



Net-Zero America - Delaware data

October 29, 2021 (updated January 9, 2022)

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:

E. Larson, C. Greig, J. Jenkins, E. Mayfield, A. Pascale, C. Zhang, J. Drossman, R. Williams, S. Pacala, R. Socolow, EJ Baik, R. Birdsey, R. Duke, R. Jones, B. Haley, E. Leslie, K. Paustian, and A. Swan, Net-Zero America: Potential Pathways, Infrastructure, and Impacts, Final Report, Princeton University, Princeton, NJ, 29 October 2021. Report available at <https://net-zeroamerica.princeton.edu>.

Contents

| | | |
|----|--|----|
| 1 | E+ scenario - IMPACTS - Health | 1 |
| 2 | E+ scenario - IMPACTS - Jobs | 2 |
| 3 | E+ scenario - IMPACTS - Fossil fuel industries | 3 |
| 4 | E+ scenario - PILLAR 1: Efficiency/Electrification - Overview | 3 |
| 5 | E+ scenario - PILLAR 1: Efficiency/Electrification - Electricity demand | 3 |
| 6 | E+ scenario - PILLAR 1: Efficiency/Electrification - Transportation | 3 |
| 7 | E+ scenario - PILLAR 1: Efficiency/Electrification - Residential | 4 |
| 8 | E+ scenario - PILLAR 1: Efficiency/Electrification - Commercial | 4 |
| 9 | E+ scenario - PILLAR 2: Clean Electricity - Generating capacity | 4 |
| 10 | E+ scenario - PILLAR 2: Clean Electricity - Generation | 5 |
| 11 | E+ scenario - PILLAR 3: Clean fuels - Bioenergy | 5 |
| 12 | E+ scenario - PILLAR 4: CCUS - CO2 capture | 5 |
| 13 | E+ scenario - PILLAR 4: CCUS - CO2 pipelines | 6 |
| 14 | E+ scenario - PILLAR 4: CCUS - CO2 storage | 6 |
| 15 | E+ scenario - PILLAR 6: Land sinks - Forests | 6 |
| 16 | E+ scenario - PILLAR 6: Land sinks - Agriculture | 9 |
| 17 | E- scenario - IMPACTS - Health | 9 |
| 18 | E- scenario - IMPACTS - Jobs | 11 |
| 19 | E- scenario - PILLAR 1: Efficiency/Electrification - Overview | 12 |
| 20 | E- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand | 12 |
| 21 | E- scenario - PILLAR 1: Efficiency/Electrification - Transportation | 12 |
| 22 | E- scenario - PILLAR 1: Efficiency/Electrification - Residential | 12 |
| 23 | E- scenario - PILLAR 1: Efficiency/Electrification - Commercial | 13 |
| 24 | E- scenario - PILLAR 2: Clean Electricity - Generating capacity | 13 |
| 25 | E- scenario - PILLAR 6: Land sinks - Forests | 13 |
| 26 | E- scenario - PILLAR 6: Land sinks - Agriculture | 15 |
| 27 | E+RE+ scenario - IMPACTS - Health | 16 |
| 28 | E+RE+ scenario - IMPACTS - Jobs | 18 |
| 29 | E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Overview | 19 |
| 30 | E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Electricity demand | 19 |
| 31 | E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Transportation | 19 |
| 32 | E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Residential | 19 |
| 33 | E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Commercial | 19 |
| 34 | E+RE+ scenario - PILLAR 2: Clean Electricity - Generating capacity | 20 |
| 35 | E+RE+ scenario - PILLAR 2: Clean Electricity - Generation | 20 |
| 36 | E+RE+ scenario - PILLAR 6: Land sinks - Forests | 20 |
| 37 | E+RE+ scenario - PILLAR 6: Land sinks - Agriculture | 23 |
| 38 | E+RE- scenario - IMPACTS - Health | 24 |
| 39 | E+RE- scenario - IMPACTS - Jobs | 25 |
| 40 | E+RE- scenario - PILLAR 1: Efficiency/Electrification - Overview | 26 |
| 41 | E+RE- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand | 26 |
| 42 | E+RE- scenario - PILLAR 1: Efficiency/Electrification - Transportation | 26 |
| 43 | E+RE- scenario - PILLAR 1: Efficiency/Electrification - Residential | 26 |

| | | |
|----|---|----|
| 44 | E+RE- scenario - PILLAR 1: Efficiency/Electrification - Commercial | 27 |
| 45 | E+RE- scenario - PILLAR 2: Clean Electricity - Generating capacity | 27 |
| 46 | E+RE- scenario - PILLAR 2: Clean Electricity - Generation | 28 |
| 47 | E+RE- scenario - PILLAR 6: Land sinks - Forests | 28 |
| 48 | E+RE- scenario - PILLAR 6: Land sinks - Agriculture | 30 |
| 49 | E-B+ scenario - IMPACTS - Health | 31 |
| 50 | E-B+ scenario - IMPACTS - Jobs | 32 |
| 51 | E-B+ scenario - PILLAR 1: Efficiency/Electrification - Overview | 33 |
| 52 | E-B+ scenario - PILLAR 1: Efficiency/Electrification - Electricity demand | 34 |
| 53 | E-B+ scenario - PILLAR 1: Efficiency/Electrification - Transportation | 34 |
| 54 | E-B+ scenario - PILLAR 1: Efficiency/Electrification - Residential | 34 |
| 55 | E-B+ scenario - PILLAR 1: Efficiency/Electrification - Commercial | 34 |
| 56 | E-B+ scenario - PILLAR 2: Clean Electricity - Generating capacity | 35 |
| 57 | E-B+ scenario - PILLAR 2: Clean Electricity - Generation | 35 |
| 58 | E-B+ scenario - PILLAR 3: Clean fuels - Bioenergy | 35 |
| 59 | E-B+ scenario - PILLAR 4: CCUS - CO2 capture | 35 |
| 60 | E-B+ scenario - PILLAR 4: CCUS - CO2 pipelines | 35 |
| 61 | E-B+ scenario - PILLAR 4: CCUS - CO2 storage | 36 |
| 62 | E-B+ scenario - PILLAR 6: Land sinks - Forests | 36 |
| 63 | E-B+ scenario - PILLAR 6: Land sinks - Agriculture | 38 |
| 64 | REF scenario - IMPACTS - Health | 40 |
| 65 | REF scenario - IMPACTS - Jobs | 41 |
| 66 | REF scenario - PILLAR 1: Efficiency/Electrification - Overview | 42 |
| 67 | REF scenario - PILLAR 1: Efficiency/Electrification - Electricity demand | 42 |
| 68 | REF scenario - PILLAR 1: Efficiency/Electrification - Residential | 42 |
| 69 | REF scenario - PILLAR 1: Efficiency/Electrification - Commercial | 42 |
| 70 | REF scenario - PILLAR 2: Clean Electricity - Generating capacity | 43 |
| 71 | REF scenario - PILLAR 2: Clean Electricity - Generation | 43 |
| 72 | REF scenario - PILLAR 6: Land sinks - Forests - REF only | 43 |
| 73 | REF scenario - PILLAR 6: Land sinks - Forests | 43 |

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) | | 14.6 | 0.01 | 0.01 | 0.009 | 0.006 | 0.001 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 5.93 | 4.36 | 2.9 | 2.63 | 1.77 | 0.736 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 26.1 | 24.5 | 18.7 | 10.8 | 4.91 | 1.87 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 1.65 | 1.51 | 1.14 | 0.665 | 0.312 | 0.134 |
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 4.31 | 3.59 | 2.44 | 1.36 | 0.65 | 0.262 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 2.71 | 2.2 | 1.49 | 0.85 | 0.366 | 0.109 |
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 0.821 | 0.736 | 0.567 | 0.383 | 0.22 | 0.121 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.322 | 0.31 | 0.297 | 0.283 | 0.269 | 0.253 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 4.34 | 3.82 | 2.84 | 1.81 | 1.09 | 0.634 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 1.33 | 1.07 | 0.766 | 0.495 | 0.328 | 0.223 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 0.304 | 0.258 | 0.212 | 0.167 | 0.123 | 0.082 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.179 | 0.101 | 0.101 | 0.1 | 0.102 | 0.102 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 8.88 | 8.14 | 7.1 | 5.54 | 3.93 | 2.35 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 129 | 0.09 | 0.089 | 0.082 | 0.057 | 0.005 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 52.5 | 38.6 | 25.7 | 23.3 | 15.7 | 6.52 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 232 | 218 | 166 | 96.2 | 43.7 | 16.6 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 14.6 | 13.4 | 10.1 | 5.89 | 2.76 | 1.18 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 38.2 | 31.8 | 21.6 | 12.1 | 5.76 | 2.33 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 24 | 19.5 | 13.2 | 7.53 | 3.24 | 0.967 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 7.27 | 6.52 | 5.03 | 3.39 | 1.95 | 1.07 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 2.85 | 2.74 | 2.63 | 2.5 | 2.38 | 2.24 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 38.4 | 33.9 | 25.1 | 16 | 9.67 | 5.61 |

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) | | 11.8 | 9.47 | 6.78 | 4.38 | 2.9 | 1.97 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 2.69 | 2.28 | 1.88 | 1.48 | 1.09 | 0.722 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 1.58 | 0.89 | 0.891 | 0.886 | 0.904 | 0.902 |
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 78.9 | 72.3 | 63 | 49.2 | 34.9 | 20.9 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|--------|
| By economic sector - Agriculture (jobs) | | 3.8 | 7.71 | 2.95 | 2.29 | 1.68 | 1.25 |
| By economic sector - Construction (jobs) | | 1,157 | 1,093 | 1,405 | 1,414 | 2,997 | 4,672 |
| By economic sector - Manufacturing (jobs) | | 880 | 1,577 | 1,618 | 1,384 | 1,975 | 2,205 |
| By economic sector - Mining (jobs) | | 287 | 197 | 119 | 64.2 | 27.8 | 8.9 |
| By economic sector - Other (jobs) | | 116 | 123 | 180 | 173 | 288 | 464 |
| By economic sector - Pipeline (jobs) | | 81.8 | 67.9 | 52 | 36.7 | 21.4 | 39.3 |
| By economic sector - Professional (jobs) | | 475 | 427 | 554 | 576 | 1,150 | 1,701 |
| By economic sector - Trade (jobs) | | 359 | 317 | 374 | 366 | 684 | 1,042 |
| By economic sector - Utilities (jobs) | | 1,295 | 1,149 | 1,543 | 1,835 | 4,358 | 6,673 |
| By resource sector - Biomass (jobs) | | 16.3 | 21.3 | 8.39 | 6.88 | 6.13 | 5.33 |
| By resource sector - CO2 (jobs) | | 0 | 0 | 0 | 0 | 0 | 224 |
| By resource sector - Coal (jobs) | | 60.3 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 1,533 | 1,562 | 2,384 | 2,802 | 8,501 | 13,175 |
| By resource sector - Natural Gas (jobs) | | 1,224 | 934 | 898 | 1,048 | 701 | 713 |
| By resource sector - Nuclear (jobs) | | 0 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Oil (jobs) | | 583 | 435 | 275 | 147 | 58.8 | 0 |
| By resource sector - Solar (jobs) | | 1,228 | 1,906 | 2,203 | 1,624 | 1,610 | 2,187 |
| By resource sector - Wind (jobs) | | 9.84 | 100 | 81.4 | 224 | 626 | 504 |
| By education level - All sectors - High school diploma or less (jobs) | | 1,968 | 2,134 | 2,517 | 2,502 | 4,955 | 7,261 |
| By education level - All sectors - Associates degree or some college (jobs) | | 1,501 | 1,598 | 1,905 | 1,925 | 3,794 | 5,558 |
| By education level - All sectors - Bachelors degree (jobs) | | 938 | 982 | 1,136 | 1,129 | 2,174 | 3,140 |
| By education level - All sectors - Masters or professional degree (jobs) | | 220 | 219 | 260 | 263 | 521 | 763 |
| By education level - All sectors - Doctoral degree (jobs) | | 28 | 26.3 | 31.4 | 31.3 | 59.3 | 86.6 |
| Related work experience - All sectors - None (jobs) | | 679 | 716 | 850 | 856 | 1,694 | 2,488 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 911 | 1,004 | 1,182 | 1,164 | 2,276 | 3,316 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 1,676 | 1,769 | 2,086 | 2,092 | 4,123 | 6,030 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 1,096 | 1,149 | 1,359 | 1,368 | 2,692 | 3,937 |
| Related work experience - All sectors - Over 10 years (jobs) | | 293 | 320 | 373 | 370 | 719 | 1,038 |
| On-the-Job Training - All sectors - None (jobs) | | 244 | 258 | 303 | 298 | 575 | 839 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 3,045 | 3,298 | 3,858 | 3,831 | 7,478 | 10,858 |

