2,452 | 2,512 | 3,455 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 3,078 | 3,627 | 3,654 | 3,366 | 3,475 | 4,838 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 5,538 | 6,373 | 6,474 | 6,009 | 6,155 | 8,407 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 3,589 | 4,116 | 4,195 | 3,909 | 3,998 | 5,435 |
| Related work experience - All sectors - Over 10 years (jobs) | | 947 | 1,086 | 1,130 | 1,037 | 1,075 | 1,446 |
| On-the-Job Training - All sectors - None (jobs) | | 860 | 988 | 967 | 891 | 906 | 1,264 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 10,051 | 11,636 | 11,868 | 10,932 | 11,269 | 15,457 |
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 3,250 | 3,755 | 3,854 | 3,619 | 3,705 | 5,029 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 1,054 | 1,219 | 1,209 | 1,168 | 1,169 | 1,603 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 154 | 179 | 179 | 161 | 166 | 228 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 2,508 | 2,906 | 2,912 | 2,690 | 2,757 | 3,810 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 9,137 | 10,570 | 10,792 | 9,957 | 10,258 | 14,052 |
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 2,519 | 2,915 | 2,992 | 2,801 | 2,872 | 3,905 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 1,075 | 1,234 | 1,223 | 1,174 | 1,174 | 1,603 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 129 | 151 | 158 | 151 | 154 | 211 |
| Wage income - All (million \$2019) | | 975 | 1,128 | 1,160 | 1,095 | 1,132 | 1,554 |

Table 29: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Overview

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 228 | 212 | 186 | 152 | 122 | 104 | 95.6 |
| Final energy use - Residential (PJ) | 155 | 143 | 130 | 112 | 94.5 | 81.6 | 73.9 |
| Final energy use - Commercial (PJ) | 120 | 114 | 109 | 101 | 93.4 | 88.1 | 84.9 |
| Final energy use - Industry (PJ) | 64.9 | 63.4 | 62.5 | 61.2 | 61.1 | 61.8 | 62.1 |

Table 30: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Electricity distribution capital invested - Cumulative 5-yr (billion \$2018) | | 1.3 | 1.34 | 3.78 | 4.11 | 3.37 | 3.57 |

Table 31: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Transportation

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|-------|-------|-------|
| Vehicle stocks - LDV - EV (1000 units) | 38.7 | 272 | 506 | 1,323 | 2,141 | 2,794 | 3,448 |
| Vehicle stocks - LDV - All others (1000 units) | 2,875 | 2,737 | 2,600 | 1,895 | 1,189 | 673 | 156 |
| Light-duty vehicle capital costs vs. REF - Cumulative 5-yr (million \$2018) | | 549 | 1,419 | 2,279 | 3,460 | 3,757 | 3,587 |
| Public EV charging plugs - DC Fast (1000 units) | 0.229 | | 0.879 | | 3.72 | | 5.99 |
| Public EV charging plugs - L2 (1000 units) | 0.794 | | 21.1 | | 89.3 | | 144 |

Table 32: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Residential

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|-------|-------|-------|-------|
| Sales of space heating units - Electric Heat Pump (%) | 7.5 | 14.9 | 62.3 | 88.8 | 92.4 | 92.6 | 92.6 |
| Sales of space heating units - Electric Resistance (%) | 4.92 | 6.44 | 5.03 | 2.19 | 1.67 | 1.64 | 1.81 |
| Sales of space heating units - Gas (%) | 34.4 | 19.8 | 14 | 2.38 | 0.3 | 0.169 | 0.163 |
| Sales of space heating units - Fossil (%) | 53.1 | 58.8 | 18.6 | 6.59 | 5.61 | 5.57 | 5.44 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 1.56 | 13.2 | 30.7 | 33.7 | 33.9 | 33.9 |
| Sales of water heating units - Electric Resistance (%) | 35.5 | 54.6 | 60.4 | 65.2 | 66 | 66 | 66 |
| Sales of water heating units - Gas Furnace (%) | 46.8 | 33.5 | 24.3 | 3.88 | 0.229 | 0 | 0 |
| Sales of water heating units - Other (%) | 17.6 | 10.3 | 2.05 | 0.206 | 0.126 | 0.127 | 0.126 |
| Sales of cooking units - Electric Resistance (%) | 71.8 | 77.8 | 96.2 | 99.8 | 100 | 100 | 100 |
| Sales of cooking units - Gas (%) | 28.2 | 22.2 | 3.79 | 0.191 | 0 | 0 | 0 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 3.13 | 3.5 | | | | |

Table 33: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Commercial

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|------|------|
| Sales of space heating units - Electric Heat Pump (%) | 4.76 | 11 | 39.3 | 72.4 | 77.8 | 78.1 | 78.1 |
| Sales of space heating units - Electric Resistance (%) | 2.29 | 4.46 | 16.5 | 21.3 | 21.9 | 21.9 | 21.9 |
| Sales of space heating units - Gas Furnace (%) | 50.7 | 53.4 | 38.2 | 6.11 | 0.363 | 0 | 0 |
| Sales of space heating units - Fossil (%) | 42.2 | 31.2 | 5.99 | 0.253 | 0 | 0 | 0 |
| Sales of water heating units - Electric Heat Pump (%) | 2.81 | 3.52 | 15.9 | 41 | 45.5 | 45.9 | 45.9 |
| Sales of water heating units - Electric Resistance (%) | 13.8 | 12.6 | 24 | 48.1 | 52.3 | 52.5 | 52.5 |
| Sales of water heating units - Gas Furnace (%) | 78.2 | 80 | 58.2 | 9.28 | 0.549 | 0 | 0 |
| Sales of water heating units - Other (%) | 5.24 | 3.95 | 1.94 | 1.61 | 1.6 | 1.59 | 1.61 |
| Sales of cooking units - Electric Resistance (%) | 36.9 | 49.9 | 81.2 | 87.4 | 87.7 | 87.7 | 87.7 |
| Sales of cooking units - Gas (%) | 63.1 | 50.1 | 18.8 | 12.6 | 12.3 | 12.3 | 12.3 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 7,080 | 7,732 | | | | |

Table 34: E+RE+ scenario - PILLAR 2: Clean Electricity - Generating capacity

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 400 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 4,965 | 4,265 | 4,270 | 4,271 | 5,593 | 6,146 | 5,255 |
| Installed thermal - Nuclear (MW) | 2,163 | 2,163 | 2,163 | 1,253 | 1,253 | 1,253 | 0 |
| Installed renewables - Rooftop PV (MW) | 770 | 1,341 | 1,570 | 1,838 | 2,141 | 2,479 | 2,857 |
| Installed renewables - Solar - Base land use assumptions (MW) | 81.5 | 81.5 | 2,839 | 3,588 | 4,030 | 4,030 | 4,030 |
| Installed renewables - Wind - Base land use assumptions (MW) | 5.8 | 5.8 | 321 | 472 | 551 | 551 | 590 |
| Installed renewables - Solar - Constrained land use assumptions (MW) | 81.6 | 81.6 | 4,290 | 6,050 | 6,944 | 6,944 | 6,944 |
| Installed renewables - Wind - Constrained land use assumptions (MW) | 6.64 | 6.64 | 350 | 389 | 439 | 439 | 472 |
| Installed renewables - Offshore Wind - Constrained land use assumptions (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital invested - Solar PV - Base (billion \$2018) | | 0 | 3.3 | 0.826 | 0.459 | 0 | 0 |
| Capital invested - Wind - Base (billion \$2018) | | 0 | 0.755 | 0.336 | 0.169 | 0 | 0.073 |

