# Net-Zero America - mississippi state report v2

Larson et al. 2020

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### Reading guide

IN DRAFT

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

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr | 0 | 2.2 | 2.297 | 0 | 0 | 0 | 0 |
| Sale of space heating units by type - Electric Heat Pump | 0.266 | 0.555 | 0.563 | 0.576 | 0.588 | 0.604 | 0.627 |
| Sale of space heating units by type - Electric Resistance | 0.298 | 0.239 | 0.235 | 0.228 | 0.218 | 0.204 | 0.18 |
| Sale of space heating units by type - Fossil | 0.122 | 0.068 | 0.069 | 0.067 | 0.066 | 0.065 | 0.065 |
| Sale of space heating units by type - Gas | 0.314 | 0.138 | 0.133 | 0.129 | 0.128 | 0.127 | 0.127 |
| Sales of cooking units - Electric Resistance | 0.755 | 0.755 | 0.755 | 0.755 | 0.755 | 0.755 | 0.755 |
| Sales of cooking units - Gas | 0.245 | 0.245 | 0.245 | 0.245 | 0.245 | 0.245 | 0.245 |
| Sales of water heating units by type - Electric Heat Pump | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sales of water heating units by type - Electric Resistance | 0.672 | 0.784 | 0.785 | 0.783 | 0.781 | 0.781 | 0.78 |
| Sales of water heating units by type - Gas Furnace | 0.292 | 0.192 | 0.19 | 0.192 | 0.194 | 0.194 | 0.195 |
| Sales of water heating units by type - Other | 0.036 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 |

Table 2: *E- scenario - PILLAR 1: Efficiency/Electrification - Transportation*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| End-use technology sales by technology - HDV - diesel | 0.981 | 0.982 | 0.979 | 0.97 | 0.956 | 0.935 | 0.916 |
| End-use technology sales by technology - HDV - EV | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| End-use technology sales by technology - HDV - gasoline | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| End-use technology sales by technology - HDV - hybrid | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| End-use technology sales by technology - HDV - hydrogen FC | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 |
| End-use technology sales by technology - HDV - other | 0.015 | 0.013 | 0.016 | 0.024 | 0.037 | 0.057 | 0.076 |
| End-use technology sales by technology - LDV - diesel | 0.016 | 0.02 | 0.022 | 0.02 | 0.018 | 0.017 | 0.016 |
| End-use technology sales by technology - LDV - EV | 0.036 | 0.056 | 0.064 | 0.079 | 0.096 | 0.111 | 0.123 |
| End-use technology sales by technology - LDV - gasoline | 0.902 | 0.866 | 0.845 | 0.826 | 0.806 | 0.786 | 0.771 |
| End-use technology sales by technology - LDV - hybrid | 0.045 | 0.053 | 0.065 | 0.07 | 0.076 | 0.082 | 0.086 |
| End-use technology sales by technology - LDV - hydrogen FC | 0.001 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| End-use technology sales by technology - LDV - other | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| End-use technology sales by technology - MDV - diesel | 0.652 | 0.635 | 0.616 | 0.596 | 0.58 | 0.565 | 0.552 |
| End-use technology sales by technology - MDV - EV | 0 | 0.001 | 0.003 | 0.007 | 0.009 | 0.01 | 0.01 |
| End-use technology sales by technology - MDV - gasoline | 0.34 | 0.355 | 0.37 | 0.385 | 0.397 | 0.408 | 0.417 |
| End-use technology sales by technology - MDV - hybrid | 0.004 | 0.004 | 0.005 | 0.006 | 0.007 | 0.008 | 0.009 |
| End-use technology sales by technology - MDV - hydrogen FC | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 |
| End-use technology sales by technology - MDV - other | 0.003 | 0.003 | 0.003 | 0.003 | 0.004 | 0.005 | 0.007 |

Table 3: *E- scenario - PILLAR 6: Land carbon sinks - Agriculture*

| variable_name | 2020 | 2030 | 2050 |
|---|---|---|---|
| Carbon sink enhancement potential - Accelerate regeneration | 0 | 0 | 1306.585 |
| Carbon sink enhancement potential - All (not counting overlap) | 0 | 0 | 83823.5 |
| Carbon sink enhancement potential - Avoid deforestation | 0 | 0 | 2023.794 |
| Carbon sink enhancement potential - Extend rotation length | 0 | 0 | 14175.3 |
| Carbon sink enhancement potential - Improve plantations | 0 | 0 | 8917.6 |
| Carbon sink enhancement potential - Increase retention of HWP | 0 | 0 | 26171.8 |
| Carbon sink enhancement potential - Increase trees outside forests | 0 | 0 | 1354.403 |
| Carbon sink enhancement potential - Reforest cropland | 0 | 0 | 11413.5 |
| Carbon sink enhancement potential - Reforest pasture | 0 | 0 | 10085.7 |
| Carbon sink enhancement potential - Restore productivity | 0 | 0 | 8374.7 |
| Land impacted for carbon sink enhancement - Accelerate regeneration | 0 | 0 | 526.602 |
| Land impacted for carbon sink enhancement - All (not counting overlap) | 0 | 0 | 17371.1 |
| Land impacted for carbon sink enhancement - Avoid deforestation | 0 | 0 | 543.25 |
| Land impacted for carbon sink enhancement - Extend rotation length | 0 | 0 | 7808.9 |
| Land impacted for carbon sink enhancement - Improve plantations | 0 | 0 | 4956.256 |
| Land impacted for carbon sink enhancement - Increase retention of HWP | 0 | 0 | 5234.4 |
| Land impacted for carbon sink enhancement - Increase trees outside forests | 0 | 0 | 382.063 |
| Land impacted for carbon sink enhancement - Natural uptake | -32.86 | -14.911 | -12.084 |
| Land impacted for carbon sink enhancement - Reforest cropland | 0 | 0 | 3800.008 |
| Land impacted for carbon sink enhancement - Reforest pasture | 0 | 0 | 762.643 |
| Land impacted for carbon sink enhancement - Restore productivity | 0 | 0 | 4726 |
| Land impacted for carbon sink enhancement - Retained in Hardwood Products | -4.273 | -7.126 | -7.501 |
| Land impacted for carbon sink enhancement - Total | -37.133 | -22.037 | -19.585 |
| Land impacted for carbon sink enhancement - Total impacted (over 30 years) | 0 | 0 | 11368.9 |