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) | | 1,003 | 1,047 | 1,252 | 1,271 | 2,532 | 3,731 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 316 | 303 | 377 | 394 | 815 | 1,233 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 45.8 | 52.2 | 59.8 | 57.3 | 104 | 148 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 745 | 801 | 940 | 931 | 1,790 | 2,597 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 2,770 | 2,987 | 3,503 | 3,486 | 6,833 | 9,943 |
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 776 | 816 | 972 | 983 | 1,958 | 2,881 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 322 | 311 | 382 | 397 | 815 | 1,227 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 41.5 | 42.9 | 52.1 | 53.7 | 109 | 161 |
| Wage income - All (million \$2019) | | 273 | 287 | 342 | 350 | 705 | 1,048 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Oil consumption - Annual (million bbls) | | 13.1 | 10.7 | 7.3 | 4.21 | 1.8 | 0 |
| Oil consumption - Cumulative (million bbls) | | | | | | | 229 |
| Oil production - Annual (million bbls) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Natural gas consumption - Annual (tcf) | | 73.9 | 62.3 | 50 | 37.6 | 23.7 | 16.4 |
| Natural gas consumption - Cumulative (tcf) | | | | | | | 1,505 |
| 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) | 81.4 | 75.7 | 67 | 56.1 | 46.1 | 40 | 37.3 |
| Final energy use - Residential (PJ) | 41.7 | 39.3 | 35.9 | 31.4 | 27.7 | 25.3 | 24.4 |
| Final energy use - Commercial (PJ) | 29.9 | 29.8 | 28.5 | 26.5 | 24.9 | 24.3 | 24.6 |
| Final energy use - Industry (PJ) | 16 | 16.3 | 16.6 | 16.9 | 17.1 | 17.5 | 18 |

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) | | 0.526 | 0.536 | 0.919 | 0.973 | 0.907 | 0.947 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|------|-------|------|-------|-------|-------|
| Vehicle stocks - LDV – EV (1000 units) | 5.71 | 88 | 170 | 459 | 747 | 977 | 1,207 |
| Vehicle stocks - LDV – All others (1000 units) | 1,007 | 959 | 910 | 663 | 417 | 236 | 54.8 |
| Light-duty vehicle capital costs vs. REF - Cumulative 5-yr (million \$2018) | | 193 | 496 | 803 | 1,217 | 1,325 | 1,263 |
| Public EV charging plugs - DC Fast (1000 units) | 0.065 | | 0.324 | | 1.42 | | 2.3 |
| Public EV charging plugs - L2 (1000 units) | 0.118 | | 7.8 | | 34.2 | | 55.3 |

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 (%) | 14.3 | 32.1 | 79.9 | 90.6 | 91 | 91 | 91 |
| Sales of space heating units - Electric Resistance (%) | 9.9 | 10.8 | 4.53 | 3.11 | 3.02 | 3.06 | 3.07 |
| Sales of space heating units - Gas (%) | 55.3 | 30.9 | 8.61 | 3.64 | 3.44 | 3.45 | 3.44 |
| Sales of space heating units - Fossil (%) | 20.5 | 26.2 | 6.99 | 2.7 | 2.51 | 2.5 | 2.49 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 9.43 | 49.9 | 59 | 59.4 | 59.4 | 59.4 |
| Sales of water heating units - Electric Resistance (%) | 30.2 | 45.9 | 40.3 | 39 | 38.9 | 38.9 | 38.9 |
| Sales of water heating units - Gas Furnace (%) | 65.2 | 41.3 | 7.81 | 0.329 | 0 | 0 | 0 |
| Sales of water heating units - Other (%) | 4.6 | 3.33 | 1.97 | 1.68 | 1.67 | 1.69 | 1.7 |
| Sales of cooking units - Electric Resistance (%) | 50.1 | 60.7 | 93.3 | 99.7 | 100 | 100 | 100 |
| Sales of cooking units - Gas (%) | 49.9 | 39.3 | 6.72 | 0.338 | 0 | 0 | 0 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 0.774 | 0.771 | | | | |

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 (%) | 1.53 | 28.2 | 70.6 | 83.7 | 85 | 85.1 | 85.1 |
| Sales of space heating units - Electric Resistance (%) | 1.94 | 8.4 | 10.6 | 12.7 | 13.1 | 13.1 | 13.1 |
| Sales of space heating units - Gas Furnace (%) | 84.3 | 59.2 | 18.1 | 3.53 | 1.88 | 1.85 | 1.84 |
| Sales of space heating units - Fossil (%) | 12.2 | 4.23 | 0.808 | 0.035 | 0 | 0 | 0 |
| Sales of water heating units - Electric Heat Pump (%) | 0.078 | 10.5 | 54.6 | 64.4 | 64.9 | 64.9 | 64.9 |
| Sales of water heating units - Electric Resistance (%) | 1.96 | 10.8 | 28.3 | 32.2 | 32.4 | 32.4 | 32.4 |
| Sales of water heating units - Gas Furnace (%) | 93.3 | 74.5 | 14.1 | 0.593 | 0 | 0 | 0 |
| Sales of water heating units - Other (%) | 4.67 | 4.25 | 3.03 | 2.72 | 2.72 | 2.72 | 2.71 |
| Sales of cooking units - Electric Resistance (%) | 32 | 46 | 79.9 | 86.5 | 86.9 | 86.9 | 86.9 |
| Sales of cooking units - Gas (%) | 68 | 54 | 20.1 | 13.5 | 13.1 | 13.1 | 13.1 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 3,472 | 3,883 | | | | |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 446 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 1,625 | 2,963 | 2,679 | 2,967 | 4,449 | 4,449 | 4,007 |
| Installed thermal - Nuclear (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed renewables - Rooftop PV (MW) | 110 | 165 | 219 | 290 | 375 | 472 | 584 |
| Installed renewables - Solar - Base land use assumptions (MW) | 39.5 | 164 | 309 | 597 | 597 | 597 | 597 |
| Installed renewables - Wind - Base land use assumptions (MW) | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Installed renewables - Offshore Wind - Base land use assumptions (MW) | 0 | 0 | 0 | 0 | 0 | 4,059 | 8,319 |
| Installed renewables - Solar - Constrained land use assumptions (MW) | 38 | 38 | 134 | 317 | 317 | 317 | 317 |
| Installed renewables - Wind - Constrained land use assumptions (MW) | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|------|-------|-------|
| Installed renewables - Offshore Wind - Constrained land use assumptions (MW) | 0 | 0 | 0 | 0 | 0 | 2,240 | 8,324 |
| Capital invested - Solar PV - Base (billion \$2018) | | 0.167 | 0.173 | 0.318 | 0 | 0 | 0 |
| Capital invested - Offshore Wind - Base (billion \$2018) | | 0 | 0 | 0 | 0 | 5.99 | 5.64 |
| Capital invested - Solar PV - Constrained (billion \$2018) | | 0.144 | 0.276 | 0.328 | 0 | 0 | 0 |
| Capital invested - Offshore Wind - Constrained (billion \$2018) | | 0 | 0 | 0 | 0 | 3.3 | 8.06 |
| 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) | 75.2 | 309 | 579 | 1,122 | 1,122 | 1,122 | 1,122 |
| Wind - Base land use assumptions (GWh) | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 |
| OffshoreWind - Base land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 17,643 | 37,615 |
| Solar - Constrained land use assumptions (GWh) | 0 | 0 | 180 | 522 | 522 | 522 | 522 |
| Wind - Constrained land use assumptions (GWh) | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 |
| OffshoreWind - Constrained land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 17,643 | 37,615 |
| 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 | 0 |
| 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 | 0 |
| Biomass purchases (million \$2018/y) | | 0 | 0 | 0 | 0 | 0 | 0 |

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 |
| Annual - 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 |
|------------------------------------|------|------|------|------|------|------|------|
| Annual - NGCC (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Annual - Cement and lime (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - All (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - BECCS (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - NGCC (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| 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 | 0 | 0 | 0 | 0 | 0 |
| Spur (km) | | 0 | 0 | 0 | 0 | 0 | 166 |
| All (km) | | 0 | 0 | 0 | 0 | 0 | 166 |
| Cumulative investment - Trunk (million \$2018) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative investment - Spur (million \$2018) | | 0 | 0 | 0 | 0 | 0 | 122 |
| Cumulative investment - All (million \$2018) | | 0 | 0 | 0 | 0 | 0 | 122 |

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) | | | | | | | -3.48 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -34.3 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -77.3 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -13.9 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -69.4 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -29.2 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | -2.7 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -6.51 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -25.8 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -263 |
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -5.21 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) | | | | | | | -139 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - Mid - Improve plantations (1000 tCO ₂ e/y) | | | | | | | -20.4 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO ₂ e/y) | | | | | | | -139 |
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO ₂ e/y) | | | | | | | -56.4 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO ₂ e/y) | | | | | | | -4.05 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO ₂ e/y) | | | | | | | -46.2 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO ₂ e/y) | | | | | | | -51.2 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO ₂ e/y) | | | | | | | -581 |
| Carbon sink potential - High - Accelerate regeneration (1000 tCO ₂ e/y) | | | | | | | -6.94 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO ₂ e/y) | | | | | | | -206 |
| Carbon sink potential - High - Extend rotation length (1000 tCO ₂ e/y) | | | | | | | -201 |
| Carbon sink potential - High - Improve plantations (1000 tCO ₂ e/y) | | | | | | | -27.3 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO ₂ e/y) | | | | | | | -208 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO ₂ e/y) | | | | | | | -83.5 |
| Carbon sink potential - High - Reforest cropland (1000 tCO ₂ e/y) | | | | | | | -5.4 |
| Carbon sink potential - High - Reforest pasture (1000 tCO ₂ e/y) | | | | | | | -85.9 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO ₂ e/y) | | | | | | | -901 |
| Carbon sink potential - High - Restore productivity (1000 tCO ₂ e/y) | | | | | | | -76.6 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 0.567 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 26.1 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 39.3 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 5.03 |
| 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) | | | | | | | 4.17 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0.179 |
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 0.423 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 15.4 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|-------|
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 91.2 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 0.851 |
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 71 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 7.57 |
| 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) | | | | | | | 6.05 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0.268 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 3.06 |
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 30.9 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 147 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 1.13 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27.8 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 103 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 10.1 |
| 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) | | | | | | | 7.93 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0.357 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 2.44 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 25.4 |
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 178 |

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 |
| Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -126 |
| Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -3.22 |
| Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y) | | | | | | | -129 |
| Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -244 |
| Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -6.43 |
| Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y) | | | | | | | -250 |
| 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) | | | | | | | 88.6 |
| Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares) | | | | | | | 5.85 |
| Land impacted for carbon sink - Moderate deployment - Total (1000 hectares) | | | | | | | 94.5 |
| 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) | | | | | | | 171 |
| Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares) | | | | | | | 11.7 |
| Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares) | | | | | | | 183 |

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) | | 14.6 | 0.01 | 0.01 | 0.009 | 0.006 | 0.001 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 5.37 | 3.48 | 1.51 | 0.651 | 0.213 | 0.146 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 26.6 | 27 | 26.4 | 23.8 | 19 | 13.1 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 1.68 | 1.7 | 1.65 | 1.48 | 1.17 | 0.806 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 4.34 | 4 | 3.57 | 2.95 | 2.2 | 1.45 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 2.75 | 2.65 | 2.53 | 2.21 | 1.64 | 1.03 |
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 0.832 | 0.84 | 0.836 | 0.767 | 0.616 | 0.445 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.322 | 0.31 | 0.297 | 0.283 | 0.269 | 0.253 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 4.37 | 4.32 | 4.16 | 3.72 | 3.04 | 2.28 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 1.34 | 1.18 | 1.02 | 0.838 | 0.684 | 0.548 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 0.304 | 0.277 | 0.249 | 0.221 | 0.193 | 0.166 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.174 | 0.101 | 0.102 | 0.102 | 0.103 | 0.1 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 8.85 | 7.69 | 6.2 | 5.07 | 4.27 | 3.1 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 129 | 0.09 | 0.089 | 0.082 | 0.057 | 0.005 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 47.6 | 30.8 | 13.4 | 5.77 | 1.89 | 1.29 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 237 | 240 | 234 | 212 | 169 | 116 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 14.9 | 15.1 | 14.6 | 13.1 | 10.4 | 7.13 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 38.5 | 35.5 | 31.6 | 26.1 | 19.5 | 12.9 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 24.4 | 23.4 | 22.4 | 19.6 | 14.6 | 9.13 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 7.37 | 7.44 | 7.41 | 6.8 | 5.46 | 3.94 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 2.85 | 2.74 | 2.63 | 2.5 | 2.38 | 2.24 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 38.7 | 38.2 | 36.8 | 32.9 | 26.9 | 20.2 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 11.9 | 10.4 | 9.01 | 7.42 | 6.06 | 4.85 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 2.69 | 2.45 | 2.2 | 1.96 | 1.71 | 1.47 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 1.53 | 0.892 | 0.898 | 0.896 | 0.905 | 0.88 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 78.6 | 68.3 | 55 | 45 | 37.9 | 27.6 |