Table 35: E+RE+ scenario - PILLAR 2: Clean Electricity - Generation

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|--------|--------|--------|--------|--------|
| Solar - Base land use assumptions (GWh) | 169 | 169 | 5,099 | 6,409 | 7,180 | 7,180 | 7,180 |
| Wind - Base land use assumptions (GWh) | 24 | 24 | 1,153 | 1,676 | 1,955 | 1,955 | 2,088 |
| OffshoreWind - Base land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Solar - Constrained land use assumptions (GWh) | 337 | 337 | 15,298 | 21,470 | 24,597 | 24,597 | 24,597 |
| Wind - Constrained land use assumptions (GWh) | 48 | 48 | 2,519 | 2,800 | 3,144 | 3,144 | 3,371 |
| OffshoreWind - Constrained land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 36: E+RE+ scenario - PILLAR 6: Land sinks - Forests

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -27.4 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -128 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -445 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -5.3 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -50.1 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -17 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -109 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -902 |

Table 36: E+RE+ scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|--------|
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -41 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) | | | | | | | -448 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) | | | | | | | -801 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) | | | | | | | -777 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -240 |
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -96.7 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) | | | | | | | -121 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y) | | | | | | | -217 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -1,973 |
| Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -54.6 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y) | | | | | | | -768 |
| Carbon sink potential - High - Extend rotation length (1000 tCO2e/y) | | | | | | | -1,158 |
| Carbon sink potential - High - Improve plantations (1000 tCO2e/y) | | | | | | | -10.4 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -360 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -143 |
| Carbon sink potential - High - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - High - Reforest pasture (1000 tCO2e/y) | | | | | | | -224 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -3,043 |
| Carbon sink potential - High - Restore productivity (1000 tCO2e/y) | | | | | | | -325 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 4.47 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 97.6 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 226 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 1.92 |
| Land impacted for carbon sink potential - Low - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Low - Increase trees outside forests (1000 hectares) | | | | | | | 7.16 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0 |

Table 36: E+RE+ scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 1.1 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 65.1 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 404 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 6.7 |
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 101 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 408 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 2.89 |
| Land impacted for carbon sink potential - Mid - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Increase trees outside forests (1000 hectares) | | | | | | | 10.4 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 7.98 |
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 131 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 668 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 8.94 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 104 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 591 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 3.84 |
| Land impacted for carbon sink potential - High - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Increase trees outside forests (1000 hectares) | | | | | | | 13.6 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 6.37 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 108 |

Table 36: *E+RE+ scenario - PILLAR 6: Land sinks - Forests (continued)*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|------|
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 835 |

Table 37: *E+RE+ scenario - PILLAR 6: Land sinks - Agriculture*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|-------|
| Carbon sink potential - Moderate deployment - Corn-ethanol to energy grasses (1000 tCO ₂ e/y) | | | | | | | 0 |
| Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO ₂ e/y) | | | | | | | -41.5 |
| Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO ₂ e/y) | | | | | | | -1.57 |
| Carbon sink potential - Moderate deployment - Total (1000 tCO ₂ e/y) | | | | | | | -43.1 |
| Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO ₂ e/y) | | | | | | | 0 |
| Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO ₂ e/y) | | | | | | | -79 |
| Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO ₂ e/y) | | | | | | | -3.14 |
| Carbon sink potential - Aggressive deployment - Total (1000 tCO ₂ e/y) | | | | | | | -82.1 |
| Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares) | | | | | | | 28.7 |
| Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares) | | | | | | | 2.86 |
| Land impacted for carbon sink - Moderate deployment - Total (1000 hectares) | | | | | | | 31.5 |
| Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares) | | | | | | | 54.5 |
| Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares) | | | | | | | 5.72 |
| Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares) | | | | | | | 60.2 |

Table 38: *E+RE- scenario - IMPACTS - Health*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Coal (deaths) | | 40.8 | 0.066 | 0.065 | 0.063 | 0.038 | 0.001 |

Table 38: E+RE- scenario - IMPACTS - Health (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 24.6 | 13.2 | 15.2 | 11.9 | 6.42 | 1.31 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 112 | 104 | 78.3 | 44.9 | 20.2 | 7.59 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 5.61 | 5.1 | 3.79 | 2.19 | 1.02 | 0.428 |
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 27.5 | 23.3 | 16.2 | 9.11 | 4.35 | 1.65 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 38 | 29.8 | 19.6 | 10.9 | 4.57 | 1.32 |
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 3.63 | 3.27 | 2.53 | 1.69 | 0.947 | 0.487 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.835 | 0.796 | 0.756 | 0.712 | 0.669 | 0.622 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 22.7 | 20.5 | 16.2 | 11.3 | 7.18 | 3.93 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 9.36 | 7.56 | 5.23 | 3.15 | 2.06 | 1.49 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 1.84 | 1.54 | 1.25 | 0.967 | 0.702 | 0.456 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.32 | 0.182 | 0.18 | 0.176 | 0.178 | 0.165 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 23.7 | 22.5 | 21.8 | 18.9 | 15.8 | 11.8 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 361 | 0.582 | 0.58 | 0.562 | 0.335 | 0.01 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 218 | 117 | 135 | 105 | 56.9 | 11.6 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 995 | 923 | 697 | 399 | 179 | 67.5 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 49.7 | 45.2 | 33.6 | 19.4 | 8.99 | 3.79 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 244 | 206 | 143 | 80.7 | 38.5 | 14.6 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 337 | 264 | 173 | 96.3 | 40.5 | 11.7 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 32.1 | 29 | 22.5 | 14.9 | 8.39 | 4.32 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 7.39 | 7.05 | 6.69 | 6.31 | 5.92 | 5.51 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 201 | 181 | 144 | 100 | 63.6 | 34.8 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 82.9 | 66.9 | 46.3 | 27.9 | 18.3 | 13.2 |

Table 38: E+RE- scenario - IMPACTS - Health (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 16.3 | 13.6 | 11.1 | 8.56 | 6.22 | 4.04 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 2.82 | 1.6 | 1.59 | 1.56 | 1.57 | 1.45 |
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 210 | 200 | 193 | 168 | 141 | 105 |