Table 4: *E- scenario - PILLAR 6: Land carbon sinks - Forests*

| variable_name | 2050 |
|---|---|
| Business-as-usual carbon sink - Accelerate regeneration | 122.111 |
| Business-as-usual carbon sink - Avoid deforestation | 173.054 |
| Business-as-usual carbon sink - Extend rotation length | 4272 |
| Business-as-usual carbon sink - Improve plantations | 1882.1 |

Table 4: *E- scenario - PILLAR 6: Land carbon sinks - Forests (continued)*

| variable_name | 2050 |
|---|---|
| Business-as-usual carbon sink - Increase retention of HWP | 0 |
| Business-as-usual carbon sink - Increase trees outside forests | 76.817 |
| Business-as-usual carbon sink - Reforest cropland | 431.206 |
| Business-as-usual carbon sink - Reforest pasture | 186.313 |
| Business-as-usual carbon sink - Restore productivity | 1663.7 |
| Business-as-usual carbon sink - Total impacted (over 30 years) | 431.206 |

Table 5: *E- scenario - PILLAR 1: Efficiency/Electrification - Overview*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Final energy demand by sector - commercial | 0.071 | 0.072 | 0.072 | 0.072 | 0.073 | 0.075 | 0.078 |
| Final energy demand by sector - industry | 0.201 | 0.21 | 0.218 | 0.222 | 0.228 | 0.232 | 0.238 |
| Final energy demand by sector - residential | 0.099 | 0.093 | 0.091 | 0.09 | 0.09 | 0.091 | 0.092 |
| Final energy demand by sector - transportation | 0.35 | 0.326 | 0.299 | 0.283 | 0.283 | 0.291 | 0.302 |

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

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Commercial HVAC investment in 2020s - Cumulative 5-yr | 0 | 7973544800 | 8300426531 | 0 | 0 | 0 | 0 |
| Sales of cooking units - Electric Resistance | 0.435 | 0.456 | 0.459 | 0.457 | 0.46 | 0.459 | 0.457 |
| Sales of cooking units - Gas | 0.565 | 0.544 | 0.541 | 0.543 | 0.54 | 0.541 | 0.543 |
| Sales of space heating units - Electric Heat Pump | 0.095 | 0.319 | 0.712 | 0.79 | 0.793 | 0.794 | 0.794 |
| Sales of space heating units - Electric Resistance | 0.047 | 0.064 | 0.12 | 0.158 | 0.187 | 0.192 | 0.192 |
| Sales of space heating units - Fossil | 0 | 0.027 | 0.005 | 0 | 0 | 0 | 0 |
| Sales of space heating units - Gas Furnace | 0.858 | 0.59 | 0.164 | 0.052 | 0.019 | 0.015 | 0.014 |
| Sales of water heating units - Electric Heat Pump | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Sales of water heating units - Electric Resistance | 0.056 | 0.057 | 0.056 | 0.057 | 0.056 | 0.056 | 0.056 |
| Sales of water heating units - Gas Furnace | 0.927 | 0.925 | 0.927 | 0.926 | 0.927 | 0.927 | 0.927 |
| Sales of water heating units - Other | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 |

Table 7: *E- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand*

| variable_name | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Electricity distribution peak load (capital invested) - Cumulative 5-yr | 2.319 | 2.41 | 3.75 | 3.991 | 3.105 | 3.211 |

Table 8: *RE- scenario - PILLAR 1: Efficiency/Electrification - Residential*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr | 0 | 2.274 | 2.78 | 0 | 0 | 0 | 0 |
| Sale of space heating units by type - Electric Heat Pump | 0.295 | 0.451 | 0.804 | 0.883 | 0.887 | 0.886 | 0.886 |
| Sale of space heating units by type - Electric Resistance | 0.286 | 0.271 | 0.114 | 0.079 | 0.077 | 0.078 | 0.078 |
| Sale of space heating units by type - Fossil | 0.117 | 0.113 | 0.032 | 0.014 | 0.013 | 0.013 | 0.013 |
| Sale of space heating units by type - Gas | 0.302 | 0.164 | 0.05 | 0.025 | 0.024 | 0.024 | 0.024 |
| Sales of cooking units - Electric Resistance | 0.758 | 0.81 | 0.967 | 0.998 | 1 | 1 | 1 |
| Sales of cooking units - Gas | 0.242 | 0.19 | 0.033 | 0.002 | 0 | 0 | 0 |
| Sales of water heating units by type - Electric Heat Pump | 0 | 0.121 | 0.64 | 0.756 | 0.761 | 0.761 | 0.761 |
| Sales of water heating units by type - Electric Resistance | 0.672 | 0.693 | 0.305 | 0.218 | 0.214 | 0.214 | 0.214 |
| Sales of water heating units by type - Gas Furnace | 0.292 | 0.161 | 0.03 | 0.001 | 0 | 0 | 0 |
| Sales of water heating units by type - Other | 0.036 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 |