Table 18: E- scenario - IMPACTS - Jobs

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|--------|
| By economic sector - Agriculture (jobs) | | 4.63 | 5.93 | 2.26 | 1.46 | 1.32 | 1.27 |
| By economic sector - Construction (jobs) | | 1,100 | 995 | 1,095 | 888 | 3,182 | 5,552 |
| By economic sector - Manufacturing (jobs) | | 904 | 1,628 | 1,287 | 1,135 | 2,409 | 2,642 |
| By economic sector - Mining (jobs) | | 314 | 205 | 144 | 97.6 | 61.7 | 28.2 |
| By economic sector - Other (jobs) | | 113 | 117 | 152 | 133 | 296 | 513 |
| By economic sector - Pipeline (jobs) | | 82.1 | 66 | 52.4 | 42.8 | 33.8 | 68.4 |
| By economic sector - Professional (jobs) | | 455 | 396 | 426 | 351 | 1,204 | 1,975 |
| By economic sector - Trade (jobs) | | 373 | 307 | 322 | 267 | 735 | 1,211 |
| By economic sector - Utilities (jobs) | | 1,166 | 968 | 1,005 | 819 | 4,502 | 7,927 |
| By resource sector - Biomass (jobs) | | 17.6 | 15.9 | 7.51 | 6.12 | 5.61 | 5.22 |
| By resource sector - CO2 (jobs) | | 0 | 0 | 0 | 0 | 0 | 384 |
| By resource sector - Coal (jobs) | | 177 | 59.1 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 1,378 | 1,204 | 1,497 | 1,191 | 9,161 | 15,941 |
| By resource sector - Natural Gas (jobs) | | 1,061 | 837 | 657 | 557 | 395 | 494 |
| By resource sector - Nuclear (jobs) | | 0 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Oil (jobs) | | 591 | 479 | 389 | 292 | 200 | 83 |
| By resource sector - Solar (jobs) | | 1,277 | 1,987 | 1,863 | 1,470 | 1,745 | 2,219 |
| By resource sector - Wind (jobs) | | 10.3 | 105 | 72.9 | 218 | 918 | 792 |
| By education level - All sectors - High school diploma or less (jobs) | | 1,917 | 2,017 | 1,936 | 1,612 | 5,373 | 8,624 |
| By education level - All sectors - Associates degree or some college (jobs) | | 1,446 | 1,503 | 1,445 | 1,206 | 4,077 | 6,578 |
| By education level - All sectors - Bachelors degree (jobs) | | 911 | 935 | 880 | 731 | 2,353 | 3,715 |
| By education level - All sectors - Masters or professional degree (jobs) | | 211 | 206 | 199 | 165 | 559 | 901 |
| By education level - All sectors - Doctoral degree (jobs) | | 27.1 | 24.9 | 24.8 | 20.4 | 63.1 | 101 |
| Related work experience - All sectors - None (jobs) | | 655 | 674 | 649 | 541 | 1,823 | 2,947 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 891 | 954 | 913 | 762 | 2,475 | 3,932 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 1,626 | 1,670 | 1,600 | 1,330 | 4,450 | 7,145 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 1,057 | 1,083 | 1,037 | 862 | 2,896 | 4,663 |
| Related work experience - All sectors - Over 10 years (jobs) | | 284 | 305 | 286 | 239 | 781 | 1,231 |
| On-the-Job Training - All sectors - None (jobs) | | 238 | 246 | 236 | 196 | 623 | 992 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 2,966 | 3,133 | 2,972 | 2,478 | 8,113 | 12,873 |
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 963 | 981 | 949 | 788 | 2,716 | 4,420 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 300 | 277 | 282 | 232 | 860 | 1,459 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 44.6 | 50.4 | 46.9 | 39.3 | 114 | 175 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 723 | 762 | 725 | 604 | 1,936 | 3,071 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 2,696 | 2,833 | 2,695 | 2,246 | 7,407 | 11,791 |

Table 18: E- 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) | | 747 | 766 | 739 | 615 | 2,104 | 3,414 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 306 | 286 | 288 | 237 | 862 | 1,452 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 39.5 | 39.9 | 39 | 32.4 | 116 | 191 |
| Wage income - All (million \$2019) | | 263 | 270 | 262 | 220 | 759 | 1,242 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 81.5 | 76.4 | 70.2 | 64.9 | 60.8 | 55.9 | 50.1 |
| Final energy use - Residential (PJ) | 41.7 | 39.5 | 38.4 | 37 | 34.6 | 31.5 | 28.6 |
| Final energy use - Commercial (PJ) | 29.9 | 29.9 | 29.5 | 28.9 | 28 | 27 | 26.5 |
| Final energy use - Industry (PJ) | 16 | 16.3 | 16.7 | 17.1 | 17.5 | 17.9 | 18.4 |

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) | | 0.457 | 0.458 | 0.597 | 0.614 | 0.89 | 0.939 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|------|-------|------|-------|
| Vehicle stocks - LDV – EV (1000 units) | 4.42 | 28.6 | 52.8 | 165 | 277 | 525 | 773 |
| Vehicle stocks - LDV – All others (1000 units) | 1,011 | 1,011 | 1,011 | 959 | 907 | 699 | 491 |
| Light-duty vehicle capital costs vs. REF - Cumulative 5-yr (million \$2018) | | 0 | 31.3 | 65.7 | 222 | 699 | 1,018 |
| Public EV charging plugs - DC Fast (1000 units) | 0.065 | | 0.1 | | 0.527 | | 1.47 |
| Public EV charging plugs - L2 (1000 units) | 0.118 | | 2.42 | | 12.7 | | 35.4 |

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 (%) | 14.3 | 22.9 | 28.3 | 44 | 68 | 83.7 | 89.1 |
| Sales of space heating units - Electric Resistance (%) | 9.9 | 12 | 11.2 | 9.09 | 5.93 | 3.95 | 3.26 |
| Sales of space heating units - Gas (%) | 55.3 | 35.2 | 32.6 | 25.4 | 14.2 | 6.89 | 4.33 |
| Sales of space heating units - Fossil (%) | 20.5 | 29.9 | 27.8 | 21.5 | 11.8 | 5.49 | 3.29 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 1.62 | 6.23 | 19.5 | 39.9 | 53.2 | 57.8 |
| Sales of water heating units - Electric Resistance (%) | 30.2 | 47 | 46.3 | 44.4 | 41.6 | 39.8 | 39.1 |
| Sales of water heating units - Gas Furnace (%) | 65.2 | 47.8 | 44 | 33.1 | 16.2 | 5.18 | 1.35 |
| Sales of water heating units - Other (%) | 4.6 | 3.59 | 3.44 | 3 | 2.33 | 1.9 | 1.75 |
| Sales of cooking units - Electric Resistance (%) | 49.9 | 51.2 | 55.8 | 67.9 | 84.7 | 95.1 | 98.7 |
| Sales of cooking units - Gas (%) | 50.1 | 48.8 | 44.2 | 32.1 | 15.3 | 4.94 | 1.33 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 0.769 | 0.798 | | | | |

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 (%) | 1.53 | 20.1 | 24.9 | 38.9 | 61.1 | 76.8 | 82.8 |
| Sales of space heating units - Electric Resistance (%) | 1.94 | 8.06 | 8.33 | 9.15 | 10.6 | 12 | 12.8 |
| Sales of space heating units - Gas Furnace (%) | 84.3 | 66.9 | 62.2 | 48.4 | 26.6 | 10.7 | 4.3 |
| Sales of space heating units - Fossil (%) | 12.2 | 4.9 | 4.55 | 3.47 | 1.71 | 0.536 | 0.14 |
| Sales of water heating units - Electric Heat Pump (%) | 0.078 | 2.03 | 7.05 | 21.5 | 43.6 | 58.1 | 63.1 |
| Sales of water heating units - Electric Resistance (%) | 1.96 | 7.38 | 9.33 | 15.1 | 24 | 29.7 | 31.7 |
| Sales of water heating units - Gas Furnace (%) | 93.3 | 86.1 | 79.2 | 59.5 | 29.1 | 9.29 | 2.42 |
| Sales of water heating units - Other (%) | 4.67 | 4.49 | 4.43 | 3.93 | 3.32 | 2.91 | 2.76 |
| Sales of cooking units - Electric Resistance (%) | 32 | 36.2 | 40.9 | 53.4 | 71 | 81.7 | 85.5 |
| Sales of cooking units - Gas (%) | 68 | 63.8 | 59.1 | 46.6 | 29 | 18.3 | 14.5 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 3,468 | 3,852 | | | | |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 446 | 446 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 1,629 | 2,286 | 1,958 | 1,670 | 1,330 | 1,330 | 2,061 |
| Installed thermal - Nuclear (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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) | | | | | | | -3.48 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -34.3 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -77.3 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -13.9 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -69.4 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -29.2 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | -2.7 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -6.51 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -25.8 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -263 |
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -5.21 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) | | | | | | | -139 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) | | | | | | | -20.4 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -139 |

Table 25: 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 tCO ₂ e/y) | | | | | | | -56.4 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO ₂ e/y) | | | | | | | -4.05 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO ₂ e/y) | | | | | | | -46.2 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO ₂ e/y) | | | | | | | -51.2 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO ₂ e/y) | | | | | | | -581 |
| Carbon sink potential - High - Accelerate regeneration (1000 tCO ₂ e/y) | | | | | | | -6.94 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO ₂ e/y) | | | | | | | -206 |
| Carbon sink potential - High - Extend rotation length (1000 tCO ₂ e/y) | | | | | | | -201 |
| Carbon sink potential - High - Improve plantations (1000 tCO ₂ e/y) | | | | | | | -27.3 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO ₂ e/y) | | | | | | | -208 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO ₂ e/y) | | | | | | | -83.5 |
| Carbon sink potential - High - Reforest cropland (1000 tCO ₂ e/y) | | | | | | | -5.4 |
| Carbon sink potential - High - Reforest pasture (1000 tCO ₂ e/y) | | | | | | | -85.9 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO ₂ e/y) | | | | | | | -901 |
| Carbon sink potential - High - Restore productivity (1000 tCO ₂ e/y) | | | | | | | -76.6 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 0.567 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 26.1 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 39.3 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 5.03 |
| 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) | | | | | | | 4.17 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0.179 |
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 0.423 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 15.4 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 91.2 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 0.851 |

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 - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 71 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 7.57 |
| 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) | | | | | | | 6.05 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0.268 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 3.06 |
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 30.9 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 147 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 1.13 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27.8 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 103 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 10.1 |
| 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) | | | | | | | 7.93 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0.357 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 2.44 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 25.4 |
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 178 |

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 |

Table 26: 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) | | | | | | | -126 |
| Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -3.22 |
| Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y) | | | | | | | -129 |
| Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -244 |
| Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -6.43 |
| Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y) | | | | | | | -250 |
| 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) | | | | | | | 88.6 |
| Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares) | | | | | | | 5.85 |
| Land impacted for carbon sink - Moderate deployment - Total (1000 hectares) | | | | | | | 94.5 |
| 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) | | | | | | | 171 |
| Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares) | | | | | | | 11.7 |
| Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares) | | | | | | | 183 |