Table 39: E+RE- scenario - IMPACTS - Jobs

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|--------|-------|--------|--------|--------|--------|
| By economic sector - Agriculture (jobs) | | 90.5 | 130 | 43.4 | 35.7 | 32.9 | 143 |
| By economic sector - Construction (jobs) | | 6,534 | 4,095 | 4,853 | 5,082 | 4,349 | 5,601 |
| By economic sector - Manufacturing (jobs) | | 2,062 | 1,517 | 1,947 | 1,452 | 1,134 | 1,997 |
| By economic sector - Mining (jobs) | | 1,048 | 750 | 504 | 320 | 195 | 122 |
| By economic sector - Other (jobs) | | 986 | 485 | 591 | 710 | 663 | 1,241 |
| By economic sector - Pipeline (jobs) | | 269 | 294 | 206 | 173 | 135 | 107 |
| By economic sector - Professional (jobs) | | 2,614 | 1,724 | 2,504 | 2,438 | 1,983 | 2,987 |
| By economic sector - Trade (jobs) | | 1,876 | 1,224 | 1,473 | 1,474 | 1,255 | 1,920 |
| By economic sector - Utilities (jobs) | | 4,331 | 4,420 | 8,655 | 7,913 | 6,083 | 6,774 |
| By resource sector - Biomass (jobs) | | 317 | 332 | 149 | 134 | 129 | 596 |
| By resource sector - CO2 (jobs) | | 0 | 501 | 1.36 | 3.45 | 3.44 | 2.54 |
| By resource sector - Coal (jobs) | | 54.1 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 4,822 | 4,759 | 8,203 | 8,676 | 7,542 | 7,092 |
| By resource sector - Natural Gas (jobs) | | 2,742 | 2,597 | 2,076 | 2,064 | 1,816 | 1,766 |
| By resource sector - Nuclear (jobs) | | 1,092 | 1,074 | 5,183 | 3,843 | 2,243 | 3,347 |
| By resource sector - Oil (jobs) | | 2,326 | 1,811 | 1,242 | 785 | 491 | 318 |
| By resource sector - Solar (jobs) | | 7,863 | 3,121 | 3,285 | 3,841 | 3,455 | 7,524 |
| By resource sector - Wind (jobs) | | 594 | 441 | 637 | 252 | 151 | 249 |
| By education level - All sectors - High school diploma or less (jobs) | | 8,463 | 6,195 | 8,474 | 8,081 | 6,598 | 8,668 |
| By education level - All sectors - Associates degree or some college (jobs) | | 6,238 | 4,628 | 6,468 | 6,195 | 5,065 | 6,606 |
| By education level - All sectors - Bachelors degree (jobs) | | 3,986 | 2,985 | 4,533 | 4,131 | 3,236 | 4,348 |
| By education level - All sectors - Masters or professional degree (jobs) | | 975 | 729 | 1,141 | 1,045 | 817 | 1,107 |
| By education level - All sectors - Doctoral degree (jobs) | | 146 | 101 | 161 | 147 | 113 | 164 |
| Related work experience - All sectors - None (jobs) | | 2,865 | 2,133 | 2,953 | 2,819 | 2,301 | 3,019 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 4,031 | 2,890 | 4,051 | 3,834 | 3,109 | 4,206 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 7,100 | 5,283 | 7,536 | 7,091 | 5,714 | 7,516 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 4,608 | 3,430 | 4,900 | 4,618 | 3,723 | 4,861 |
| Related work experience - All sectors - Over 10 years (jobs) | | 1,205 | 901 | 1,337 | 1,236 | 983 | 1,293 |
| On-the-Job Training - All sectors - None (jobs) | | 1,112 | 794 | 1,165 | 1,084 | 863 | 1,183 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 12,885 | 9,541 | 13,632 | 12,759 | 10,262 | 13,677 |
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 4,215 | 3,136 | 4,405 | 4,210 | 3,428 | 4,413 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 1,395 | 1,026 | 1,375 | 1,361 | 1,130 | 1,421 |

Table 39: E+RE- scenario - IMPACTS - Jobs (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|--------|-------|--------|--------|-------|--------|
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 202 | 141 | 200 | 185 | 147 | 202 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 3,244 | 2,357 | 3,389 | 3,171 | 2,543 | 3,440 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 11,721 | 8,685 | 12,408 | 11,635 | 9,367 | 12,431 |
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 3,266 | 2,424 | 3,396 | 3,242 | 2,641 | 3,411 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 1,411 | 1,043 | 1,414 | 1,383 | 1,140 | 1,437 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 169 | 127 | 169 | 167 | 139 | 175 |
| Wage income - All (million \$2019) | | 1,245 | 948 | 1,393 | 1,328 | 1,081 | 1,424 |

Table 40: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Overview

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 228 | 212 | 186 | 152 | 122 | 104 | 95.6 |
| Final energy use - Residential (PJ) | 155 | 143 | 130 | 112 | 94.5 | 81.6 | 73.9 |
| Final energy use - Commercial (PJ) | 120 | 114 | 109 | 101 | 93.4 | 88.1 | 84.9 |
| Final energy use - Industry (PJ) | 64.9 | 63.4 | 62.5 | 61.2 | 61.1 | 61.8 | 62.1 |

Table 41: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Electricity distribution capital invested - Cumulative 5-yr (billion \$2018) | | 1.3 | 1.34 | 3.78 | 4.11 | 3.37 | 3.57 |

Table 42: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Transportation

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|-------|-------|-------|
| Vehicle stocks - LDV – EV (1000 units) | 38.7 | 272 | 506 | 1,323 | 2,141 | 2,794 | 3,448 |
| Vehicle stocks - LDV – All others (1000 units) | 2,875 | 2,737 | 2,600 | 1,895 | 1,189 | 673 | 156 |
| Light-duty vehicle capital costs vs. REF - Cumulative 5-yr (million \$2018) | | 549 | 1,419 | 2,279 | 3,460 | 3,757 | 3,587 |
| Public EV charging plugs - DC Fast (1000 units) | 0.229 | | 0.879 | | 3.72 | | 5.99 |
| Public EV charging plugs - L2 (1000 units) | 0.794 | | 21.1 | | 89.3 | | 144 |

Table 43: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Residential

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|-------|-------|-------|-------|
| Sales of space heating units - Electric Heat Pump (%) | 7.5 | 14.9 | 62.3 | 88.8 | 92.4 | 92.6 | 92.6 |
| Sales of space heating units - Electric Resistance (%) | 4.92 | 6.44 | 5.03 | 2.19 | 1.67 | 1.64 | 1.81 |
| Sales of space heating units - Gas (%) | 34.4 | 19.8 | 14 | 2.38 | 0.3 | 0.169 | 0.163 |
| Sales of space heating units - Fossil (%) | 53.1 | 58.8 | 18.6 | 6.59 | 5.61 | 5.57 | 5.44 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 1.56 | 13.2 | 30.7 | 33.7 | 33.9 | 33.9 |
| Sales of water heating units - Electric Resistance (%) | 35.5 | 54.6 | 60.4 | 65.2 | 66 | 66 | 66 |
| Sales of water heating units - Gas Furnace (%) | 46.8 | 33.5 | 24.3 | 3.88 | 0.229 | 0 | 0 |
| Sales of water heating units - Other (%) | 17.6 | 10.3 | 2.05 | 0.206 | 0.126 | 0.127 | 0.126 |
| Sales of cooking units - Electric Resistance (%) | 71.8 | 77.8 | 96.2 | 99.8 | 100 | 100 | 100 |
| Sales of cooking units - Gas (%) | 28.2 | 22.2 | 3.79 | 0.191 | 0 | 0 | 0 |

Table 43: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Residential (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|------|
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 3.13 | 3.5 | | | | |

Table 44: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Commercial

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|------|------|
| Sales of space heating units - Electric Heat Pump (%) | 4.76 | 11 | 39.3 | 72.4 | 77.8 | 78.1 | 78.1 |
| Sales of space heating units - Electric Resistance (%) | 2.29 | 4.46 | 16.5 | 21.3 | 21.9 | 21.9 | 21.9 |
| Sales of space heating units - Gas Furnace (%) | 50.7 | 53.4 | 38.2 | 6.11 | 0.363 | 0 | 0 |
| Sales of space heating units - Fossil (%) | 42.2 | 31.2 | 5.99 | 0.253 | 0 | 0 | 0 |
| Sales of water heating units - Electric Heat Pump (%) | 2.81 | 3.52 | 15.9 | 41 | 45.5 | 45.9 | 45.9 |
| Sales of water heating units - Electric Resistance (%) | 13.8 | 12.6 | 24 | 48.1 | 52.3 | 52.5 | 52.5 |
| Sales of water heating units - Gas Furnace (%) | 78.2 | 80 | 58.2 | 9.28 | 0.549 | 0 | 0 |
| Sales of water heating units - Other (%) | 5.24 | 3.95 | 1.94 | 1.61 | 1.6 | 1.59 | 1.61 |
| Sales of cooking units - Electric Resistance (%) | 36.9 | 49.9 | 81.2 | 87.4 | 87.7 | 87.7 | 87.7 |
| Sales of cooking units - Gas (%) | 63.1 | 50.1 | 18.8 | 12.6 | 12.3 | 12.3 | 12.3 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 7,080 | 7,732 | | | | |