Table 9: *RE- scenario - PILLAR 1: Efficiency/Electrification - Transportation*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| End-use technology sales by technology - HDV - diesel | 0.972 | 0.921 | 0.67 | 0.233 | 0.042 | 0.006 | 0 |
| End-use technology sales by technology - HDV - EV | 0.006 | 0.038 | 0.19 | 0.456 | 0.574 | 0.596 | 0.6 |
| End-use technology sales by technology - HDV - gasoline | 0.002 | 0.002 | 0.002 | 0.001 | 0 | 0 | 0 |
| End-use technology sales by technology - HDV - hybrid | 0.001 | 0.001 | 0.001 | 0 | 0 | 0 | 0 |
| End-use technology sales by technology - HDV - hydrogen FC | 0.004 | 0.025 | 0.127 | 0.304 | 0.382 | 0.397 | 0.4 |
| End-use technology sales by technology - HDV - other | 0.015 | 0.012 | 0.011 | 0.006 | 0.002 | 0 | 0 |
| End-use technology sales by technology - LDV - diesel | 0.015 | 0.018 | 0.013 | 0.004 | 0.001 | 0 | 0 |
| End-use technology sales by technology - LDV - EV | 0.039 | 0.152 | 0.465 | 0.818 | 0.963 | 0.993 | 1 |
| End-use technology sales by technology - LDV - gasoline | 0.899 | 0.78 | 0.487 | 0.165 | 0.033 | 0.006 | 0 |
| End-use technology sales by technology - LDV - hybrid | 0.044 | 0.046 | 0.032 | 0.012 | 0.003 | 0.001 | 0 |
| End-use technology sales by technology - LDV - hydrogen FC | 0.001 | 0.003 | 0.002 | 0.001 | 0 | 0 | 0 |
| End-use technology sales by technology - LDV - other | 0.001 | 0.001 | 0.001 | 0 | 0 | 0 | 0 |
| End-use technology sales by technology - MDV - diesel | 0.647 | 0.597 | 0.423 | 0.144 | 0.026 | 0.004 | 0 |
| End-use technology sales by technology - MDV - EV | 0.008 | 0.051 | 0.253 | 0.608 | 0.765 | 0.795 | 0.8 |
| End-use technology sales by technology - MDV - gasoline | 0.337 | 0.333 | 0.255 | 0.093 | 0.018 | 0.003 | 0 |
| End-use technology sales by technology - MDV - hybrid | 0.004 | 0.004 | 0.003 | 0.001 | 0 | 0 | 0 |
| End-use technology sales by technology - MDV - hydrogen FC | 0.002 | 0.013 | 0.063 | 0.152 | 0.191 | 0.199 | 0.2 |
| End-use technology sales by technology - MDV - other | 0.003 | 0.003 | 0.002 | 0.001 | 0 | 0 | 0 |
| Light-duty vehicle capital costs - Cumulative 5-yr | 0 | 397910032 | 1015902778 | 1652685188 | 2500938277 | 2724721225 | 2596359807 |
| Number of public EV charging plugs - DC Fast Charging | 53 | 0 | 877.781 | 0 | 3917.1 | 0 | 6345.8 |
| Number of public EV charging plugs - L2 Charging | 175 | 0 | 21121.3 | 0 | 94253.9 | 0 | 152694.6 |

Table 10: *RE- scenario - PILLAR 2: Clean Electricity - Generating capacity*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Power generation capital investment - biomass power plant | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Power generation capital investment - biomass w/ccu allam power plant | 0 | 0 | 0 | 0 | 0.002 | 0 | 0 |
| Power generation capital investment - biomass w/ccu power plant | 0 | 0 | 2.856 | 0 | 0 | 2.522 | 0 |
| Power generation capital investment - Solar PV - Base | 0 | 1.428 | 1.392 | 5.446 | 9.458 | 9.286 | 10.833 |
| Power generation capital investment - Solar PV - Constrained | 0 | 0.876 | 2.232 | 4.746 | 5.053 | 7.966 | 9.845 |
| Power generation capital investment - Wind - Base | 0 | 0 | 0 | 0 | 0 | 0.529 | 1.141 |
| Power generation capital investment - Wind - Constrained | 0 | 0 | 0 | 0 | 15.78 | 0 | 0 |

Table 11: *RE- scenario - PILLAR 2: Clean Electricity - Generation*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Power generation by technology - biomass power plant | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Power generation by technology - biomass w/ccu allam power plant | 0 | 0 | 0 | 0 | 2.371 | 2.371 | 2.371 |
| Power generation by technology - biomass w/ccu power plant | 0 | 0 | 3205.2 | 3205.2 | 3205.2 | 6035.8 | 6035.8 |

Table 12: *RE- scenario - PILLAR 2: Clean Electricity - Transmission*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| HV transmission for wind and solar - base all | 0 | 96.35 | 179.298 | 546.775 | 1517.5 | 2623.4 | 4464.7 |
| HV transmission for wind and solar - base other intra-state | 0 | 27.948 | 27.948 | 34.285 | 314.949 | 829.813 | 1745.9 |
| HV transmission for wind and solar - base spur intra-state | 0 | 1.447 | 1.447 | 92.546 | 542.88 | 989.766 | 1712.1 |
| HV transmission for wind and solar - constrained all | 0 | 80.419 | 176.41 | 912.736 | 6424.6 | 7587 | 9023 |
| HV transmission for wind and solar - constrained other intra-state | 0 | 27.948 | 27.948 | 162.352 | 1336.4 | 1959 | 2625.7 |
| HV transmission for wind and solar - constrained spur intra-state | 0 | 1.346 | 22.411 | 183.131 | 1869.1 | 2312.8 | 3010.4 |

Table 13: *RE- scenario - PILLAR 3: Bioenergy and Hydrogen - Bioconversion*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Biomass purchases | 0 | 0 | 0.118 | 0.344 | 0.547 | 0.97 | 0.97 |
| Capital investment | 0 | 0 | 2.469 | 0 | 7.812 | 0 | 7.964 |
| Number of facilities - allam power w ccu | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Number of facilities - beccs hydrogen | 0 | 0 | 0 | 4 | 7 | 14 | 14 |
| Number of facilities - diesel | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - diesel ccu | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Number of facilities - power | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - power ccu | 0 | 0 | 2 | 2 | 2 | 4 | 4 |
| Number of facilities - pyrolysis | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - pyrolysis ccu | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Number of facilities - sng | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - sng ccu | 0 | 0 | 1 | 1 | 1 | 1 | 1 |