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) | | 14.6 | 0.01 | 0.01 | 0.009 | 0.006 | 0.001 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 4.93 | 3.65 | 2.23 | 1.52 | 0.539 | 0.107 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 26.1 | 24.5 | 18.7 | 10.8 | 4.91 | 1.87 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 1.65 | 1.51 | 1.14 | 0.665 | 0.312 | 0.134 |
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 4.31 | 3.59 | 2.44 | 1.36 | 0.65 | 0.262 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 2.71 | 2.2 | 1.49 | 0.85 | 0.366 | 0.109 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 0.821 | 0.736 | 0.567 | 0.383 | 0.22 | 0.121 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.322 | 0.31 | 0.297 | 0.283 | 0.269 | 0.253 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 4.34 | 3.82 | 2.84 | 1.81 | 1.09 | 0.634 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 1.33 | 1.07 | 0.766 | 0.495 | 0.328 | 0.223 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 0.304 | 0.258 | 0.212 | 0.167 | 0.123 | 0.082 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.191 | 0.101 | 0.101 | 0.1 | 0.102 | 0.097 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 8.67 | 7.96 | 6.47 | 4.6 | 2.59 | 0.24 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 129 | 0.09 | 0.089 | 0.082 | 0.057 | 0.005 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 43.7 | 32.3 | 19.8 | 13.5 | 4.78 | 0.946 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 232 | 218 | 166 | 96.2 | 43.7 | 16.6 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 14.6 | 13.4 | 10.1 | 5.89 | 2.76 | 1.18 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 38.2 | 31.8 | 21.6 | 12.1 | 5.76 | 2.33 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 24 | 19.5 | 13.2 | 7.53 | 3.24 | 0.967 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 7.27 | 6.52 | 5.03 | 3.39 | 1.95 | 1.07 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 2.85 | 2.74 | 2.63 | 2.5 | 2.38 | 2.24 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 38.4 | 33.9 | 25.1 | 16 | 9.67 | 5.61 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 11.8 | 9.47 | 6.78 | 4.38 | 2.9 | 1.97 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 2.69 | 2.28 | 1.88 | 1.48 | 1.09 | 0.722 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 1.69 | 0.89 | 0.89 | 0.884 | 0.903 | 0.853 |
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 77 | 70.7 | 57.5 | 40.9 | 23 | 2.13 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|--------|-------|
| By economic sector - Agriculture (jobs) | | 3.82 | 793 | 293 | 1.87 | 1.51 | 1.1 |
| By economic sector - Construction (jobs) | | 990 | 1,054 | 1,012 | 2,075 | 5,408 | 3,860 |
| By economic sector - Manufacturing (jobs) | | 1,135 | 1,616 | 2,514 | 2,180 | 2,924 | 3,615 |
| By economic sector - Mining (jobs) | | 307 | 191 | 105 | 45.4 | 9.67 | 5.25 |
| By economic sector - Other (jobs) | | 90 | 125 | 120 | 207 | 432 | 791 |
| By economic sector - Pipeline (jobs) | | 79.5 | 64.8 | 43.2 | 25.3 | 11.5 | 7.42 |
| By economic sector - Professional (jobs) | | 421 | 426 | 402 | 831 | 1,999 | 1,651 |
| By economic sector - Trade (jobs) | | 348 | 312 | 276 | 492 | 1,145 | 1,150 |
| By economic sector - Utilities (jobs) | | 1,169 | 1,069 | 1,170 | 2,970 | 8,363 | 3,648 |
| By resource sector - Biomass (jobs) | | 14.9 | 22.4 | 7.89 | 6.1 | 5.6 | 4.86 |
| By resource sector - CO2 (jobs) | | 0 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Coal (jobs) | | 177 | 59.1 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 1,391 | 1,352 | 1,767 | 5,475 | 17,219 | 6,924 |
| By resource sector - Natural Gas (jobs) | | 1,053 | 898 | 726 | 777 | 497 | 668 |
| By resource sector - Nuclear (jobs) | | 0 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Oil (jobs) | | 583 | 427 | 257 | 107 | 0.002 | 0 |
| By resource sector - Solar (jobs) | | 1,316 | 1,972 | 2,554 | 1,739 | 1,420 | 6,600 |
| By resource sector - Wind (jobs) | | 9.59 | 134 | 333 | 723 | 1,151 | 531 |
| By education level - All sectors - High school diploma or less (jobs) | | 1,930 | 2,091 | 2,449 | 3,797 | 8,765 | 6,350 |
| By education level - All sectors - Associates degree or some college (jobs) | | 1,456 | 1,566 | 1,826 | 2,901 | 6,702 | 4,816 |
| By education level - All sectors - Bachelors degree (jobs) | | 921 | 967 | 1,108 | 1,691 | 3,804 | 2,813 |
| By education level - All sectors - Masters or professional degree (jobs) | | 210 | 215 | 236 | 394 | 921 | 663 |
| By education level - All sectors - Doctoral degree (jobs) | | 25.9 | 26.1 | 25.9 | 44.6 | 102 | 84.4 |
| Related work experience - All sectors - None (jobs) | | 657 | 701 | 807 | 1,289 | 2,997 | 2,148 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 898 | 988 | 1,168 | 1,764 | 3,994 | 3,029 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 1,635 | 1,734 | 1,999 | 3,155 | 7,285 | 5,238 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 1,062 | 1,127 | 1,295 | 2,058 | 4,755 | 3,392 |
| Related work experience - All sectors - Over 10 years (jobs) | | 290 | 315 | 376 | 562 | 1,262 | 921 |
| On-the-Job Training - All sectors - None (jobs) | | 238 | 254 | 290 | 444 | 1,002 | 779 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 3,008 | 3,242 | 3,812 | 5,797 | 13,145 | 9,693 |
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 964 | 1,024 | 1,173 | 1,915 | 4,499 | 3,142 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 289 | 293 | 308 | 587 | 1,470 | 965 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 45.6 | 51.8 | 62.6 | 84.6 | 177 | 148 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 728 | 790 | 920 | 1,393 | 3,122 | 2,380 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 2,730 | 2,934 | 3,440 | 5,277 | 12,036 | 8,805 |
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 749 | 798 | 918 | 1,485 | 3,476 | 2,444 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 297 | 302 | 319 | 592 | 1,465 | 967 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 39.4 | 41.8 | 47.8 | 81.2 | 194 | 131 |
| Wage income - All (million \$2019) | | 265 | 281 | 324 | 529 | 1,252 | 884 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 81.4 | 75.7 | 67 | 56.1 | 46.1 | 40 | 37.3 |
| Final energy use - Residential (PJ) | 41.7 | 39.3 | 35.9 | 31.4 | 27.7 | 25.3 | 24.4 |
| Final energy use - Commercial (PJ) | 29.9 | 29.8 | 28.5 | 26.5 | 24.9 | 24.3 | 24.6 |
| Final energy use - Industry (PJ) | 16 | 16.3 | 16.6 | 16.9 | 17.1 | 17.5 | 18 |

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) | | 0.526 | 0.536 | 0.919 | 0.973 | 0.907 | 0.947 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|------|-------|------|-------|-------|-------|
| Vehicle stocks - LDV – EV (1000 units) | 5.71 | 88 | 170 | 459 | 747 | 977 | 1,207 |
| Vehicle stocks - LDV – All others (1000 units) | 1,007 | 959 | 910 | 663 | 417 | 236 | 54.8 |
| Light-duty vehicle capital costs vs. REF - Cumulative 5-yr (million \$2018) | | 193 | 496 | 803 | 1,217 | 1,325 | 1,263 |
| Public EV charging plugs - DC Fast (1000 units) | 0.065 | | 0.324 | | 1.42 | | 2.3 |
| Public EV charging plugs - L2 (1000 units) | 0.118 | | 7.8 | | 34.2 | | 55.3 |

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 (%) | 14.3 | 32.1 | 79.9 | 90.6 | 91 | 91 | 91 |
| Sales of space heating units - Electric Resistance (%) | 9.9 | 10.8 | 4.53 | 3.11 | 3.02 | 3.06 | 3.07 |
| Sales of space heating units - Gas (%) | 55.3 | 30.9 | 8.61 | 3.64 | 3.44 | 3.45 | 3.44 |
| Sales of space heating units - Fossil (%) | 20.5 | 26.2 | 6.99 | 2.7 | 2.51 | 2.5 | 2.49 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 9.43 | 49.9 | 59 | 59.4 | 59.4 | 59.4 |
| Sales of water heating units - Electric Resistance (%) | 30.2 | 45.9 | 40.3 | 39 | 38.9 | 38.9 | 38.9 |
| Sales of water heating units - Gas Furnace (%) | 65.2 | 41.3 | 7.81 | 0.329 | 0 | 0 | 0 |
| Sales of water heating units - Other (%) | 4.6 | 3.33 | 1.97 | 1.68 | 1.67 | 1.69 | 1.7 |
| Sales of cooking units - Electric Resistance (%) | 50.1 | 60.7 | 93.3 | 99.7 | 100 | 100 | 100 |
| Sales of cooking units - Gas (%) | 49.9 | 39.3 | 6.72 | 0.338 | 0 | 0 | 0 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 0.774 | 0.771 | | | | |

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 (%) | 1.53 | 28.2 | 70.6 | 83.7 | 85 | 85.1 | 85.1 |
| Sales of space heating units - Electric Resistance (%) | 1.94 | 8.4 | 10.6 | 12.7 | 13.1 | 13.1 | 13.1 |
| Sales of space heating units - Gas Furnace (%) | 84.3 | 59.2 | 18.1 | 3.53 | 1.88 | 1.85 | 1.84 |
| Sales of space heating units - Fossil (%) | 12.2 | 4.23 | 0.808 | 0.035 | 0 | 0 | 0 |
| Sales of water heating units - Electric Heat Pump (%) | 0.078 | 10.5 | 54.6 | 64.4 | 64.9 | 64.9 | 64.9 |
| Sales of water heating units - Electric Resistance (%) | 1.96 | 10.8 | 28.3 | 32.2 | 32.4 | 32.4 | 32.4 |

Table 33: *E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Commercial (continued)*

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|------|------|------|
| Sales of water heating units - Gas Furnace (%) | 93.3 | 74.5 | 14.1 | 0.593 | 0 | 0 | 0 |
| Sales of water heating units - Other (%) | 4.67 | 4.25 | 3.03 | 2.72 | 2.72 | 2.72 | 2.71 |
| Sales of cooking units - Electric Resistance (%) | 32 | 46 | 79.9 | 86.5 | 86.9 | 86.9 | 86.9 |
| Sales of cooking units - Gas (%) | 68 | 54 | 20.1 | 13.5 | 13.1 | 13.1 | 13.1 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 3,472 | 3,883 | | | | |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 446 | 446 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 1,629 | 2,194 | 2,387 | 2,391 | 3,293 | 3,293 | 4,368 |
| Installed thermal - Nuclear (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed renewables - Rooftop PV (MW) | 110 | 165 | 219 | 290 | 375 | 472 | 584 |
| Installed renewables - Solar - Base land use assumptions (MW) | 39.5 | 39.5 | 241 | 241 | 241 | 241 | 3,383 |
| Installed renewables - Wind - Base land use assumptions (MW) | 2 | 2 | 2 | 2 | 2 | 2 | 131 |
| Installed renewables - Offshore Wind - Base land use assumptions (MW) | 0 | 0 | 0 | 0 | 2,235 | 7,552 | 8,319 |
| Installed renewables - Solar - Constrained land use assumptions (MW) | 39.5 | 145 | 741 | 741 | 741 | 741 | 3,713 |
| Installed renewables - Wind - Constrained land use assumptions (MW) | 2.29 | 2.29 | 2.29 | 2.29 | 2.29 | 2.29 | 2.29 |
| Installed renewables - Offshore Wind - Constrained land use assumptions (MW) | 0 | 0 | 0 | 0 | 2,240 | 2,240 | 8,324 |
| Capital invested - Solar PV - Base (billion \$2018) | | 0 | 0.242 | 0 | 0 | 0 | 2.91 |
| Capital invested - Wind - Base (billion \$2018) | | 0 | 0 | 0 | 0 | 0 | 0.246 |
| Capital invested - Offshore Wind - Base (billion \$2018) | | 0 | 0 | 0 | 3.88 | 7.84 | 1.02 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|-------|-------|--------|--------|--------|
| Solar - Base land use assumptions (GWh) | 75.2 | 75.2 | 454 | 454 | 454 | 454 | 6,352 |
| Wind - Base land use assumptions (GWh) | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 403 |
| OffshoreWind - Base land use assumptions (GWh) | 0 | 0 | 0 | 0 | 9,506 | 33,967 | 37,615 |
| Solar - Constrained land use assumptions (GWh) | 150 | 548 | 2,786 | 2,786 | 2,786 | 2,786 | 13,929 |
| Wind - Constrained land use assumptions (GWh) | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 |
| OffshoreWind - Constrained land use assumptions (GWh) | 0 | 0 | 0 | 0 | 19,052 | 19,052 | 75,270 |

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) | | | | | | | -3.48 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -34.3 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -77.3 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -13.9 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -69.4 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -29.2 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | -2.7 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -6.51 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -25.8 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -263 |
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -5.21 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) | | | | | | | -139 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) | | | | | | | -20.4 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -139 |
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -56.4 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) | | | | | | | -4.05 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) | | | | | | | -46.2 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y) | | | | | | | -51.2 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -581 |
| Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -6.94 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y) | | | | | | | -206 |
| Carbon sink potential - High - Extend rotation length (1000 tCO2e/y) | | | | | | | -201 |
| Carbon sink potential - High - Improve plantations (1000 tCO2e/y) | | | | | | | -27.3 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -208 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -83.5 |
| Carbon sink potential - High - Reforest cropland (1000 tCO2e/y) | | | | | | | -5.4 |
| Carbon sink potential - High - Reforest pasture (1000 tCO2e/y) | | | | | | | -85.9 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -901 |
| Carbon sink potential - High - Restore productivity (1000 tCO2e/y) | | | | | | | -76.6 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 0.567 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 26.1 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 39.3 |