Table 45: E+RE- scenario - PILLAR 2: Clean Electricity - Generating capacity

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 400 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 4,965 | 4,265 | 4,060 | 4,063 | 5,038 | 4,460 | 2,552 |
| Installed thermal - Nuclear (MW) | 2,163 | 2,163 | 2,163 | 3,896 | 4,736 | 4,736 | 4,404 |
| Installed renewables - Rooftop PV (MW) | 770 | 1,341 | 1,570 | 1,838 | 2,141 | 2,479 | 2,857 |
| Installed renewables - Solar - Base land use assumptions (MW) | 1,273 | 3,656 | 3,656 | 3,656 | 4,251 | 4,251 | 4,251 |
| Installed renewables - Wind - Base land use assumptions (MW) | 5.8 | 5.8 | 82.8 | 82.8 | 82.8 | 135 | 245 |
| Installed renewables - Solar - Constrained land use assumptions (MW) | 2,024 | 3,248 | 4,132 | 4,132 | 5,632 | 5,632 | 6,007 |
| Installed renewables - Wind - Constrained land use assumptions (MW) | 5.8 | 5.8 | 171 | 171 | 171 | 171 | 349 |
| Installed renewables - Offshore Wind - Constrained land use assumptions (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital invested - Solar PV - Base (billion \$2018) | | 3.19 | 0 | 0 | 0.619 | 0 | 0 |
| Capital invested - Wind - Base (billion \$2018) | | 0 | 0.273 | 0 | 0 | 0.106 | 0.283 |
| Capital invested - Solar PV - Constrained (billion \$2018) | | 1.64 | 1.06 | 0 | 1.56 | 0 | 0.347 |
| Capital invested - Wind - Constrained (billion \$2018) | | 0 | 0.396 | 0 | 0 | 0 | 0.338 |

Table 46: E+RE- scenario - PILLAR 2: Clean Electricity - Generation

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|-------|-------|-------|
| Solar - Base land use assumptions (GWh) | 2,320 | 6,549 | 6,549 | 6,549 | 7,589 | 7,589 | 7,589 |
| Wind - Base land use assumptions (GWh) | 24 | 24 | 433 | 433 | 433 | 625 | 1,153 |
| Offshore Wind - Base land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 46: E+RE- scenario - PILLAR 2: Clean Electricity - Generation (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|--------|--------|--------|
| Solar - Constrained land use assumptions (GWh) | 3,653 | 5,825 | 7,405 | 7,405 | 10,045 | 10,045 | 10,707 |
| Wind - Constrained land use assumptions (GWh) | 24 | 24 | 628 | 628 | 628 | 628 | 1,259 |
| OffshoreWind - Constrained land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 47: E+RE- scenario - PILLAR 6: Land sinks - Forests

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|--------|
| Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -27.4 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -128 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -445 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -5.3 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -50.1 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -17 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -109 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -902 |
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -41 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) | | | | | | | -448 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) | | | | | | | -801 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) | | | | | | | -7.77 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -240 |
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -96.7 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) | | | | | | | -121 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y) | | | | | | | -217 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -1,973 |
| Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -54.6 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y) | | | | | | | -768 |
| Carbon sink potential - High - Extend rotation length (1000 tCO2e/y) | | | | | | | -1,158 |
| Carbon sink potential - High - Improve plantations (1000 tCO2e/y) | | | | | | | -10.4 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -360 |

Table 47: E+RE- scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|--------|
| Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -143 |
| Carbon sink potential - High - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - High - Reforest pasture (1000 tCO2e/y) | | | | | | | -224 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -3,043 |
| Carbon sink potential - High - Restore productivity (1000 tCO2e/y) | | | | | | | -325 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 4.47 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 97.6 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 226 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 1.92 |
| Land impacted for carbon sink potential - Low - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Low - Increase trees outside forests (1000 hectares) | | | | | | | 7.16 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 1.1 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 65.1 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 404 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 6.7 |
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 101 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 408 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 2.89 |
| Land impacted for carbon sink potential - Mid - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Increase trees outside forests (1000 hectares) | | | | | | | 10.4 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 7.98 |

Table 47: *E+RE- scenario - PILLAR 6: Land sinks - Forests (continued)*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 131 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 668 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 8.94 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 104 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 591 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 3.84 |
| Land impacted for carbon sink potential - High - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Increase trees outside forests (1000 hectares) | | | | | | | 13.6 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 6.37 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 108 |
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 835 |

Table 48: *E+RE- scenario - PILLAR 6: Land sinks - Agriculture*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|-------|
| Carbon sink potential - Moderate deployment - Corn-ethanol to energy grasses (1000 tCO ₂ e/y) | | | | | | | 0 |
| Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO ₂ e/y) | | | | | | | -41.5 |
| Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO ₂ e/y) | | | | | | | -1.57 |
| Carbon sink potential - Moderate deployment - Total (1000 tCO ₂ e/y) | | | | | | | -43.1 |
| Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO ₂ e/y) | | | | | | | 0 |
| Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO ₂ e/y) | | | | | | | -79 |
| Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO ₂ e/y) | | | | | | | -3.14 |
| Carbon sink potential - Aggressive deployment - Total (1000 tCO ₂ e/y) | | | | | | | -82.1 |

Table 48: E+RE- scenario - PILLAR 6: Land sinks - Agriculture (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares) | | | | | | | 28.7 |
| Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares) | | | | | | | 2.86 |
| Land impacted for carbon sink - Moderate deployment - Total (1000 hectares) | | | | | | | 31.5 |
| Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares) | | | | | | | 54.5 |
| Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares) | | | | | | | 5.72 |
| Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares) | | | | | | | 60.2 |

Table 49: E-B+ scenario - IMPACTS - Health

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Coal (deaths) | | 40.8 | 0.066 | 0.065 | 0.063 | 0.038 | 0.001 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 25.1 | 10.3 | 5.33 | 4.18 | 2.6 | 0.918 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 114 | 115 | 111 | 99 | 78.2 | 53.2 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 5.74 | 5.76 | 5.51 | 4.89 | 3.84 | 2.61 |
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 27.7 | 25.5 | 22.6 | 18.6 | 13.9 | 9.21 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 38.6 | 35.9 | 33.4 | 28.3 | 20.5 | 12.5 |
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 3.67 | 3.62 | 3.53 | 3.21 | 2.58 | 1.86 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.835 | 0.796 | 0.756 | 0.712 | 0.669 | 0.622 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 22.8 | 22.4 | 21.6 | 19.8 | 16.9 | 13.4 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 9.43 | 8.49 | 7.51 | 6.19 | 5.03 | 3.92 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 1.84 | 1.65 | 1.46 | 1.28 | 1.1 | 0.929 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.345 | 0.182 | 0.182 | 0.179 | 0.181 | 0.177 |

Table 49: E-B+ scenario - IMPACTS - Health (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|------|-------|-------|------|
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 23.2 | 20 | 16.1 | 13.1 | 11 | 7.88 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 361 | 0.582 | 0.58 | 0.562 | 0.335 | 0.01 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 222 | 90.9 | 47.2 | 37.1 | 23 | 8.13 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 1,013 | 1,020 | 985 | 880 | 695 | 473 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 50.8 | 51 | 48.8 | 43.3 | 34 | 23.1 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 246 | 226 | 200 | 165 | 124 | 81.6 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 342 | 318 | 296 | 250 | 181 | 111 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 32.5 | 32.1 | 31.3 | 28.4 | 22.8 | 16.5 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 7.39 | 7.05 | 6.69 | 6.31 | 5.92 | 5.51 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 202 | 198 | 191 | 175 | 149 | 118 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 83.5 | 75.1 | 66.4 | 54.8 | 44.6 | 34.7 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 16.3 | 14.6 | 13 | 11.3 | 9.73 | 8.22 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 3.04 | 1.61 | 1.6 | 1.58 | 1.59 | 1.56 |
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 206 | 178 | 143 | 117 | 97.7 | 70 |