Table 14: *RE- scenario - PILLAR 4: CO2 capture, use, storage - CO2 capture*

| variable_name | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Annual - All | 0 | 3.17 | 13.71 | 18.54 | 30.85 | 31.36 |
| Annual - BECCS | 0 | 3.17 | 8.78 | 13.71 | 24.33 | 24.32 |
| Annual - Cement | 0 | 0 | 0 | 0 | 0 | 0 |
| Annual - NGCC | 0 | 0 | 4.93 | 4.83 | 6.52 | 7.04 |
| Cumulative - All | 0 | 3.17 | 16.88 | 35.42 | 66.27 | 97.63 |
| Cumulative - BECCS | 0 | 3.17 | 11.95 | 25.66 | 49.99 | 74.31 |
| Cumulative - Cement | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - NGCC | 0 | 0 | 4.93 | 9.76 | 16.28 | 23.32 |

Table 15: *RE- scenario - PILLAR 4: CO2 capture, use, storage - CO2 storage*

| variable_name | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Annual | 0 | 6.58 | 21.14 | 37.94 | 60.25 | 80.14 |
| Injection wells | 0 | 6 | 24 | 42 | 70 | 86 |
| Resource characterization, appraisal and permitting costs cumulative | 32.8 | 590.4 | 935.46 | 935.46 | 935.46 | 935.46 |
| Wells and facilities construction costs cumulative | 0 | 181 | 705.39 | 1257.1 | 2101.9 | 2609.6 |

Table 16: *RE- scenario - PILLAR 4: CO2 capture, use, storage - CO2 transportation*

| variable_name | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| CO2 pipelines - All | 0 | 2939211.381 | 6496815.9 | 6988495.7 | 7605454.5 | 7794957.3 |
| CO2 pipelines - Spur | 0 | 85019.342 | 788431.2 | 1280111.2 | 1897070.1 | 2086572.8 |
| CO2 pipelines - Trunk | 0 | 2854192.739 | 5708384.477 | 5708384.477 | 5708384.477 | 5708384.477 |

Table 17: *RE- scenario - IMPACTS - Jobs*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Jobs by economic sector - agriculture | 176.558 | 189.462 | 382.2 | 878.859 | 1094.8 | 1486.2 | 1220.9 |
| Jobs by economic sector - construction | 4334 | 5107.9 | 6096.3 | 10102.1 | 12546.3 | 13917.6 | 17638 |
| Jobs by economic sector - manufacturing | 4217 | 6520.2 | 7438.2 | 9493.1 | 9165.7 | 8159.6 | 9566.9 |

Table 17: *RE- scenario - IMPACTS - Jobs (continued)*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Jobs by economic sector - mining | 5696.3 | 4844.9 | 4039.5 | 3230 | 2134.9 | 1563.6 | 985.945 |
| Jobs by economic sector - other | 203.752 | 374.913 | 423.942 | 1169.1 | 2154.2 | 2578.3 | 3730.5 |
| Jobs by economic sector - pipeline | 556.626 | 556.744 | 828.654 | 868.522 | 477.749 | 422.58 | 430.215 |
| Jobs by economic sector - professional | 2764.8 | 2896.5 | 2894.8 | 4771.7 | 6444.2 | 7923.6 | 9510.5 |
| Jobs by economic sector - trade | 2673.4 | 2569.1 | 2374.9 | 3189.1 | 4097.8 | 4721.1 | 5977.2 |
| Jobs by economic sector - utilities | 6260.4 | 5944.4 | 6784.2 | 9692.4 | 10211.8 | 11514.4 | 13573 |
| Jobs by resource sector - Biomass | 572.246 | 633.332 | 1009.4 | 2447.6 | 3263.2 | 5424.5 | 5228.8 |
| Jobs by resource sector - CO2 | 0 | 12.766 | 3162 | 4289.9 | 1772 | 2277.9 | 2838.2 |
| Jobs by resource sector - Coal | 679.589 | 217.864 | 0 | 0 | 0 | 0 | 0 |
| Jobs by resource sector - Grid | 6536.2 | 6142 | 6203.3 | 11297.3 | 14577.2 | 17732.2 | 23650 |
| Jobs by resource sector - Natural Gas | 6273.4 | 6086.2 | 4934 | 4471.3 | 4263.1 | 3621.6 | 1999.7 |
| Jobs by resource sector - Nuclear | 738.72 | 726.81 | 715.203 | 703.888 | 692.856 | 402.003 | 0 |
| Jobs by resource sector - Oil | 10907.6 | 10204.4 | 8953 | 7699.9 | 5575.9 | 4128.5 | 2633.6 |
| Jobs by resource sector - Solar | 840.561 | 3340.2 | 3974.9 | 9402.8 | 15361.2 | 16457 | 23050.1 |
| Jobs by resource sector - Wind | 334.386 | 1640.5 | 2311 | 3082.1 | 2822 | 2243.3 | 3232.7 |
| Median wages - All | 54483.5 | 54192 | 54236.1 | 53713.6 | 53644.2 | 54302.3 | 54459.2 |
| Required Level of Education - Associates degree or some college | 8032.5 | 8760.6 | 9589.8 | 13505.6 | 15104.5 | 16332.6 | 19864.6 |
| Required Level of Education - Bachelors degree | 6297.5 | 6583.2 | 6788.8 | 8936.2 | 9746.9 | 10478.1 | 12319.6 |
| Required Level of Education - Doctoral degree | 201.259 | 205.365 | 203.714 | 283.314 | 338.576 | 386.852 | 453.274 |
| Required Level of Education - High school diploma or less | 10845.5 | 11912 | 13108.9 | 18563 | 20775.3 | 22486.3 | 26929.3 |
| Required Level of Education - Masters or professional degree | 1506 | 1542.9 | 1571.7 | 2106.7 | 2362.3 | 2603.1 | 3066.4 |
| Wage income - All | 1464716166 | 1571855946 | 1695646853 | 2331070118 | 2592806727 | 2839686988 | 3411486877 |