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 - Improve plantations (1000 hectares) | | | | | | | 5.03 |
| 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) | | | | | | | 4.17 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0.179 |
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 0.423 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 15.4 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 91.2 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 0.851 |
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 71 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 7.57 |
| 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) | | | | | | | 6.05 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0.268 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 3.06 |
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 30.9 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 147 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 1.13 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27.8 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 103 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 10.1 |
| Land impacted for carbon sink potential - High - Increase retention of HWP (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 - High - Increase trees outside forests (1000 hectares) | | | | | | | 7.93 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0.357 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 2.44 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 25.4 |
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 178 |

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 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -126 |
| Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -3.22 |
| Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y) | | | | | | | -129 |
| Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -244 |
| Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -6.43 |
| Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y) | | | | | | | -250 |
| 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) | | | | | | | 88.6 |
| Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares) | | | | | | | 5.85 |
| Land impacted for carbon sink - Moderate deployment - Total (1000 hectares) | | | | | | | 94.5 |
| 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) | | | | | | | 171 |
| Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares) | | | | | | | 11.7 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|------|
| Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares) | | | | | | | 183 |

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) | | 14.6 | 0.01 | 0.01 | 0.009 | 0.006 | 0.001 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 5.79 | 4.72 | 5.44 | 4.16 | 1.66 | 0.482 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 26.1 | 24.5 | 18.7 | 10.8 | 4.91 | 1.87 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 1.65 | 1.51 | 1.14 | 0.665 | 0.312 | 0.134 |
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 4.31 | 3.59 | 2.44 | 1.36 | 0.65 | 0.262 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 2.71 | 2.2 | 1.49 | 0.85 | 0.366 | 0.109 |
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 0.821 | 0.736 | 0.567 | 0.383 | 0.22 | 0.121 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.322 | 0.31 | 0.297 | 0.283 | 0.269 | 0.253 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 4.34 | 3.82 | 2.84 | 1.81 | 1.09 | 0.634 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 1.33 | 1.07 | 0.766 | 0.495 | 0.328 | 0.223 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 0.304 | 0.258 | 0.212 | 0.167 | 0.123 | 0.082 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.166 | 0.101 | 0.101 | 0.1 | 0.102 | 0.097 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 9.04 | 8.65 | 8.46 | 7.46 | 6.3 | 4.77 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 129 | 0.09 | 0.089 | 0.082 | 0.057 | 0.005 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 51.3 | 41.8 | 48.2 | 36.9 | 14.7 | 4.27 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 232 | 218 | 166 | 96.2 | 43.7 | 16.6 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 14.6 | 13.4 | 10.1 | 5.89 | 2.76 | 1.18 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 38.2 | 31.8 | 21.6 | 12.1 | 5.76 | 2.33 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 24 | 19.5 | 13.2 | 7.53 | 3.24 | 0.967 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 7.27 | 6.52 | 5.03 | 3.39 | 1.95 | 1.07 |

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 - Coal (million \$2019) | | 2.85 | 2.74 | 2.63 | 2.5 | 2.38 | 2.24 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 38.4 | 33.9 | 25.1 | 16 | 9.67 | 5.61 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 11.8 | 9.47 | 6.78 | 4.38 | 2.9 | 1.97 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 2.69 | 2.28 | 1.88 | 1.48 | 1.09 | 0.722 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 1.47 | 0.889 | 0.891 | 0.885 | 0.904 | 0.853 |
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 80.3 | 76.8 | 75.1 | 66.2 | 56 | 42.4 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|-------|
| By economic sector - Agriculture (jobs) | | 4.34 | 6.22 | 2.08 | 1.72 | 1.58 | 1.37 |
| By economic sector - Construction (jobs) | | 856 | 776 | 934 | 1,088 | 1,142 | 1,806 |
| By economic sector - Manufacturing (jobs) | | 672 | 681 | 612 | 548 | 575 | 509 |
| By economic sector - Mining (jobs) | | 291 | 203 | 133 | 80.9 | 45.6 | 25.6 |
| By economic sector - Other (jobs) | | 78.6 | 78.4 | 103 | 127 | 145 | 251 |
| By economic sector - Pipeline (jobs) | | 84.2 | 72.3 | 63.9 | 53.4 | 41 | 83.5 |
| By economic sector - Professional (jobs) | | 337 | 295 | 345 | 509 | 460 | 1,084 |
| By economic sector - Trade (jobs) | | 286 | 244 | 251 | 302 | 293 | 564 |
| By economic sector - Utilities (jobs) | | 894 | 804 | 1,033 | 1,870 | 1,543 | 4,804 |
| By resource sector - Biomass (jobs) | | 15.2 | 15.9 | 7.13 | 6.41 | 6.19 | 5.7 |
| By resource sector - CO2 (jobs) | | 0 | 0 | 0 | 0 | 0 | 434 |
| By resource sector - Coal (jobs) | | 60.3 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 923 | 814 | 1,434 | 1,822 | 2,152 | 2,675 |
| By resource sector - Natural Gas (jobs) | | 1,023 | 971 | 830 | 905 | 871 | 803 |
| By resource sector - Nuclear (jobs) | | 0 | 0 | 0 | 797 | 161 | 3,880 |
| By resource sector - Oil (jobs) | | 582 | 435 | 275 | 147 | 67.5 | 21.1 |
| By resource sector - Solar (jobs) | | 866 | 882 | 922 | 886 | 954 | 1,289 |
| By resource sector - Wind (jobs) | | 32.1 | 40.7 | 7.88 | 16.1 | 34.7 | 18.7 |
| By education level - All sectors - High school diploma or less (jobs) | | 1,481 | 1,345 | 1,488 | 1,671 | 1,755 | 2,525 |
| By education level - All sectors - Associates degree or some college (jobs) | | 1,119 | 1,016 | 1,133 | 1,306 | 1,365 | 2,031 |
| By education level - All sectors - Bachelors degree (jobs) | | 715 | 634 | 677 | 783 | 789 | 1,248 |
| By education level - All sectors - Masters or professional degree (jobs) | | 166 | 146 | 159 | 192 | 191 | 322 |
| By education level - All sectors - Doctoral degree (jobs) | | 21.2 | 18.4 | 19.8 | 25.5 | 23.8 | 48.3 |
| Related work experience - All sectors - None (jobs) | | 509 | 461 | 511 | 583 | 610 | 899 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 684 | 622 | 685 | 776 | 808 | 1,199 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 1,264 | 1,136 | 1,248 | 1,431 | 1,480 | 2,226 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 824 | 741 | 817 | 942 | 972 | 1,473 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|-------|
| Related work experience - All sectors - Over 10 years (jobs) | | 221 | 200 | 217 | 246 | 254 | 377 |
| On-the-Job Training - All sectors - None (jobs) | | 185 | 166 | 180 | 206 | 211 | 326 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 2,298 | 2,073 | 2,261 | 2,573 | 2,661 | 3,971 |
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 750 | 678 | 758 | 873 | 912 | 1,357 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 234 | 210 | 244 | 289 | 302 | 464 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 34.8 | 31.8 | 33.8 | 37.3 | 38.3 | 56.5 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 561 | 506 | 551 | 633 | 651 | 999 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 2,089 | 1,884 | 2,061 | 2,345 | 2,430 | 3,615 |
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 581 | 525 | 586 | 672 | 702 | 1,039 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 240 | 216 | 247 | 290 | 302 | 463 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 30.7 | 27.9 | 31.9 | 37.2 | 39.1 | 58.1 |
| Wage income - All (million \$2019) | | 206 | 186 | 208 | 242 | 253 | 387 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 81.4 | 75.7 | 67 | 56.1 | 46.1 | 40 | 37.3 |
| Final energy use - Residential (PJ) | 41.7 | 39.3 | 35.9 | 31.4 | 27.7 | 25.3 | 24.4 |
| Final energy use - Commercial (PJ) | 29.9 | 29.8 | 28.5 | 26.5 | 24.9 | 24.3 | 24.6 |
| Final energy use - Industry (PJ) | 16 | 16.3 | 16.6 | 16.9 | 17.1 | 17.5 | 18 |

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) | | 0.526 | 0.536 | 0.919 | 0.973 | 0.907 | 0.947 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|------|-------|------|-------|-------|-------|
| Vehicle stocks - LDV - EV (1000 units) | 5.71 | 88 | 170 | 459 | 747 | 977 | 1,207 |
| Vehicle stocks - LDV - All others (1000 units) | 1,007 | 959 | 910 | 663 | 417 | 236 | 54.8 |
| Light-duty vehicle capital costs vs. REF - Cumulative 5-yr (million \$2018) | | 193 | 496 | 803 | 1,217 | 1,325 | 1,263 |
| Public EV charging plugs - DC Fast (1000 units) | 0.065 | | 0.324 | | 1.42 | | 2.3 |
| Public EV charging plugs - L2 (1000 units) | 0.118 | | 7.8 | | 34.2 | | 55.3 |

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 (%) | 14.3 | 32.1 | 79.9 | 90.6 | 91 | 91 | 91 |
| Sales of space heating units - Electric Resistance (%) | 9.9 | 10.8 | 4.53 | 3.11 | 3.02 | 3.06 | 3.07 |
| Sales of space heating units - Gas (%) | 55.3 | 30.9 | 8.61 | 3.64 | 3.44 | 3.45 | 3.44 |
| Sales of space heating units - Fossil (%) | 20.5 | 26.2 | 6.99 | 2.7 | 2.51 | 2.5 | 2.49 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|------|------|------|
| Sales of water heating units - Electric Heat Pump (%) | 0 | 9.43 | 49.9 | 59 | 59.4 | 59.4 | 59.4 |
| Sales of water heating units - Electric Resistance (%) | 30.2 | 45.9 | 40.3 | 39 | 38.9 | 38.9 | 38.9 |
| Sales of water heating units - Gas Furnace (%) | 65.2 | 41.3 | 7.81 | 0.329 | 0 | 0 | 0 |
| Sales of water heating units - Other (%) | 4.6 | 3.33 | 1.97 | 1.68 | 1.67 | 1.69 | 1.7 |
| Sales of cooking units - Electric Resistance (%) | 50.1 | 60.7 | 93.3 | 99.7 | 100 | 100 | 100 |
| Sales of cooking units - Gas (%) | 49.9 | 39.3 | 6.72 | 0.338 | 0 | 0 | 0 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 0.774 | 0.771 | | | | |

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 (%) | 1.53 | 28.2 | 70.6 | 83.7 | 85 | 85.1 | 85.1 |
| Sales of space heating units - Electric Resistance (%) | 1.94 | 8.4 | 10.6 | 12.7 | 13.1 | 13.1 | 13.1 |
| Sales of space heating units - Gas Furnace (%) | 84.3 | 59.2 | 18.1 | 3.53 | 1.88 | 1.85 | 1.84 |
| Sales of space heating units - Fossil (%) | 12.2 | 4.23 | 0.808 | 0.035 | 0 | 0 | 0 |
| Sales of water heating units - Electric Heat Pump (%) | 0.078 | 10.5 | 54.6 | 64.4 | 64.9 | 64.9 | 64.9 |
| Sales of water heating units - Electric Resistance (%) | 1.96 | 10.8 | 28.3 | 32.2 | 32.4 | 32.4 | 32.4 |
| Sales of water heating units - Gas Furnace (%) | 93.3 | 74.5 | 14.1 | 0.593 | 0 | 0 | 0 |
| Sales of water heating units - Other (%) | 4.67 | 4.25 | 3.03 | 2.72 | 2.72 | 2.72 | 2.71 |
| Sales of cooking units - Electric Resistance (%) | 32 | 46 | 79.9 | 86.5 | 86.9 | 86.9 | 86.9 |
| Sales of cooking units - Gas (%) | 68 | 54 | 20.1 | 13.5 | 13.1 | 13.1 | 13.1 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 3,472 | 3,883 | | | | |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 446 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 1,598 | 1,746 | 1,414 | 2,038 | 2,558 | 3,610 | 3,168 |
| Installed thermal - Nuclear (MW) | 0 | 0 | 0 | 0 | 340 | 340 | 1,978 |
| Installed renewables - Rooftop PV (MW) | 110 | 165 | 219 | 290 | 375 | 472 | 584 |
| Installed renewables - Solar - Base land use assumptions (MW) | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 |
| Installed renewables - Wind - Base land use assumptions (MW) | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Installed renewables - Solar - Constrained land use assumptions (MW) | 39.5 | 39.5 | 145 | 395 | 395 | 616 | 616 |
| Installed renewables - Wind - Constrained land use assumptions (MW) | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Installed renewables - Offshore Wind - Constrained land use assumptions (MW) | 0 | 0 | 0 | 0 | 0 | 241 | 321 |
| Capital invested - Solar PV - Base (billion \$2018) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital invested - Wind - Base (billion \$2018) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital invested - Solar PV - Constrained (billion \$2018) | | 0 | 0.127 | 0.275 | 0 | 0.217 | 0 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|-------|-------|
| Capital invested - Wind - Constrained (billion \$2018) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital invested - Offshore Wind - Constrained (billion \$2018) | | 0 | 0 | 0 | 0 | 0.356 | 0.106 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|-------|-------|
| Solar - Base land use assumptions (GWh) | 75.2 | 75.2 | 75.2 | 75.2 | 75.2 | 75.2 | 75.2 |
| Wind - Base land use assumptions (GWh) | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 |
| OffshoreWind - Base land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Solar - Constrained land use assumptions (GWh) | 75.2 | 75.2 | 274 | 743 | 743 | 1,157 | 1,157 |
| Wind - Constrained land use assumptions (GWh) | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 |
| OffshoreWind - Constrained land use assumptions (GWh) | 0 | 0 | 0 | 0 | 0 | 1,008 | 1,348 |