Table 50: E-B+ scenario - IMPACTS - Jobs

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|-------|
| By economic sector - Agriculture (jobs) | | 88.3 | 124 | 46.2 | 34.2 | 28.4 | 186 |
| By economic sector - Construction (jobs) | | 4,513 | 5,775 | 4,611 | 4,308 | 4,784 | 5,839 |
| By economic sector - Manufacturing (jobs) | | 1,656 | 2,164 | 2,035 | 1,578 | 2,202 | 3,422 |
| By economic sector - Mining (jobs) | | 1,042 | 760 | 554 | 406 | 258 | 130 |
| By economic sector - Other (jobs) | | 609 | 904 | 720 | 707 | 826 | 1,336 |
| By economic sector - Pipeline (jobs) | | 260 | 271 | 178 | 151 | 116 | 78.3 |
| By economic sector - Professional (jobs) | | 1,946 | 2,347 | 1,947 | 1,868 | 2,100 | 2,961 |
| By economic sector - Trade (jobs) | | 1,451 | 1,687 | 1,419 | 1,348 | 1,466 | 1,997 |
| By economic sector - Utilities (jobs) | | 3,657 | 4,313 | 4,216 | 4,241 | 5,107 | 4,959 |
| By resource sector - Biomass (jobs) | | 351 | 333 | 156 | 143 | 131 | 876 |
| By resource sector - CO2 (jobs) | | 0 | 455 | 1.23 | 3.13 | 3.12 | 2.31 |
| By resource sector - Coal (jobs) | | 54.1 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 3,569 | 4,856 | 5,829 | 6,014 | 7,725 | 7,915 |
| By resource sector - Natural Gas (jobs) | | 2,637 | 2,172 | 1,484 | 1,328 | 1,393 | 1,074 |
| By resource sector - Nuclear (jobs) | | 1,092 | 1,074 | 1,057 | 1,041 | 1,025 | 834 |
| By resource sector - Oil (jobs) | | 2,357 | 1,961 | 1,635 | 1,363 | 967 | 510 |

Table 50: E-B+ scenario - IMPACTS - Jobs (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|--------|--------|-------|--------|--------|
| By resource sector - Solar (jobs) | | 5,039 | 6,925 | 4,723 | 4,376 | 5,055 | 8,298 |
| By resource sector - Wind (jobs) | | 123 | 570 | 840 | 374 | 589 | 1,398 |
| By education level - All sectors - High school diploma or less (jobs) | | 6,431 | 7,850 | 6,697 | 6,214 | 7,175 | 8,924 |
| By education level - All sectors - Associates degree or some college (jobs) | | 4,747 | 5,798 | 4,981 | 4,657 | 5,427 | 6,682 |
| By education level - All sectors - Bachelors degree (jobs) | | 3,160 | 3,671 | 3,167 | 2,943 | 3,350 | 4,134 |
| By education level - All sectors - Masters or professional degree (jobs) | | 771 | 895 | 772 | 726 | 823 | 1,021 |
| By education level - All sectors - Doctoral degree (jobs) | | 114 | 131 | 109 | 103 | 113 | 148 |
| Related work experience - All sectors - None (jobs) | | 2,195 | 2,664 | 2,281 | 2,132 | 2,465 | 3,052 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 3,050 | 3,728 | 3,170 | 2,935 | 3,389 | 4,317 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 5,487 | 6,574 | 5,650 | 5,268 | 6,064 | 7,462 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 3,554 | 4,260 | 3,655 | 3,410 | 3,930 | 4,802 |
| Related work experience - All sectors - Over 10 years (jobs) | | 937 | 1,118 | 969 | 897 | 1,040 | 1,275 |
| On-the-Job Training - All sectors - None (jobs) | | 854 | 1,020 | 865 | 803 | 914 | 1,155 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 9,961 | 11,957 | 10,282 | 9,545 | 11,014 | 13,761 |
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 3,214 | 3,902 | 3,344 | 3,129 | 3,623 | 4,390 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 1,042 | 1,281 | 1,080 | 1,024 | 1,175 | 1,398 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 153 | 185 | 155 | 141 | 161 | 204 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 2,487 | 2,995 | 2,545 | 2,360 | 2,714 | 3,419 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 9,053 | 10,874 | 9,357 | 8,696 | 10,035 | 12,489 |
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 2,491 | 3,024 | 2,594 | 2,424 | 2,807 | 3,414 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 1,064 | 1,295 | 1,094 | 1,035 | 1,183 | 1,405 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 127 | 157 | 135 | 128 | 149 | 181 |
| Wage income - All (million \$2019) | | 965 | 1,165 | 1,017 | 965 | 1,123 | 1,378 |

Table 51: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Overview

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 228 | 214 | 195 | 179 | 167 | 152 | 134 |
| Final energy use - Residential (PJ) | 155 | 144 | 135 | 128 | 118 | 105 | 91.1 |
| Final energy use - Commercial (PJ) | 120 | 114 | 111 | 108 | 105 | 101 | 96.5 |
| Final energy use - Industry (PJ) | 64.9 | 63.5 | 62.9 | 62.4 | 62.9 | 63.5 | 63.2 |

Table 52: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|------|------|------|------|------|
| Electricity distribution capital invested - Cumulative 5-yr (billion \$2018) | | 0.975 | 0.97 | 1.63 | 1.7 | 3.09 | 3.32 |

Table 53: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Transportation

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|-------|-------|-------|
| Vehicle stocks - LDV – EV (1000 units) | 29.9 | 98.5 | 167 | 485 | 802 | 1,505 | 2,208 |
| Vehicle stocks - LDV – All others (1000 units) | 2,886 | 2,886 | 2,886 | 2,738 | 2,589 | 1,995 | 1,401 |
| Light-duty vehicle capital costs vs. REF - Cumulative 5-yr (million \$2018) | | 0 | 91 | 186 | 634 | 1,979 | 2,888 |
| Public EV charging plugs - DC Fast (1000 units) | 0.229 | | 0.29 | | 1.39 | | 3.84 |
| Public EV charging plugs - L2 (1000 units) | 0.794 | | 6.97 | | 33.5 | | 92.2 |

Table 54: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Residential

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|------|------|------|------|-------|
| Sales of space heating units - Electric Heat Pump (%) | 7.5 | 7.1 | 12.5 | 28.5 | 55.7 | 78.2 | 88.3 |
| Sales of space heating units - Electric Resistance (%) | 4.92 | 6.49 | 6.23 | 5.8 | 4.6 | 2.99 | 2.13 |
| Sales of space heating units - Gas (%) | 34.4 | 20.1 | 19.4 | 17.2 | 12.1 | 5.68 | 1.98 |
| Sales of space heating units - Fossil (%) | 53.1 | 66.3 | 61.9 | 48.5 | 27.6 | 13.1 | 7.61 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 0.484 | 1.83 | 6.09 | 15.2 | 25.5 | 31.2 |
| Sales of water heating units - Electric Resistance (%) | 35.5 | 53.7 | 54.4 | 56.4 | 60.1 | 63.5 | 65.2 |
| Sales of water heating units - Gas Furnace (%) | 46.8 | 33.9 | 32.8 | 29.2 | 20.5 | 9.58 | 3.12 |
| Sales of water heating units - Other (%) | 17.6 | 11.9 | 11 | 8.3 | 4.13 | 1.41 | 0.461 |
| Sales of cooking units - Electric Resistance (%) | 71.7 | 72.5 | 75.1 | 81.9 | 91.4 | 97.2 | 99.2 |
| Sales of cooking units - Gas (%) | 28.3 | 27.5 | 24.9 | 18.1 | 8.64 | 2.79 | 0.75 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 3.14 | 3.73 | | | | |