Table 18: *RE- scenario - PILLAR 6: Land carbon sinks - Agriculture*

| variable_name | 2050 |
|---|---|
| Carbon sink enhancement potential - Accelerate regeneration | 1306.585 |
| Carbon sink enhancement potential - All (not counting overlap) | 83823.5 |
| Carbon sink enhancement potential - Avoid deforestation | 2023.794 |
| Carbon sink enhancement potential - corn-ethanol to energy grasses | -344.92 |
| Carbon sink enhancement potential - cropland measures | -9542.727 |
| Carbon sink enhancement potential - Extend rotation length | 14175.3 |
| Carbon sink enhancement potential - Improve plantations | 8917.6 |
| Carbon sink enhancement potential - Increase retention of HWP | 26171.8 |
| Carbon sink enhancement potential - Increase trees outside forests | 1354.403 |
| Carbon sink enhancement potential - permanent conservation cover | -102.909 |
| Carbon sink enhancement potential - Reforest cropland | 11413.5 |
| Carbon sink enhancement potential - Reforest pasture | 10085.7 |
| Carbon sink enhancement potential - Restore productivity | 8374.7 |
| Carbon sink enhancement potential - total | -9990.558 |
| Land impacted for carbon sink enhancement - Accelerate regeneration | 526.602 |
| Land impacted for carbon sink enhancement - All (not counting overlap) | 17371.1 |
| Land impacted for carbon sink enhancement - Avoid deforestation | 543.25 |
| Land impacted for carbon sink enhancement - corn-ethanol to energy grasses | 139.044 |
| Land impacted for carbon sink enhancement - cropland measures | 2753.269 |
| Land impacted for carbon sink enhancement - Extend rotation length | 7808.9 |
| Land impacted for carbon sink enhancement - Improve plantations | 4956.256 |
| Land impacted for carbon sink enhancement - Increase retention of HWP | 5234.4 |
| Land impacted for carbon sink enhancement - Increase trees outside forests | 382.063 |
| Land impacted for carbon sink enhancement - permanent conservation cover | 187.173 |
| Land impacted for carbon sink enhancement - Reforest cropland | 3800.008 |
| Land impacted for carbon sink enhancement - Reforest pasture | 762.643 |
| Land impacted for carbon sink enhancement - Restore productivity | 4726 |
| Land impacted for carbon sink enhancement - total | 3079.6 |
| Land impacted for carbon sink enhancement - Total impacted (over 30 years) | 11368.9 |

Table 19: *RE- scenario - PILLAR 6: Land carbon sinks - Forests*

| variable_name | 2050 |
|---|---|
| Business-as-usual carbon sink - Accelerate regeneration | 122.111 |
| Business-as-usual carbon sink - Avoid deforestation | 173.054 |
| Business-as-usual carbon sink - Extend rotation length | 4272 |
| Business-as-usual carbon sink - Improve plantations | 1882.1 |
| Business-as-usual carbon sink - Increase retention of HWP | 0 |
| Business-as-usual carbon sink - Increase trees outside forests | 76.817 |
| Business-as-usual carbon sink - Reforest cropland | 431.206 |
| Business-as-usual carbon sink - Reforest pasture | 186.313 |
| Business-as-usual carbon sink - Restore productivity | 1663.7 |
| Business-as-usual carbon sink - Total impacted (over 30 years) | 431.206 |

Table 20: *RE- scenario - IMPACTS - Fossil fuel industries*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Natural gas consumption | 439603.9 | 446132.5 | 376064.5 | 301619.3 | 227054.5 | 142855.1 | 99080.5 |
| Oil consumption | 80046.2 | 75737.1 | 66718.8 | 53492 | 41032.9 | 31149.2 | 23087.4 |

Table 21: *RE- scenario - PILLAR 1: Efficiency/Electrification - Overview*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Final energy demand by sector - commercial | 0.071 | 0.071 | 0.068 | 0.064 | 0.061 | 0.06 | 0.06 |
| Final energy demand by sector - industry | 0.201 | 0.206 | 0.208 | 0.206 | 0.206 | 0.204 | 0.203 |
| Final energy demand by sector - residential | 0.099 | 0.093 | 0.086 | 0.076 | 0.069 | 0.065 | 0.063 |
| Final energy demand by sector - transportation | 0.35 | 0.323 | 0.285 | 0.238 | 0.196 | 0.17 | 0.16 |

Table 22: *RE- scenario - PILLAR 1: Efficiency/Electrification - Commercial*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Commercial HVAC investment in 2020s - Cumulative 5-yr | 0 | 8123045787 | 9221838573 | 0 | 0 | 0 | 0 |
| Sales of cooking units - Electric Resistance | 0.435 | 0.553 | 0.834 | 0.889 | 0.892 | 0.892 | 0.891 |
| Sales of cooking units - Gas | 0.565 | 0.447 | 0.166 | 0.111 | 0.108 | 0.108 | 0.108 |
| Sales of space heating units - Electric Heat Pump | 0.095 | 0.293 | 0.77 | 0.908 | 0.919 | 0.92 | 0.92 |
| Sales of space heating units - Electric Resistance | 0.047 | 0.046 | 0.049 | 0.063 | 0.066 | 0.066 | 0.066 |
| Sales of space heating units - Fossil | 0 | 0.029 | 0.006 | 0 | 0 | 0 | 0 |
| Sales of space heating units - Gas Furnace | 0.858 | 0.632 | 0.175 | 0.029 | 0.015 | 0.014 | 0.014 |
| Sales of water heating units - Electric Heat Pump | 0.002 | 0.106 | 0.557 | 0.657 | 0.661 | 0.662 | 0.662 |
| Sales of water heating units - Electric Resistance | 0.056 | 0.1 | 0.28 | 0.321 | 0.323 | 0.323 | 0.323 |
| Sales of water heating units - Gas Furnace | 0.927 | 0.778 | 0.147 | 0.006 | 0 | 0 | 0 |
| Sales of water heating units - Other | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 |

Table 23: *RE- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand*

| variable_name | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Electricity distribution peak load (capital invested) - Cumulative 5-yr | 2.033 | 2.091 | 3.694 | 3.936 | 2.976 | 3.075 |