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) | | | | | | | -3.48 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -34.3 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -77.3 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -13.9 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -69.4 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -29.2 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | -2.7 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -6.51 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -25.8 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -263 |
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -5.21 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) | | | | | | | -139 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) | | | | | | | -20.4 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -139 |
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -56.4 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) | | | | | | | -4.05 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) | | | | | | | -46.2 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y) | | | | | | | -51.2 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -581 |
| Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -6.94 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y) | | | | | | | -206 |
| Carbon sink potential - High - Extend rotation length (1000 tCO2e/y) | | | | | | | -201 |
| Carbon sink potential - High - Improve plantations (1000 tCO2e/y) | | | | | | | -27.3 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -208 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -83.5 |
| Carbon sink potential - High - Reforest cropland (1000 tCO2e/y) | | | | | | | -5.4 |
| Carbon sink potential - High - Reforest pasture (1000 tCO2e/y) | | | | | | | -85.9 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -901 |
| Carbon sink potential - High - Restore productivity (1000 tCO2e/y) | | | | | | | -76.6 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 0.567 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 26.1 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 39.3 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 5.03 |
| 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) | | | | | | | 4.17 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0.179 |
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 0.423 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 15.4 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 91.2 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 0.851 |
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 71 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 7.57 |

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 - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Increase trees outside forests (1000 hectares) | | | | | | | 6.05 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0.268 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 3.06 |
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 30.9 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 147 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 1.13 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27.8 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 103 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 10.1 |
| 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) | | | | | | | 7.93 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0.357 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 2.44 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 25.4 |
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 178 |

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 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -126 |
| Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -3.22 |
| Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y) | | | | | | | -129 |

Table 48: E+RE- 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) | | | | | | | -244 |
| Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -6.43 |
| Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y) | | | | | | | -250 |
| 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) | | | | | | | 88.6 |
| Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares) | | | | | | | 5.85 |
| Land impacted for carbon sink - Moderate deployment - Total (1000 hectares) | | | | | | | 94.5 |
| 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) | | | | | | | 171 |
| Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares) | | | | | | | 11.7 |
| Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares) | | | | | | | 183 |

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) | | 14.6 | 0.01 | 0.01 | 0.009 | 0.006 | 0.001 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 5.26 | 3.19 | 1.79 | 1.29 | 0.751 | 0.223 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 26.6 | 27 | 26.4 | 23.8 | 19 | 13.1 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 1.68 | 1.7 | 1.65 | 1.48 | 1.17 | 0.806 |
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 4.34 | 4 | 3.57 | 2.95 | 2.2 | 1.45 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 2.75 | 2.65 | 2.53 | 2.21 | 1.64 | 1.03 |
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 0.832 | 0.84 | 0.836 | 0.767 | 0.616 | 0.445 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.322 | 0.31 | 0.297 | 0.283 | 0.269 | 0.253 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 4.37 | 4.32 | 4.16 | 3.72 | 3.04 | 2.28 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|-------|-------|-------|-------|-------|-------|
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 1.34 | 1.18 | 1.02 | 0.838 | 0.684 | 0.548 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 0.304 | 0.277 | 0.249 | 0.221 | 0.193 | 0.166 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.178 | 0.101 | 0.102 | 0.102 | 0.104 | 0.103 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 8.85 | 7.69 | 6.2 | 5.07 | 4.27 | 3.1 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 129 | 0.09 | 0.089 | 0.082 | 0.057 | 0.005 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 46.6 | 28.3 | 15.9 | 11.4 | 6.65 | 1.97 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 237 | 240 | 234 | 212 | 169 | 116 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 14.9 | 15.1 | 14.6 | 13.1 | 10.4 | 7.13 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 38.5 | 35.5 | 31.6 | 26.1 | 19.5 | 12.9 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 24.4 | 23.4 | 22.4 | 19.6 | 14.6 | 9.13 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 7.37 | 7.44 | 7.41 | 6.8 | 5.46 | 3.94 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 2.85 | 2.74 | 2.63 | 2.5 | 2.38 | 2.24 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 38.7 | 38.2 | 36.8 | 32.9 | 26.9 | 20.2 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 11.9 | 10.4 | 9.01 | 7.42 | 6.06 | 4.85 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 2.69 | 2.45 | 2.2 | 1.96 | 1.71 | 1.47 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 1.57 | 0.892 | 0.898 | 0.897 | 0.916 | 0.908 |
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 78.6 | 68.3 | 55 | 45 | 37.9 | 27.6 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|------|-------|-------|
| By economic sector - Agriculture (jobs) | | 4.24 | 5.93 | 2.22 | 1.64 | 1.36 | 55.9 |
| By economic sector - Construction (jobs) | | 1,096 | 992 | 1,057 | 982 | 2,321 | 4,585 |
| By economic sector - Manufacturing (jobs) | | 894 | 1,613 | 1,112 | 816 | 1,542 | 2,228 |
| By economic sector - Mining (jobs) | | 312 | 204 | 145 | 103 | 61.3 | 25.1 |
| By economic sector - Other (jobs) | | 112 | 117 | 144 | 136 | 236 | 448 |
| By economic sector - Pipeline (jobs) | | 81.3 | 65.9 | 53.2 | 44.4 | 32.9 | 67.9 |
| By economic sector - Professional (jobs) | | 454 | 395 | 410 | 395 | 887 | 1,726 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|--------|
| By economic sector - Trade (jobs) | | 373 | 306 | 313 | 292 | 557 | 1,033 |
| By economic sector - Utilities (jobs) | | 1,162 | 967 | 978 | 1,018 | 3,170 | 6,389 |
| By resource sector - Biomass (jobs) | | 16.8 | 16 | 7.5 | 6.88 | 6.3 | 264 |
| By resource sector - CO2 (jobs) | | 0 | 0 | 0 | 0 | 0 | 394 |
| By resource sector - Coal (jobs) | | 177 | 59.1 | 0 | 0 | 0 | 0 |
| By resource sector - Grid (jobs) | | 1,378 | 1,204 | 1,433 | 1,446 | 6,243 | 12,719 |
| By resource sector - Natural Gas (jobs) | | 1,051 | 835 | 666 | 711 | 477 | 432 |
| By resource sector - Nuclear (jobs) | | 0 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Oil (jobs) | | 591 | 479 | 389 | 314 | 202 | 70.1 |
| By resource sector - Solar (jobs) | | 1,264 | 1,965 | 1,655 | 1,194 | 1,336 | 2,157 |
| By resource sector - Wind (jobs) | | 10.6 | 108 | 63.9 | 117 | 543 | 521 |
| By education level - All sectors - High school diploma or less (jobs) | | 1,907 | 2,008 | 1,816 | 1,623 | 3,800 | 7,173 |
| By education level - All sectors - Associates degree or some college (jobs) | | 1,438 | 1,497 | 1,358 | 1,230 | 2,891 | 5,442 |
| By education level - All sectors - Bachelors degree (jobs) | | 906 | 931 | 827 | 740 | 1,672 | 3,101 |
| By education level - All sectors - Masters or professional degree (jobs) | | 210 | 206 | 189 | 173 | 399 | 754 |
| By education level - All sectors - Doctoral degree (jobs) | | 27 | 24.8 | 23.8 | 21.9 | 46.2 | 87.3 |
| Related work experience - All sectors - None (jobs) | | 652 | 671 | 612 | 554 | 1,295 | 2,450 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 886 | 950 | 854 | 757 | 1,749 | 3,288 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 1,617 | 1,663 | 1,505 | 1,357 | 3,157 | 5,934 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 1,052 | 1,079 | 977 | 883 | 2,057 | 3,866 |
| Related work experience - All sectors - Over 10 years (jobs) | | 282 | 303 | 267 | 237 | 550 | 1,020 |
| On-the-Job Training - All sectors - None (jobs) | | 237 | 245 | 222 | 198 | 444 | 830 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 2,951 | 3,118 | 2,783 | 2,482 | 5,736 | 10,729 |
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 958 | 977 | 895 | 815 | 1,929 | 3,650 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 298 | 276 | 270 | 255 | 619 | 1,202 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 44.4 | 50.2 | 43.5 | 37.6 | 80.5 | 146 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 719 | 759 | 679 | 606 | 1,374 | 2,564 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 2,682 | 2,821 | 2,526 | 2,258 | 5,239 | 9,816 |
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 743 | 762 | 696 | 632 | 1,493 | 2,822 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 305 | 285 | 275 | 258 | 620 | 1,198 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 39.3 | 39.7 | 36.9 | 34 | 82.3 | 157 |
| Wage income - All (million \$2019) | | 262 | 269 | 247 | 226 | 539 | 1,031 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 81.5 | 76.4 | 70.2 | 64.9 | 60.8 | 55.9 | 50.1 |
| Final energy use - Residential (PJ) | 41.7 | 39.5 | 38.4 | 37 | 34.6 | 31.5 | 28.6 |
| Final energy use - Commercial (PJ) | 29.9 | 29.9 | 29.5 | 28.9 | 28 | 27 | 26.5 |
| Final energy use - Industry (PJ) | 16 | 16.3 | 16.7 | 17.1 | 17.5 | 17.9 | 18.4 |

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) | | 0.457 | 0.458 | 0.597 | 0.614 | 0.89 | 0.939 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|------|-------|------|-------|
| Vehicle stocks - LDV – EV (1000 units) | 4.42 | 28.6 | 52.8 | 165 | 277 | 525 | 773 |
| Vehicle stocks - LDV – All others (1000 units) | 1,011 | 1,011 | 1,011 | 959 | 907 | 699 | 491 |
| Light-duty vehicle capital costs vs. REF - Cumulative 5-yr (million \$2018) | | 0 | 31.3 | 65.7 | 222 | 699 | 1,018 |
| Public EV charging plugs - DC Fast (1000 units) | 0.065 | | 0.1 | | 0.527 | | 1.47 |
| Public EV charging plugs - L2 (1000 units) | 0.118 | | 2.42 | | 12.7 | | 35.4 |

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 (%) | 14.3 | 22.9 | 28.3 | 44 | 68 | 83.7 | 89.1 |
| Sales of space heating units - Electric Resistance (%) | 9.9 | 12 | 11.2 | 9.09 | 5.93 | 3.95 | 3.26 |
| Sales of space heating units - Gas (%) | 55.3 | 35.2 | 32.6 | 25.4 | 14.2 | 6.89 | 4.33 |
| Sales of space heating units - Fossil (%) | 20.5 | 29.9 | 27.8 | 21.5 | 11.8 | 5.49 | 3.29 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 1.62 | 6.23 | 19.5 | 39.9 | 53.2 | 57.8 |
| Sales of water heating units - Electric Resistance (%) | 30.2 | 47 | 46.3 | 44.4 | 41.6 | 39.8 | 39.1 |
| Sales of water heating units - Gas Furnace (%) | 65.2 | 47.8 | 44 | 33.1 | 16.2 | 5.18 | 1.35 |
| Sales of water heating units - Other (%) | 4.6 | 3.59 | 3.44 | 3 | 2.33 | 1.9 | 1.75 |
| Sales of cooking units - Electric Resistance (%) | 49.9 | 51.2 | 55.8 | 67.9 | 84.7 | 95.1 | 98.7 |
| Sales of cooking units - Gas (%) | 50.1 | 48.8 | 44.2 | 32.1 | 15.3 | 4.94 | 1.33 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 0.769 | 0.798 | | | | |