Table 55: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Commercial

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|------|------|------|------|
| Sales of space heating units - Electric Heat Pump (%) | 4.76 | 7.71 | 11 | 20.9 | 40.9 | 61.8 | 73 |
| Sales of space heating units - Electric Resistance (%) | 2.29 | 2.3 | 3.61 | 7.63 | 14.2 | 19.1 | 21 |
| Sales of space heating units - Gas Furnace (%) | 50.7 | 53.9 | 51.7 | 46 | 32.5 | 15.2 | 4.94 |
| Sales of space heating units - Fossil (%) | 42.2 | 36.1 | 33.8 | 25.4 | 12.4 | 3.94 | 1.03 |
| Sales of water heating units - Electric Heat Pump (%) | 2.81 | 2.92 | 4.33 | 9.01 | 20.1 | 33.9 | 42 |
| Sales of water heating units - Electric Resistance (%) | 13.8 | 12 | 13 | 17.7 | 28.2 | 41.2 | 48.8 |
| Sales of water heating units - Gas Furnace (%) | 78.2 | 80.8 | 78.7 | 69.9 | 49.2 | 23 | 7.51 |
| Sales of water heating units - Other (%) | 5.24 | 4.31 | 3.95 | 3.35 | 2.49 | 1.86 | 1.68 |
| Sales of cooking units - Electric Resistance (%) | 36.9 | 40.7 | 44.7 | 56.5 | 72.7 | 82.9 | 86.4 |
| Sales of cooking units - Gas (%) | 63.1 | 59.3 | 55.3 | 43.5 | 27.3 | 17.1 | 13.6 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 7,079 | 7,740 | | | | |

Table 56: E-B+ scenario - PILLAR 2: Clean Electricity - Generating capacity

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 400 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 4,965 | 4,265 | 3,173 | 3,176 | 3,547 | 4,079 | 3,502 |
| Installed thermal - Nuclear (MW) | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 1,253 |

Table 56: E-B+ scenario - PILLAR 2: Clean Electricity - Generating capacity (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|------|
| Capital invested - Biomass power plant (billion \$2018) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital invested - Biomass w/ccu allam power plant (billion \$2018) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital invested - Biomass w/ccu power plant (billion \$2018) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 57: E-B+ scenario - PILLAR 2: Clean Electricity - Generation

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---------------------------------------|------|------|------|------|------|------|------|
| Biomass power plant (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Biomass w/ccu power plant (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Biomass w/ccu allam power plant (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 58: E-B+ scenario - PILLAR 3: Clean fuels - Bioenergy

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|-------|
| Number of facilities - Power (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Power ccu (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Allam power w ccu (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Beccs hydrogen (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Diesel (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Diesel ccu (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Pyrolysis (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Number of facilities - Pyrolysis ccu (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Sng (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - Sng ccu (quantity) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conversion capital investment - Cumulative 5-yr (million \$2018) | | 0 | 0 | 0 | 0 | 0 | 2,269 |
| Biomass purchases (million \$2018/y) | | 0 | 0 | 0 | 0 | 0 | 142 |

Table 59: E-B+ scenario - PILLAR 4: CCUS - CO2 capture

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|------------------------------------|------|------|------|------|------|------|------|
| Annual - All (MMT) | | 0 | 0 | 0 | 0 | 0 | 0.01 |
| Annual - BECCS (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Annual - NGCC (MMT) | | 0 | 0 | 0 | 0 | 0 | 0.01 |
| Annual - Cement and lime (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - All (MMT) | | 0 | 0 | 0 | 0 | 0 | 0.01 |
| Cumulative - BECCS (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - NGCC (MMT) | | 0 | 0 | 0 | 0 | 0 | 0.01 |
| Cumulative - Cement and lime (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |

Table 60: E-B+ scenario - PILLAR 4: CCUS - CO2 pipelines

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|-------|-------|-------|-------|-------|
| Trunk (km) | | 0 | 145 | 145 | 145 | 145 | 145 |
| Spur (km) | | 0 | 1.21 | 1.21 | 1.21 | 1.21 | 1.21 |
| All (km) | | 0 | 146 | 146 | 146 | 146 | 146 |
| Cumulative investment - Trunk (million \$2018) | | 0 | 262 | 262 | 262 | 262 | 262 |
| Cumulative investment - Spur (million \$2018) | | 0 | 0.702 | 0.702 | 0.702 | 0.702 | 0.703 |
| Cumulative investment - All (million \$2018) | | 0 | 262 | 262 | 262 | 262 | 262 |

Table 61: E-B+ scenario - PILLAR 4: CCUS - CO2 storage

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|------|
| Annual (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Injection wells (wells) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Resource characterization, appraisal, permitting costs (million \$2020) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Wells and facilities construction costs (million \$2020) | | 0 | 0 | 0 | 0 | 0 | 0 |

Table 62: E-B+ scenario - PILLAR 6: Land sinks - Forests

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|--------|
| Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -27.4 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -128 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -445 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -5.3 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -50.1 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -17 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -109 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -902 |
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -41 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) | | | | | | | -448 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) | | | | | | | -801 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) | | | | | | | -7.77 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -240 |
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -96.7 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) | | | | | | | -121 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y) | | | | | | | -217 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -1,973 |
| Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -54.6 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y) | | | | | | | -768 |
| Carbon sink potential - High - Extend rotation length (1000 tCO2e/y) | | | | | | | -1,158 |
| Carbon sink potential - High - Improve plantations (1000 tCO2e/y) | | | | | | | -10.4 |

Table 62: E-B+ scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|--------|
| Carbon sink potential - High - Increase retention of HWP (1000 tCO ₂ e/y) | | | | | | | -360 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO ₂ e/y) | | | | | | | -143 |
| Carbon sink potential - High - Reforest cropland (1000 tCO ₂ e/y) | | | | | | | 0 |
| Carbon sink potential - High - Reforest pasture (1000 tCO ₂ e/y) | | | | | | | -224 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO ₂ e/y) | | | | | | | -3,043 |
| Carbon sink potential - High - Restore productivity (1000 tCO ₂ e/y) | | | | | | | -325 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 4.47 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 97.6 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 226 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 1.92 |
| Land impacted for carbon sink potential - Low - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Low - Increase trees outside forests (1000 hectares) | | | | | | | 7.16 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 1.1 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 65.1 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 404 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 6.7 |
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 101 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 408 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 2.89 |
| Land impacted for carbon sink potential - Mid - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Increase trees outside forests (1000 hectares) | | | | | | | 10.4 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 7.98 |

Table 62: E-B+ scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 131 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 668 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 8.94 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 104 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 591 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 3.84 |
| Land impacted for carbon sink potential - High - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Increase trees outside forests (1000 hectares) | | | | | | | 13.6 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 6.37 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 108 |
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 835 |

Table 63: E-B+ scenario - PILLAR 6: Land sinks - Agriculture

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - Moderate deployment - Corn-ethanol to energy grasses (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -41.5 |
| Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -1.57 |
| Carbon sink potential - Moderate deployment - Cropland to woody energy crops (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Moderate deployment - Pasture to energy crops (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y) | | | | | | | -43.1 |
| Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -79 |