Table 24: *REF scenario - PILLAR 1: Efficiency/Electrification - Residential*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr | 0 | 2.251 | 2.651 | 0 | 0 | 0 | 0 |
| Sale of space heating units by type - Electric Heat Pump | 0.295 | 0.383 | 0.423 | 0.541 | 0.718 | 0.833 | 0.872 |
| Sale of space heating units by type - Electric Resistance | 0.286 | 0.301 | 0.283 | 0.23 | 0.151 | 0.101 | 0.084 |
| Sale of space heating units by type - Fossil | 0.117 | 0.129 | 0.121 | 0.092 | 0.05 | 0.024 | 0.016 |
| Sale of space heating units by type - Gas | 0.302 | 0.186 | 0.173 | 0.138 | 0.081 | 0.042 | 0.028 |
| Sales of cooking units - Electric Resistance | 0.757 | 0.764 | 0.786 | 0.844 | 0.926 | 0.976 | 0.994 |
| Sales of cooking units - Gas | 0.243 | 0.236 | 0.214 | 0.156 | 0.074 | 0.024 | 0.006 |
| Sales of water heating units by type - Electric Heat Pump | 0 | 0.021 | 0.08 | 0.25 | 0.511 | 0.681 | 0.74 |
| Sales of water heating units by type - Electric Resistance | 0.672 | 0.768 | 0.725 | 0.596 | 0.401 | 0.274 | 0.23 |
| Sales of water heating units by type - Gas Furnace | 0.292 | 0.186 | 0.17 | 0.129 | 0.064 | 0.02 | 0.005 |
| Sales of water heating units by type - Other | 0.036 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 |

Table 25: *REF scenario - PILLAR 1: Efficiency/Electrification - Transportation*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| End-use technology sales by technology - HDV - diesel | 0.974 | 0.96 | 0.913 | 0.798 | 0.582 | 0.321 | 0.137 |
| End-use technology sales by technology - HDV - EV | 0.005 | 0.015 | 0.041 | 0.108 | 0.236 | 0.394 | 0.51 |
| End-use technology sales by technology - HDV - gasoline | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 |
| End-use technology sales by technology - HDV - hybrid | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0 |
| End-use technology sales by technology - HDV - hydrogen FC | 0.003 | 0.01 | 0.027 | 0.072 | 0.157 | 0.263 | 0.34 |
| End-use technology sales by technology - HDV - other | 0.015 | 0.013 | 0.015 | 0.019 | 0.022 | 0.02 | 0.011 |
| End-use technology sales by technology - LDV - diesel | 0.016 | 0.02 | 0.021 | 0.016 | 0.01 | 0.005 | 0.002 |
| End-use technology sales by technology - LDV - EV | 0.019 | 0.047 | 0.119 | 0.259 | 0.484 | 0.721 | 0.876 |
| End-use technology sales by technology - LDV - gasoline | 0.917 | 0.874 | 0.796 | 0.666 | 0.462 | 0.248 | 0.11 |
| End-use technology sales by technology - LDV - hybrid | 0.046 | 0.054 | 0.061 | 0.055 | 0.041 | 0.024 | 0.012 |
| End-use technology sales by technology - LDV - hydrogen FC | 0.001 | 0.004 | 0.003 | 0.002 | 0.002 | 0.001 | 0 |
| End-use technology sales by technology - LDV - other | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0 | 0 |
| End-use technology sales by technology - MDV - diesel | 0.648 | 0.622 | 0.577 | 0.494 | 0.356 | 0.196 | 0.084 |
| End-use technology sales by technology - MDV - EV | 0.007 | 0.019 | 0.055 | 0.143 | 0.314 | 0.526 | 0.68 |
| End-use technology sales by technology - MDV - gasoline | 0.338 | 0.347 | 0.347 | 0.319 | 0.244 | 0.142 | 0.063 |
| End-use technology sales by technology - MDV - hybrid | 0.004 | 0.004 | 0.005 | 0.005 | 0.004 | 0.003 | 0.001 |
| End-use technology sales by technology - MDV - hydrogen FC | 0.002 | 0.005 | 0.014 | 0.036 | 0.079 | 0.132 | 0.17 |
| End-use technology sales by technology - MDV - other | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 0.001 |
| Light-duty vehicle capital costs - Cumulative 5-yr | 0 | 0 | 63667785 | 135340365 | 455540258 | 1438226087 | 2093705847 |
| Number of public EV charging plugs - DC Fast Charging | 53 | 0 | 262.691 | 0 | 1445.9 | 0 | 4064.5 |
| Number of public EV charging plugs - L2 Charging | 175 | 0 | 6320.9 | 0 | 34791.2 | 0 | 97800.8 |

Table 26: *REF scenario - PILLAR 6: Land carbon sinks - Agriculture*

| variable_name | 2050 |
|---|---|
| Carbon sink enhancement potential - Accelerate regeneration | 1306.585 |
| Carbon sink enhancement potential - All (not counting overlap) | 83823.5 |
| Carbon sink enhancement potential - Avoid deforestation | 2023.794 |
| Carbon sink enhancement potential - corn-ethanol to energy grasses | -344.92 |

Table 26: *REF scenario - PILLAR 6: Land carbon sinks - Agriculture (continued)*

| variable_name | 2050 |
|---|---|
| Carbon sink enhancement potential - cropland measures | -9542.727 |
| Carbon sink enhancement potential - Extend rotation length | 14175.3 |
| Carbon sink enhancement potential - Improve plantations | 8917.6 |
| Carbon sink enhancement potential - Increase retention of HWP | 26171.8 |
| Carbon sink enhancement potential - Increase trees outside forests | 1354.403 |
| Carbon sink enhancement potential - permanent conservation cover | -102.909 |
| Carbon sink enhancement potential - Reforest cropland | 11413.5 |
| Carbon sink enhancement potential - Reforest pasture | 10085.7 |
| Carbon sink enhancement potential - Restore productivity | 8374.7 |
| Carbon sink enhancement potential - total | -9990.558 |
| Land impacted for carbon sink enhancement - Accelerate regeneration | 526.602 |
| Land impacted for carbon sink enhancement - All (not counting overlap) | 17371.1 |
| Land impacted for carbon sink enhancement - Avoid deforestation | 543.25 |
| Land impacted for carbon sink enhancement - corn-ethanol to energy grasses | 139.044 |
| Land impacted for carbon sink enhancement - cropland measures | 2753.269 |
| Land impacted for carbon sink enhancement - Extend rotation length | 7808.9 |
| Land impacted for carbon sink enhancement - Improve plantations | 4956.256 |
| Land impacted for carbon sink enhancement - Increase retention of HWP | 5234.4 |
| Land impacted for carbon sink enhancement - Increase trees outside forests | 382.063 |
| Land impacted for carbon sink enhancement - permanent conservation cover | 187.173 |
| Land impacted for carbon sink enhancement - Reforest cropland | 3800.008 |
| Land impacted for carbon sink enhancement - Reforest pasture | 762.643 |
| Land impacted for carbon sink enhancement - Restore productivity | 4726 |
| Land impacted for carbon sink enhancement - total | 3079.6 |
| Land impacted for carbon sink enhancement - Total impacted (over 30 years) | 11368.9 |