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 (%) | 1.53 | 20.1 | 24.9 | 38.9 | 61.1 | 76.8 | 82.8 |
| Sales of space heating units - Electric Resistance (%) | 1.94 | 8.06 | 8.33 | 9.15 | 10.6 | 12 | 12.8 |
| Sales of space heating units - Gas Furnace (%) | 84.3 | 66.9 | 62.2 | 48.4 | 26.6 | 10.7 | 4.3 |
| Sales of space heating units - Fossil (%) | 12.2 | 4.9 | 4.55 | 3.47 | 1.71 | 0.536 | 0.14 |
| Sales of water heating units - Electric Heat Pump (%) | 0.078 | 2.03 | 7.05 | 21.5 | 43.6 | 58.1 | 63.1 |
| Sales of water heating units - Electric Resistance (%) | 1.96 | 7.38 | 9.33 | 15.1 | 24 | 29.7 | 31.7 |
| Sales of water heating units - Gas Furnace (%) | 93.3 | 86.1 | 79.2 | 59.5 | 29.1 | 9.29 | 2.42 |
| Sales of water heating units - Other (%) | 4.67 | 4.49 | 4.43 | 3.93 | 3.32 | 2.91 | 2.76 |
| Sales of cooking units - Electric Resistance (%) | 32 | 36.2 | 40.9 | 53.4 | 71 | 81.7 | 85.5 |
| Sales of cooking units - Gas (%) | 68 | 63.8 | 59.1 | 46.6 | 29 | 18.3 | 14.5 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 3,468 | 3,852 | | | | |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 446 | 446 | 0 | 0 | 0 | 0 | 0 |
| Installed thermal - Natural gas (MW) | 1,627 | 2,286 | 1,958 | 1,670 | 2,142 | 2,142 | 2,061 |
| Installed thermal - Nuclear (MW) | 0 | 0 | 0 | 0 | 0 | 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 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 | 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 | 772 |
| Biomass purchases (million \$2018/y) | | 0 | 0 | 0 | 0 | 0 | 69.2 |

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 |
| Annual - BECCS (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Annual - NGCC (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Annual - Cement and lime (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - All (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - BECCS (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - NGCC (MMT) | | 0 | 0 | 0 | 0 | 0 | 0 |
| 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 | 0 | 0 | 0 | 0 | 0 |
| Spur (km) | | 0 | 0 | 0 | 0 | 0 | 0 |
| All (km) | | 0 | 0 | 0 | 0 | 0 | 0 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Cumulative investment - Trunk (million \$2018) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative investment - Spur (million \$2018) | | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative investment - All (million \$2018) | | 0 | 0 | 0 | 0 | 0 | 0 |

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) | | | | | | | -3.48 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) | | | | | | | -34.3 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) | | | | | | | -77.3 |
| Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) | | | | | | | -13.9 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -69.4 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -29.2 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) | | | | | | | -2.7 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) | | | | | | | -6.51 |
| Carbon sink potential - Low - Restore productivity (1000 tCO2e/y) | | | | | | | -25.8 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -263 |
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -5.21 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) | | | | | | | -120 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) | | | | | | | -139 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) | | | | | | | -20.4 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -139 |
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -56.4 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) | | | | | | | -4.05 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) | | | | | | | -46.2 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y) | | | | | | | -51.2 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -581 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y) | | | | | | | -6.94 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y) | | | | | | | -206 |
| Carbon sink potential - High - Extend rotation length (1000 tCO2e/y) | | | | | | | -201 |
| Carbon sink potential - High - Improve plantations (1000 tCO2e/y) | | | | | | | -27.3 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y) | | | | | | | -208 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y) | | | | | | | -83.5 |
| Carbon sink potential - High - Reforest cropland (1000 tCO2e/y) | | | | | | | -5.4 |
| Carbon sink potential - High - Reforest pasture (1000 tCO2e/y) | | | | | | | -85.9 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y) | | | | | | | -901 |
| Carbon sink potential - High - Restore productivity (1000 tCO2e/y) | | | | | | | -76.6 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 0.567 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 26.1 |
| Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares) | | | | | | | 39.3 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 5.03 |
| 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) | | | | | | | 4.17 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0.179 |
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 0.423 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 15.4 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 91.2 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 0.851 |
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 71 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 7.57 |

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 - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - Mid - Increase trees outside forests (1000 hectares) | | | | | | | 6.05 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0.268 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 3.06 |
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 30.9 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 147 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 1.13 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27.8 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 103 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 10.1 |
| 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) | | | | | | | 7.93 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0.357 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 2.44 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 25.4 |
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 178 |

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) | | | | | | | -25.9 |
| Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -116 |
| Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -2.8 |
| Carbon sink potential - Moderate deployment - Cropland to woody energy crops (1000 tCO2e/y) | | | | | | | 0 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|-------|
| Carbon sink potential - Moderate deployment - Pasture to energy crops (1000 tCO2e/y) | | | | | | | 0 |
| Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y) | | | | | | | -145 |
| Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y) | | | | | | | -25.9 |
| Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y) | | | | | | | -225 |
| Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y) | | | | | | | -5.61 |
| 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) | | | | | | | -257 |
| Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 13.8 |
| Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares) | | | | | | | 81.5 |
| Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares) | | | | | | | 5.1 |
| Land impacted for carbon sink - Moderate deployment - Cropland to woody energy crops (1000 hectares) | | | | | | | 3.07 |
| Land impacted for carbon sink - Moderate deployment - Pasture to energy crops (1000 hectares) | | | | | | | 0.14 |
| Land impacted for carbon sink - Moderate deployment - Total (1000 hectares) | | | | | | | 104 |
| Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares) | | | | | | | 13.8 |
| Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares) | | | | | | | 390 |
| Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares) | | | | | | | 10.2 |
| Land impacted for carbon sink - Aggressive deployment - Cropland to woody energy crops (1000 hectares) | | | | | | | 3.07 |
| Land impacted for carbon sink - Aggressive deployment - Pasture to energy crops (1000 hectares) | | | | | | | 0.14 |
| Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares) | | | | | | | 417 |

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) | | 38.9 | 24.3 | 22.8 | 22.2 | 21.8 | 19.9 |
| Premature deaths from air pollution - Fuel Comb - Electric Generation - Natural Gas (deaths) | | 4.15 | 4.63 | 6.08 | 6.31 | 6.31 | 5.9 |
| Premature deaths from air pollution - Mobile - On-Road (deaths) | | 26.6 | 27.3 | 28.1 | 28.9 | 29.8 | 30.6 |
| Premature deaths from air pollution - Gas Stations (deaths) | | 1.68 | 1.72 | 1.75 | 1.8 | 1.85 | 1.88 |
| Premature deaths from air pollution - Fuel Comb - Residential - Natural Gas (deaths) | | 4.28 | 4.02 | 3.86 | 3.81 | 3.82 | 3.81 |
| Premature deaths from air pollution - Fuel Comb - Residential - Oil (deaths) | | 2.64 | 2.22 | 1.59 | 1.03 | 0.628 | 0.402 |
| Premature deaths from air pollution - Fuel Comb - Residential - Other (deaths) | | 0.794 | 0.784 | 0.785 | 0.798 | 0.815 | 0.829 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Coal (deaths) | | 0.336 | 0.339 | 0.341 | 0.342 | 0.342 | 0.341 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (deaths) | | 4.4 | 4.41 | 4.21 | 3.97 | 3.94 | 4.13 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Oil (deaths) | | 1.36 | 1.23 | 1.08 | 0.909 | 0.811 | 0.761 |
| Premature deaths from air pollution - Fuel Comb - Comm/Institutional - Other (deaths) | | 0.318 | 0.328 | 0.339 | 0.348 | 0.357 | 0.367 |
| Premature deaths from air pollution - Industrial Processes - Coal Mining (deaths) | | 0.324 | 0.241 | 0.207 | 0.2 | 0.197 | 0.189 |
| Premature deaths from air pollution - Industrial Processes - Oil & Gas Production (deaths) | | 8.92 | 9.67 | 10.1 | 9.7 | 9.81 | 9.51 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Coal (million \$2019) | | 345 | 215 | 202 | 196 | 193 | 177 |
| Monetary damages from air pollution - Fuel Comb - Electric Generation - Natural Gas (million \$2019) | | 36.8 | 41 | 53.9 | 55.9 | 55.9 | 52.3 |
| Monetary damages from air pollution - Mobile - On-Road (million \$2019) | | 236 | 243 | 249 | 257 | 265 | 272 |
| Monetary damages from air pollution - Gas Stations (million \$2019) | | 14.8 | 15.2 | 15.5 | 16 | 16.3 | 16.7 |
| Monetary damages from air pollution - Fuel Comb - Residential - Natural Gas (million \$2019) | | 38 | 35.6 | 34.2 | 33.7 | 33.9 | 33.8 |
| Monetary damages from air pollution - Fuel Comb - Residential - Oil (million \$2019) | | 23.4 | 19.7 | 14.1 | 9.14 | 5.56 | 3.56 |
| Monetary damages from air pollution - Fuel Comb - Residential - Other (million \$2019) | | 7.03 | 6.95 | 6.95 | 7.08 | 7.22 | 7.35 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Coal (million \$2019) | | 2.98 | 3 | 3.02 | 3.02 | 3.03 | 3.01 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Natural Gas (million \$2019) | | 39 | 39 | 37.3 | 35.2 | 34.9 | 36.5 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Oil (million \$2019) | | 12 | 10.9 | 9.56 | 8.04 | 7.18 | 6.74 |
| Monetary damages from air pollution - Fuel Comb - Comm/Institutional - Other (million \$2019) | | 2.81 | 2.91 | 3 | 3.08 | 3.16 | 3.24 |
| Monetary damages from air pollution - Industrial Processes - Coal Mining (million \$2019) | | 2.86 | 2.13 | 1.82 | 1.76 | 1.74 | 1.67 |
| Monetary damages from air pollution - Industrial Processes - Oil & Gas Production (million \$2019) | | 79.2 | 85.9 | 89.6 | 86.1 | 87.1 | 84.5 |