Table 63: E-B+ scenario - PILLAR 6: Land sinks - Agriculture (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|-------|
| Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -3.14 |
| Carbon sink potential - Aggressive deployment - Cropland to woody energy crops (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Aggressive deployment - Pasture to energy crops (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y) | | | | | | | -82.1 |
| Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares) | | | | | | | 28.7 |
| Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares) | | | | | | | 2.86 |
| Land impacted for carbon sink - Moderate deployment - Cropland to woody energy crops (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Moderate deployment - Pasture to energy crops (1000 hectares) | | | | | | | 0.313 |
| Land impacted for carbon sink - Moderate deployment - Total (1000 hectares) | | | | | | | 31.8 |
| Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares) | | | | | | | 134 |
| Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares) | | | | | | | 5.72 |
| Land impacted for carbon sink - Aggressive deployment - Cropland to woody energy crops (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink - Aggressive deployment - Pasture to energy crops (1000 hectares) | | | | | | | 0.313 |
| Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares) | | | | | | | 141 |

Table 64: REF scenario - IMPACTS - Health

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Coal (deaths) | | 112 | 73.4 | 68.8 | 67 | 65.8 | 58.8 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 16.8 | 13.7 | 17.9 | 19.5 | 20.6 | 19.5 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 114 | 116 | 118 | 120 | 122 | 125 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 5.71 | 5.8 | 5.86 | 5.96 | 6.04 | 6.1 |

Table 64: REF scenario - IMPACTS - Health (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 27.5 | 26.6 | 26.7 | 26.9 | 26.9 | 26.5 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 37.4 | 29.8 | 19.7 | 12.1 | 7.26 | 4.72 |
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 3.6 | 3.52 | 3.43 | 3.39 | 3.34 | 3.31 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.872 | 0.871 | 0.868 | 0.86 | 0.852 | 0.839 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 23.2 | 23.6 | 23.2 | 22.6 | 22.8 | 23.9 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 9.45 | 8.31 | 6.75 | 4.9 | 3.79 | 3.11 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 1.92 | 1.96 | 1.99 | 2.01 | 2.03 | 2.05 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.65 | 0.474 | 0.398 | 0.379 | 0.369 | 0.349 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 23.4 | 25.1 | 25.9 | 24.6 | 24.6 | 23.5 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 997 | 650 | 610 | 594 | 583 | 521 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 149 | 122 | 158 | 173 | 182 | 172 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 1,011 | 1,031 | 1,048 | 1,068 | 1,088 | 1,109 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 50.6 | 51.4 | 51.9 | 52.8 | 53.5 | 54 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 244 | 236 | 237 | 239 | 239 | 234 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 332 | 264 | 175 | 107 | 64.3 | 41.8 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 31.9 | 31.2 | 30.4 | 30 | 29.6 | 29.3 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 7.72 | 7.71 | 7.68 | 7.62 | 7.54 | 7.43 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 205 | 209 | 205 | 200 | 202 | 211 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 83.6 | 73.6 | 59.8 | 43.4 | 33.5 | 27.6 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 17 | 17.3 | 17.6 | 17.8 | 18 | 18.1 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 5.74 | 4.18 | 3.51 | 3.35 | 3.26 | 3.08 |

Table 64: REF scenario - IMPACTS - Health (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 207 | 223 | 230 | 218 | 218 | 209 |

Table 65: REF scenario - IMPACTS - Jobs

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|--------|
| By economic sector - Agriculture (jobs) | | 83.7 | 75 | 74.1 | 60.4 | 60.3 | 65.4 |
| By economic sector - Construction (jobs) | | 2,085 | 3,197 | 3,676 | 3,796 | 3,878 | 5,366 |
| By economic sector - Manufacturing (jobs) | | 1,034 | 1,168 | 1,780 | 1,193 | 1,206 | 1,911 |
| By economic sector - Mining (jobs) | | 1,058 | 858 | 699 | 568 | 483 | 409 |
| By economic sector - Other (jobs) | | 86.9 | 347 | 414 | 463 | 501 | 1,087 |
| By economic sector - Pipeline (jobs) | | 268 | 278 | 280 | 265 | 268 | 266 |
| By economic sector - Professional (jobs) | | 1,137 | 1,435 | 1,598 | 1,670 | 1,694 | 2,424 |
| By economic sector - Trade (jobs) | | 904 | 1,073 | 1,134 | 1,171 | 1,194 | 1,804 |
| By economic sector - Utilities (jobs) | | 3,616 | 3,552 | 4,291 | 4,542 | 4,613 | 4,605 |
| By resource sector - Biomass (jobs) | | 323 | 302 | 281 | 251 | 257 | 261 |
| By resource sector - CO2 (jobs) | | 0 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Coal (jobs) | | 54.1 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 3,569 | 3,570 | 5,085 | 5,280 | 5,495 | 5,844 |
| By resource sector - Natural Gas (jobs) | | 2,716 | 2,623 | 2,675 | 2,921 | 2,869 | 2,709 |
| By resource sector - Nuclear (jobs) | | 1,092 | 1,074 | 1,057 | 1,041 | 1,025 | 834 |
| By resource sector - Oil (jobs) | | 2,371 | 2,004 | 1,752 | 1,621 | 1,547 | 1,496 |
| By resource sector - Solar (jobs) | | | 2,207 | 2,365 | 2,483 | 2,570 | 6,185 |
| By resource sector - Wind (jobs) | | 148 | 201 | 731 | 132 | 136 | 607 |
| By education level - All sectors - High school diploma or less (jobs) | | 4,206 | 5,014 | 5,882 | 5,766 | 5,852 | 7,605 |
| By education level - All sectors - Associates degree or some college (jobs) | | 3,164 | 3,738 | 4,408 | 4,370 | 4,434 | 5,751 |
| By education level - All sectors - Bachelors degree (jobs) | | 2,274 | 2,524 | 2,866 | 2,805 | 2,819 | 3,569 |
| By education level - All sectors - Masters or professional degree (jobs) | | 554 | 617 | 695 | 692 | 696 | 884 |
| By education level - All sectors - Doctoral degree (jobs) | | 74.4 | 87.1 | 94.6 | 95.3 | 95.6 | 128 |
| Related work experience - All sectors - None (jobs) | | 1,479 | 1,733 | 2,025 | 2,005 | 2,035 | 2,631 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 1,939 | 2,342 | 2,741 | 2,673 | 2,711 | 3,596 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 3,767 | 4,347 | 5,041 | 4,971 | 5,029 | 6,452 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 2,434 | 2,816 | 3,270 | 3,233 | 3,268 | 4,172 |
| Related work experience - All sectors - Over 10 years (jobs) | | 652 | 745 | 870 | 846 | 854 | 1,085 |
| On-the-Job Training - All sectors - None (jobs) | | 558 | 659 | 752 | 738 | 746 | 987 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 6,785 | 7,842 | 9,125 | 8,918 | 9,023 | 11,668 |
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 2,162 | 2,544 | 2,980 | 2,964 | 3,004 | 3,838 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 674 | 822 | 955 | 980 | 996 | 1,271 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 93.1 | 115 | 134 | 128 | 129 | 173 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 1,641 | 1,932 | 2,237 | 2,192 | 2,215 | 2,904 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 6,169 | 7,136 | 8,306 | 8,132 | 8,230 | 10,622 |

Table 65: REF scenario - IMPACTS - Jobs (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|-------|
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 1,673 | 1,969 | 2,306 | 2,288 | 2,319 | 2,972 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 704 | 843 | 976 | 995 | 1,009 | 1,279 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 85.2 | 101 | 121 | 121 | 124 | 158 |
| Wage income - All (million \$2019) | | 675 | 782 | 916 | 921 | 944 | 1,205 |