Table 27: *REF scenario - PILLAR 6: Land carbon sinks - Forests*

| variable_name | 2050 |
|---|---|
| Business-as-usual carbon sink - Accelerate regeneration | 122.111 |
| Business-as-usual carbon sink - Avoid deforestation | 173.054 |
| Business-as-usual carbon sink - Extend rotation length | 4272 |
| Business-as-usual carbon sink - Improve plantations | 1882.1 |
| Business-as-usual carbon sink - Increase retention of HWP | 0 |
| Business-as-usual carbon sink - Increase trees outside forests | 76.817 |
| Business-as-usual carbon sink - Reforest cropland | 431.206 |
| Business-as-usual carbon sink - Reforest pasture | 186.313 |
| Business-as-usual carbon sink - Restore productivity | 1663.7 |
| Business-as-usual carbon sink - Total impacted (over 30 years) | 431.206 |

Table 28: *REF scenario - PILLAR 1: Efficiency/Electrification - Overview*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Final energy demand by sector - commercial | 0.071 | 0.071 | 0.07 | 0.069 | 0.067 | 0.065 | 0.064 |
| Final energy demand by sector - industry | 0.201 | 0.207 | 0.209 | 0.208 | 0.209 | 0.207 | 0.206 |
| Final energy demand by sector - residential | 0.099 | 0.093 | 0.089 | 0.085 | 0.079 | 0.073 | 0.068 |
| Final energy demand by sector - transportation | 0.351 | 0.326 | 0.298 | 0.275 | 0.258 | 0.238 | 0.214 |

Table 29: *REF scenario - PILLAR 1: Efficiency/Electrification - Commercial*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Commercial HVAC investment in 2020s - Cumulative 5-yr | 0 | 8118656976 | 9209493771 | 0 | 0 | 0 | 0 |
| Sales of cooking units - Electric Resistance | 0.435 | 0.471 | 0.513 | 0.616 | 0.761 | 0.85 | 0.88 |
| Sales of cooking units - Gas | 0.565 | 0.529 | 0.487 | 0.384 | 0.239 | 0.15 | 0.12 |
| Sales of space heating units - Electric Heat Pump | 0.095 | 0.202 | 0.256 | 0.414 | 0.661 | 0.832 | 0.896 |
| Sales of space heating units - Electric Resistance | 0.047 | 0.046 | 0.047 | 0.048 | 0.052 | 0.059 | 0.063 |
| Sales of space heating units - Fossil | 0 | 0.033 | 0.032 | 0.024 | 0.012 | 0.004 | 0.001 |
| Sales of space heating units - Gas Furnace | 0.858 | 0.718 | 0.666 | 0.514 | 0.275 | 0.105 | 0.039 |
| Sales of water heating units - Electric Heat Pump | 0.002 | 0.02 | 0.071 | 0.218 | 0.444 | 0.592 | 0.643 |
| Sales of water heating units - Electric Resistance | 0.056 | 0.065 | 0.084 | 0.144 | 0.235 | 0.295 | 0.316 |
| Sales of water heating units - Gas Furnace | 0.927 | 0.9 | 0.83 | 0.622 | 0.305 | 0.097 | 0.025 |
| Sales of water heating units - Other | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 |

Table 30: *REF scenario - PILLAR 1: Efficiency/Electrification - Electricity demand*

| variable_name | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Electricity distribution peak load (capital invested) - Cumulative 5-yr | 1.689 | 1.706 | 2.12 | 2.184 | 3.132 | 3.301 |

Table 31: *E+ scenario - PILLAR 2: Clean Electricity - Generating capacity*

| variable_name | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Power generation capital investment - Solar PV - Base | 2.714 | 4.337 | 7.501 | 19.455 | 24.681 | 31.859 |
| Power generation capital investment - Wind - Base | 0 | 0 | 0 | 0.242 | 1.561 | 33.785 |

Table 32: *E+ scenario - PILLAR 2: Clean Electricity - Transmission*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| HV transmission for wind and solar - base all | 0 | 154.51 | 485.995 | 1172.6 | 3613.2 | 8420.1 | 29933.7 |
| HV transmission for wind and solar - base other intra-state | 0 | 27.948 | 166.019 | 346.314 | 1451 | 2785.7 | 9030.4 |
| HV transmission for wind and solar - base spur intra-state | 0 | 1.447 | 97.522 | 420.573 | 1372.9 | 3453.1 | 9447.2 |