Table 65: REF scenario - IMPACTS - Jobs

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|-------|
| By economic sector - Agriculture (jobs) | | 4.02 | 3.6 | 3.56 | 2.9 | 2.89 | 3.14 |
| By economic sector - Construction (jobs) | | 726 | 925 | 1,112 | 1,360 | 1,555 | 2,287 |
| By economic sector - Manufacturing (jobs) | | 277 | 320 | 362 | 453 | 470 | 895 |
| By economic sector - Mining (jobs) | | 317 | 257 | 209 | 168 | 143 | 110 |
| By economic sector - Other (jobs) | | 34.2 | 84.8 | 110 | 141 | 163 | 288 |
| By economic sector - Pipeline (jobs) | | 83.8 | 87.2 | 88.1 | 82.5 | 83.3 | 82.3 |
| By economic sector - Professional (jobs) | | 329 | 372 | 445 | 552 | 610 | 890 |
| By economic sector - Trade (jobs) | | 290 | 307 | 337 | 393 | 430 | 613 |
| By economic sector - Utilities (jobs) | | 1,132 | 1,064 | 1,343 | 1,767 | 2,043 | 2,796 |
| By resource sector - Biomass (jobs) | | 15.5 | 14.5 | 13.5 | 12 | 12.3 | 12.5 |
| By resource sector - CO2 (jobs) | | 0 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Coal (jobs) | | 177 | 167 | 158 | 150 | 143 | 55 |
| By resource sector - Grid (jobs) | | 1,314 | 1,183 | 1,616 | 2,287 | 2,901 | 4,636 |
| By resource sector - Natural Gas (jobs) | | 1,079 | 1,062 | 1,199 | 1,378 | 1,351 | 1,260 |
| By resource sector - Nuclear (jobs) | | 0 | 0 | 0 | 0 | 0 | 0 |
| By resource sector - Oil (jobs) | | 594 | 488 | 418 | 383 | 365 | 352 |
| By resource sector - Solar (jobs) | | | 470 | 571 | 675 | 721 | 1,353 |
| By resource sector - Wind (jobs) | | 13.5 | 36.8 | 33.7 | 33 | 6.68 | 295 |
| By education level - All sectors - High school diploma or less (jobs) | | 1,327 | 1,443 | 1,694 | 2,078 | 2,335 | 3,408 |
| By education level - All sectors - Associates degree or some college (jobs) | | 1,024 | 1,104 | 1,308 | 1,617 | 1,812 | 2,621 |
| By education level - All sectors - Bachelors degree (jobs) | | 663 | 688 | 792 | 960 | 1,061 | 1,519 |
| By education level - All sectors - Masters or professional degree (jobs) | | 159 | 165 | 192 | 234 | 259 | 371 |
| By education level - All sectors - Doctoral degree (jobs) | | 19.8 | 21.5 | 24.7 | 29.5 | 32.2 | 46 |
| Related work experience - All sectors - None (jobs) | | 469 | 503 | 593 | 730 | 818 | 1,181 |
| Related work experience - All sectors - Up to 1 year (jobs) | | 595 | 655 | 768 | 942 | 1,057 | 1,560 |
| Related work experience - All sectors - 1 to 4 years (jobs) | | 1,168 | 1,241 | 1,451 | 1,778 | 1,987 | 2,865 |
| Related work experience - All sectors - 4 to 10 years (jobs) | | 762 | 811 | 952 | 1,168 | 1,304 | 1,872 |
| Related work experience - All sectors - Over 10 years (jobs) | | 198 | 210 | 245 | 300 | 335 | 487 |
| On-the-Job Training - All sectors - None (jobs) | | 165 | 179 | 207 | 252 | 280 | 408 |
| On-the-Job Training - All sectors - Up to 1 year (jobs) | | 2,076 | 2,213 | 2,582 | 3,162 | 3,531 | 5,135 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|-------|-------|-------|-------|-------|-------|
| On-the-Job Training - All sectors - 1 to 4 years (jobs) | | 696 | 748 | 884 | 1,091 | 1,224 | 1,760 |
| On-the-Job Training - All sectors - 4 to 10 years (jobs) | | 229 | 250 | 299 | 369 | 417 | 590 |
| On-the-Job Training - All sectors - Over 10 years (jobs) | | 279 | 31.5 | 36.6 | 44.3 | 48.9 | 72 |
| On-Site or In-Plant Training - All sectors - None (jobs) | | 498 | 539 | 630 | 770 | 857 | 1,246 |
| On-Site or In-Plant Training - All sectors - Up to 1 year (jobs) | | 1,896 | 2,021 | 2,360 | 2,892 | 3,232 | 4,696 |
| On-Site or In-Plant Training - All sectors - 1 to 4 years (jobs) | | 536 | 576 | 681 | 839 | 941 | 1,357 |
| On-Site or In-Plant Training - All sectors - 4 to 10 years (jobs) | | 234 | 253 | 301 | 371 | 417 | 589 |
| On-Site or In-Plant Training - All sectors - Over 10 years (jobs) | | 29 | 31.2 | 37.5 | 46.7 | 52.6 | 75.4 |
| Wage income - All (million \$2019) | | 193 | 206 | 244 | 303 | 343 | 497 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Final energy use - Transportation (PJ) | 81.4 | 76.3 | 70.4 | 66.8 | 66.7 | 68.4 | 70.6 |
| Final energy use - Residential (PJ) | 41.7 | 39.3 | 38.7 | 38.6 | 39 | 40 | 41.1 |
| Final energy use - Commercial (PJ) | 29.9 | 30.3 | 30.5 | 30.5 | 30.7 | 31.5 | 33.2 |
| Final energy use - Industry (PJ) | 16 | 16.8 | 17.7 | 18.8 | 20 | 21.3 | 22.7 |

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) | | 0.488 | 0.492 | 0.647 | 0.67 | 0.83 | 0.869 |

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 (%) | 11.1 | 37.9 | 39.1 | 40.3 | 41.2 | 41.9 | 42.9 |
| Sales of space heating units - Electric Resistance (%) | 10.4 | 9.91 | 9.75 | 9.4 | 9.02 | 8.38 | 7.34 |
| Sales of space heating units - Gas (%) | 57.3 | 30.9 | 39.4 | 42.7 | 42.6 | 42.6 | 42.6 |
| Sales of space heating units - Fossil (%) | 21.2 | 21.3 | 11.8 | 7.55 | 7.21 | 7.18 | 7.25 |
| Sales of water heating units - Electric Heat Pump (%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sales of water heating units - Electric Resistance (%) | 30.2 | 47.2 | 47.2 | 47.1 | 47 | 47 | 46.9 |
| Sales of water heating units - Gas Furnace (%) | 65.2 | 49.1 | 49.2 | 49.2 | 49.3 | 49.4 | 49.4 |
| Sales of water heating units - Other (%) | 4.6 | 3.64 | 3.64 | 3.65 | 3.66 | 3.66 | 3.67 |
| Sales of cooking units - Electric Resistance (%) | 49.4 | 49.4 | 49.4 | 49.4 | 49.4 | 49.4 | 49.4 |
| Sales of cooking units - Gas (%) | 50.6 | 50.6 | 50.6 | 50.6 | 50.6 | 50.6 | 50.6 |
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018) | | 0.756 | 0.716 | | | | |

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 (%) | 1.53 | 24.1 | 48.5 | 68.4 | 71.7 | 72.1 | 72.1 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|-------|-------|-------|-------|-------|-------|-------|
| Sales of space heating units - Electric Resistance (%) | 1.94 | 8.79 | 12.8 | 20.1 | 25.2 | 25.9 | 26 |
| Sales of space heating units - Gas Furnace (%) | 84.3 | 62.4 | 35.2 | 9.91 | 2.84 | 1.91 | 1.84 |
| Sales of space heating units - Fossil (%) | 12.2 | 4.76 | 3.52 | 1.51 | 0.221 | 0.018 | 0 |
| Sales of water heating units - Electric Heat Pump (%) | 0.078 | 0.268 | 0.265 | 0.267 | 0.268 | 0.267 | 0.268 |
| Sales of water heating units - Electric Resistance (%) | 1.96 | 6.67 | 6.62 | 6.62 | 6.65 | 6.63 | 6.65 |
| Sales of water heating units - Gas Furnace (%) | 93.3 | 88.5 | 88.5 | 88.6 | 88.5 | 88.5 | 88.5 |
| Sales of water heating units - Other (%) | 4.67 | 4.54 | 4.63 | 4.53 | 4.56 | 4.58 | 4.53 |
| Sales of cooking units - Electric Resistance (%) | 32 | 34.3 | 34.3 | 34.3 | 34.4 | 34.3 | 34.3 |
| Sales of cooking units - Gas (%) | 68 | 65.7 | 65.7 | 65.7 | 65.6 | 65.7 | 65.7 |
| Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018) | | 3,421 | 3,558 | | | | |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|-------|-------|-------|-------|-------|-------|-------|
| Installed thermal - Coal (MW) | 446 | 446 | 446 | 446 | 446 | 446 | 0 |
| Installed thermal - Natural gas (MW) | 1,620 | 2,286 | 1,958 | 2,627 | 4,157 | 5,313 | 5,232 |
| Installed thermal - Nuclear (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Installed renewables - Rooftop PV (MW) | 110 | 165 | 219 | 290 | 375 | 472 | 584 |
| Installed renewables - Solar - Base land use assumptions (MW) | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 |
| Installed renewables - Wind - Base land use assumptions (MW) | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Installed renewables - Offshore Wind - Base land use assumptions (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 1,497 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|------|------|
| Solar - Base land use assumptions (GWh) | 75.2 | 75.2 | 75.2 | 75.2 | 75.2 | 75.2 | 75.2 |
| Wind - Base land use assumptions (GWh) | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 |
| 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 CO ₂ e/y) | -0.69 | | -0.314 | | | | -0.281 |
| Business-as-usual carbon sink - Retained in Hardwood Products (Mt CO ₂ e/y) | -0.057 | | -0.102 | | | | -0.106 |
| Business-as-usual carbon sink - Total (Mt CO ₂ e/y) | -0.747 | | -0.416 | | | | -0.387 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - Low - Accelerate regeneration (1000 tCO ₂ e/y) | | | | | | | -3.48 |
| Carbon sink potential - Low - Avoid deforestation (1000 tCO ₂ e/y) | | | | | | | -34.3 |
| Carbon sink potential - Low - Extend rotation length (1000 tCO ₂ e/y) | | | | | | | -77.3 |

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

| Item | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|------|------|------|------|------|------|-------|
| Carbon sink potential - Low - Improve plantations (1000 tCO ₂ e/y) | | | | | | | -13.9 |
| Carbon sink potential - Low - Increase retention of HWP (1000 tCO ₂ e/y) | | | | | | | -69.4 |
| Carbon sink potential - Low - Increase trees outside forests (1000 tCO ₂ e/y) | | | | | | | -29.2 |
| Carbon sink potential - Low - Reforest cropland (1000 tCO ₂ e/y) | | | | | | | -2.7 |
| Carbon sink potential - Low - Reforest pasture (1000 tCO ₂ e/y) | | | | | | | -6.51 |
| Carbon sink potential - Low - Restore productivity (1000 tCO ₂ e/y) | | | | | | | -25.8 |
| Carbon sink potential - Low - All (not counting overlap) (1000 tCO ₂ e/y) | | | | | | | -263 |
| Carbon sink potential - Mid - Accelerate regeneration (1000 tCO ₂ e/y) | | | | | | | -5.21 |
| Carbon sink potential - Mid - Avoid deforestation (1000 tCO ₂ e/y) | | | | | | | -120 |
| Carbon sink potential - Mid - Extend rotation length (1000 tCO ₂ e/y) | | | | | | | -139 |
| Carbon sink potential - Mid - Improve plantations (1000 tCO ₂ e/y) | | | | | | | -20.4 |
| Carbon sink potential - Mid - Increase retention of HWP (1000 tCO ₂ e/y) | | | | | | | -139 |
| Carbon sink potential - Mid - Increase trees outside forests (1000 tCO ₂ e/y) | | | | | | | -56.4 |
| Carbon sink potential - Mid - Reforest cropland (1000 tCO ₂ e/y) | | | | | | | -4.05 |
| Carbon sink potential - Mid - Reforest pasture (1000 tCO ₂ e/y) | | | | | | | -46.2 |
| Carbon sink potential - Mid - Restore productivity (1000 tCO ₂ e/y) | | | | | | | -51.2 |
| Carbon sink potential - Mid - All (not counting overlap) (1000 tCO ₂ e/y) | | | | | | | -581 |
| Carbon sink potential - High - Accelerate regeneration (1000 tCO ₂ e/y) | | | | | | | -6.94 |
| Carbon sink potential - High - Avoid deforestation (1000 tCO ₂ e/y) | | | | | | | -206 |
| Carbon sink potential - High - Extend rotation length (1000 tCO ₂ e/y) | | | | | | | -201 |
| Carbon sink potential - High - Improve plantations (1000 tCO ₂ e/y) | | | | | | | -27.3 |
| Carbon sink potential - High - Increase retention of HWP (1000 tCO ₂ e/y) | | | | | | | -208 |
| Carbon sink potential - High - Increase trees outside forests (1000 tCO ₂ e/y) | | | | | | | -83.5 |
| Carbon sink potential - High - Reforest cropland (1000 tCO ₂ e/y) | | | | | | | -5.4 |
| Carbon sink potential - High - Reforest pasture (1000 tCO ₂ e/y) | | | | | | | -85.9 |
| Carbon sink potential - High - All (not counting overlap) (1000 tCO ₂ e/y) | | | | | | | -901 |
| Carbon sink potential - High - Restore productivity (1000 tCO ₂ e/y) | | | | | | | -76.6 |
| Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares) | | | | | | | 0.567 |
| Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 26.1 |

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 - Extend rotation length (1000 hectares) | | | | | | | 39.3 |
| Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares) | | | | | | | 5.03 |
| 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) | | | | | | | 4.17 |
| Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares) | | | | | | | 0.179 |
| Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares) | | | | | | | 0.423 |
| Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares) | | | | | | | 15.4 |
| Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares) | | | | | | | 91.2 |
| Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares) | | | | | | | 0.851 |
| Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27 |
| Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares) | | | | | | | 71 |
| Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares) | | | | | | | 7.57 |
| 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) | | | | | | | 6.05 |
| Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares) | | | | | | | 0.268 |
| Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares) | | | | | | | 3.06 |
| Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares) | | | | | | | 30.9 |
| Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares) | | | | | | | 147 |
| Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares) | | | | | | | 1.13 |
| Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares) | | | | | | | 27.8 |
| Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares) | | | | | | | 103 |
| Land impacted for carbon sink potential - High - Improve plantations (1000 hectares) | | | | | | | 10.1 |

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 - Increase retention of HWP (1000 hectares) | | | | | | | 0 |
| Land impacted for carbon sink potential - High - Increase trees outside forests (1000 hectares) | | | | | | | 7.93 |
| Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares) | | | | | | | 0.357 |
| Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares) | | | | | | | 2.44 |
| Land impacted for carbon sink potential - High - Restore productivity (1000 hectares) | | | | | | | 25.4 |
| Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares) | | | | | | | 178 |