Table 66: REF scenario - PILLAR 1: Efficiency/Electrification - Overview

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 228 | 214 | 197 | 187 | 187 | 193 | 200 |
| Final energy use - Residential (PJ) | 155 | 145 | 139 | 135 | 132 | 130 | 128 |
| Final energy use - Commercial (PJ) | 120 | 116 | 117 | 116 | 115 | 117 | 121 |
| Final energy use - Industry (PJ) | 64.9 | 65.9 | 67.9 | 70.3 | 74.3 | 78.9 | 82.7 |

Table 67: REF scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Electricity distribution capital invested - Cumulative 5-yr (billion \$2018) | | 1.02 | 1.02 | 2.7 | 2.9 | 2.76 | 2.92 |

Table 68: REF scenario - PILLAR 1: Efficiency/Electrification - Residential

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|------|
| Sales of space heating units - Electric Heat Pump (%) | 7.29 | 8.79 | 9.1 | 9.58 | 9.77 | 9.98 | 10.3 |
| Sales of space heating units - Electric Resistance (%) | 4.95 | 6.28 | 6.15 | 6.11 | 6.12 | 5.85 | 5.64 |
| Sales of space heating units - Gas (%) | 34.5 | 27.1 | 53.6 | 72 | 73 | 73.2 | 73.1 |
| Sales of space heating units - Fossil (%) | 53.3 | 57.9 | 31.1 | 12.3 | 11.1 | 11 | 11 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sales of water heating units - Electric Resistance (%) | 35.5 | 53.5 | 53.4 | 53.5 | 53.4 | 53.4 | 53.4 |
| Sales of water heating units - Gas Furnace (%) | 46.8 | 34.3 | 34.3 | 34.2 | 34.2 | 34.2 | 34.2 |
| Sales of water heating units - Other (%) | 17.6 | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 |
| Sales of cooking units - Electric Resistance (%) | 71.5 | 71.5 | 71.5 | 71.5 | 71.5 | 71.5 | 71.5 |
| Sales of cooking units - Gas (%) | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 3.06 | 3.2 | | | | |

Table 69: REF scenario - PILLAR 1: Efficiency/Electrification - Commercial

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|-------|-------|------|
| Sales of space heating units - Electric Heat Pump (%) | 4.76 | 13 | 41.2 | 64.2 | 67.9 | 68.3 | 68.4 |
| Sales of space heating units - Electric Resistance (%) | 2.29 | 2.72 | 7.48 | 19.8 | 29.9 | 31.6 | 31.6 |
| Sales of space heating units - Gas Furnace (%) | 50.7 | 49.5 | 26.9 | 6.44 | 0.813 | 0.044 | 0 |
| Sales of space heating units - Fossil (%) | 42.2 | 34.8 | 24.4 | 9.58 | 1.37 | 0.108 | 0 |
| Sales of water heating units - Electric Heat Pump (%) | 2.81 | 2.41 | 2.38 | 2.38 | 2.36 | 2.39 | 2.38 |
| Sales of water heating units - Electric Resistance (%) | 13.8 | 11.5 | 11.2 | 11.4 | 11.4 | 11.2 | 11.3 |
| Sales of water heating units - Gas Furnace (%) | 78.2 | 81.7 | 82.2 | 82 | 82 | 82.3 | 82.2 |

Table 69: REF scenario - PILLAR 1: Efficiency/Electrification - Commercial (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|------|------|------|------|
| Sales of water heating units - Other (%) | 5.24 | 4.38 | 4.24 | 4.21 | 4.3 | 4.08 | 4.12 |
| Sales of cooking units - Electric Resistance (%) | 36.9 | 39 | 38.6 | 38.5 | 38.3 | 38.5 | 38.4 |
| Sales of cooking units - Gas (%) | 63.1 | 61 | 61.4 | 61.5 | 61.7 | 61.5 | 61.6 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 6,993 | 7,196 | | | | |

Table 70: REF scenario - PILLAR 2: Clean Electricity - Generating capacity

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 400 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 4,965 | 4,265 | 4,265 | 4,388 | 4,709 | 5,612 | 5,616 |
| Installed thermal - Nuclear (MW) | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 1,253 |
| Installed renewables - Rooftop PV (MW) | 770 | 1,341 | 1,570 | 1,838 | 2,141 | 2,479 | 2,857 |
| Installed renewables - Solar - Base land use assumptions (MW) | 81.5 | 81.5 | 81.5 | 81.5 | 81.5 | 81.5 | 81.5 |
| Installed renewables - Wind - Base land use assumptions (MW) | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 46.3 |

Table 71: REF scenario - PILLAR 2: Clean Electricity - Generation

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Solar - Base land use assumptions (GWh) | 169 | 169 | 169 | 169 | 169 | 169 | 169 |
| Wind - Base land use assumptions (GWh) | 24 | 24 | 24 | 24 | 24 | 24 | 171 |
| OffshoreWind - Base land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 72: REF scenario - PILLAR 6: Land sinks - Forests - REF only

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|--------|------|--------|------|------|------|--------|
| Business-as-usual carbon sink - Natural uptake (Mt CO2e/y) | -10.2 | | -1.57 | | | | -1.41 |
| Business-as-usual carbon sink - Retained in Hardwood Products (Mt CO2e/y) | -0.098 | | -0.176 | | | | -0.183 |
| Business-as-usual carbon sink - Total (Mt CO2e/y) | -10.3 | | -1.75 | | | | -1.59 |

Table 73: REF scenario - PILLAR 6: Land sinks - Forests

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -27.4 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -128 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -445 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -5.3 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -50.1 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -17 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -109 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -902 |

Table 73: REF scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|--------|
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO ₂ e/y) | | | | | | | -41 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO ₂ e/y) | | | | | | | -448 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO ₂ e/y) | | | | | | | -801 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO ₂ e/y) | | | | | | | -777 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO ₂ e/y) | | | | | | | -240 |
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO ₂ e/y) | | | | | | | -96.7 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO ₂ e/y) | | | | | | | 0 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO ₂ e/y) | | | | | | | -121 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO ₂ e/y) | | | | | | | -217 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO ₂ e/y) | | | | | | | -1,973 |
| Carbon sink potential - High - Accelerate regeneration (1000 tCO ₂ e/y) | | | | | | | -54.6 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO ₂ e/y) | | | | | | | -768 |
| Carbon sink potential - High - Extend rotation length (1000 tCO ₂ e/y) | | | | | | | -1,158 |
| Carbon sink potential - High - Improve plantations (1000 tCO ₂ e/y) | | | | | | | -10.4 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO ₂ e/y) | | | | | | | -360 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO ₂ e/y) | | | | | | | -143 |
| Carbon sink potential - High - Reforest cropland (1000 tCO ₂ e/y) | | | | | | | 0 |
| Carbon sink potential - High - Reforest pasture (1000 tCO ₂ e/y) | | | | | | | -224 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO ₂ e/y) | | | | | | | -3,043 |
| Carbon sink potential - High - Restore productivity (1000 tCO ₂ e/y) | | | | | | | -325 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 4.47 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 97.6 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 226 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 1.92 |
| Land impacted for carbon sink potential - Low - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Low - Increase trees outside forests (1000 hectares) | | | | | | | 7.16 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0 |

Table 73: REF scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 1.1 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 65.1 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 404 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 6.7 |
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 101 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 408 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 2.89 |
| Land impacted for carbon sink potential - Mid - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Increase trees outside forests (1000 hectares) | | | | | | | 10.4 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 7.98 |
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 131 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 668 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 8.94 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 104 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 591 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 3.84 |
| Land impacted for carbon sink potential - High - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Increase trees outside forests (1000 hectares) | | | | | | | 13.6 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 6.37 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 108 |

Table 73: REF scenario - PILLAR 6: Land sinks - Forests (continued)

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|------|
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 835 |