Table 33: *E+ scenario - PILLAR 6: Land carbon sinks - Agriculture*

| variable_name | 2050 |
|---|---|
| Carbon sink enhancement potential - Accelerate regeneration | 1306.585 |
| Carbon sink enhancement potential - All (not counting overlap) | 83823.5 |
| Carbon sink enhancement potential - Avoid deforestation | 2023.794 |
| Carbon sink enhancement potential - corn-ethanol to energy grasses | -344.92 |
| Carbon sink enhancement potential - cropland measures | -9542.727 |
| Carbon sink enhancement potential - Extend rotation length | 14175.3 |
| Carbon sink enhancement potential - Improve plantations | 8917.6 |
| Carbon sink enhancement potential - Increase retention of HWP | 26171.8 |
| Carbon sink enhancement potential - Increase trees outside forests | 1354.403 |
| Carbon sink enhancement potential - permanent conservation cover | -102.909 |
| Carbon sink enhancement potential - Reforest cropland | 11413.5 |
| Carbon sink enhancement potential - Reforest pasture | 10085.7 |
| Carbon sink enhancement potential - Restore productivity | 8374.7 |
| Carbon sink enhancement potential - total | -9990.558 |
| Land impacted for carbon sink enhancement - Accelerate regeneration | 526.602 |
| Land impacted for carbon sink enhancement - All (not counting overlap) | 17371.1 |
| Land impacted for carbon sink enhancement - Avoid deforestation | 543.25 |
| Land impacted for carbon sink enhancement - corn-ethanol to energy grasses | 139.044 |
| Land impacted for carbon sink enhancement - cropland measures | 2753.269 |
| Land impacted for carbon sink enhancement - Extend rotation length | 7808.9 |
| Land impacted for carbon sink enhancement - Improve plantations | 4956.256 |
| Land impacted for carbon sink enhancement - Increase retention of HWP | 5234.4 |
| Land impacted for carbon sink enhancement - Increase trees outside forests | 382.063 |
| Land impacted for carbon sink enhancement - permanent conservation cover | 187.173 |
| Land impacted for carbon sink enhancement - Reforest cropland | 3800.008 |
| Land impacted for carbon sink enhancement - Reforest pasture | 762.643 |
| Land impacted for carbon sink enhancement - Restore productivity | 4726 |
| Land impacted for carbon sink enhancement - total | 3079.6 |
| Land impacted for carbon sink enhancement - Total impacted (over 30 years) | 11368.9 |

Table 34: *E+ scenario - PILLAR 6: Land carbon sinks - Forests*

| variable_name | 2050 |
|---|---|
| Business-as-usual carbon sink - Accelerate regeneration | 122.111 |
| Business-as-usual carbon sink - Avoid deforestation | 173.054 |
| Business-as-usual carbon sink - Extend rotation length | 4272 |
| Business-as-usual carbon sink - Improve plantations | 1882.1 |
| Business-as-usual carbon sink - Increase retention of HWP | 0 |
| Business-as-usual carbon sink - Increase trees outside forests | 76.817 |
| Business-as-usual carbon sink - Reforest cropland | 431.206 |
| Business-as-usual carbon sink - Reforest pasture | 186.313 |
| Business-as-usual carbon sink - Restore productivity | 1663.7 |
| Business-as-usual carbon sink - Total impacted (over 30 years) | 431.206 |

Table 35: *RE+ scenario - PILLAR 2: Clean Electricity - Generating capacity*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Power generation capital investment - biomass power plant | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Power generation capital investment - biomass w/ccu allam power plant | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Power generation capital investment - biomass w/ccu power plant | 0 | 0 | 10.138 | 11.518 | 23.953 | 0 | 0 |

Table 36: *RE+ scenario - PILLAR 2: Clean Electricity - Generation*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Power generation by technology - biomass power plant | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Power generation by technology - biomass w/ccu allam power plant | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Power generation by technology - biomass w/ccu power plant | 0 | 0 | 11378.1 | 24305 | 51189.3 | 51189.3 | 51189.3 |

Table 37: *RE+ scenario - PILLAR 3: Bioenergy and Hydrogen - Bioconversion*

| variable_name | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Biomass purchases | 0 | 0 | 0.661 | 1.412 | 2.974 | 3.358 | 3.358 |
| Capital investment | 0 | 0 | 8.762 | 0 | 30.659 | 0 | 4.405 |
| Number of facilities - allam power w ccu | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - beccs hydrogen | 0 | 0 | 0 | 0 | 0 | 5 | 5 |
| Number of facilities - diesel | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - diesel ccu | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - power | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - power ccu | 0 | 0 | 9 | 19 | 40 | 40 | 40 |
| Number of facilities - pyrolysis | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - pyrolysis ccu | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - sng | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of facilities - sng ccu | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 38: *RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 capture*

| variable_name | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Annual - All | 0 | 11.26 | 24.15 | 50.73 | 56.73 | 57.03 |
| Annual - BECCS | 0 | 11.26 | 24.04 | 50.65 | 56.66 | 56.47 |
| Annual - Cement | 0 | 0 | 0 | 0 | 0 | 0 |
| Annual - NGCC | 0 | 0 | 0.1 | 0.08 | 0.07 | 0.56 |
| Cumulative - All | 0 | 11.26 | 35.41 | 86.14 | 142.87 | 199.9 |
| Cumulative - BECCS | 0 | 11.26 | 35.3 | 85.95 | 142.61 | 199.08 |
| Cumulative - Cement | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative - NGCC | 0 | 0 | 0.1 | 0.18 | 0.25 | 0.81 |

Table 39: *RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 storage*

| variable_name | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Annual | 0 | 7.39 | 36.39 | 71.29 | 98.48 | 103.66 |
| Injection wells | 0 | 8 | 34 | 60 | 100 | 124 |
| Resource characterization, appraisal and permitting costs cumulative | 32.8 | 809.66 | 1298.9 | 1298.9 | 1298.9 | 1298.9 |
| Wells and facilities construction costs cumulative | 0 | 256.62 | 1000.1 | 1782.2 | 2980.1 | 3699.8 |

Table 40: *RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 transportation*

| variable_name | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| CO2 pipelines - All | 0 | 3530930.816 | 7102187.2 | 10301262.7 | 10927830.7 | 10792227.7 |
| CO2 pipelines - Spur | 0 | 434647.777 | 909620.744 | 2298527.9 | 2925095.9 | 2789492.9 |
| CO2 pipelines - Trunk | 0 | 3096282.739 | 6192566.477 | 8002734.8 | 8002734.8 | 8002734.8 |

Table 41: *RE+ scenario - PILLAR 6: Land carbon sinks - Agriculture*

| variable_name | 2050 |
|---|---|
| Carbon sink enhancement potential - Accelerate regeneration | 1306.585 |
| Carbon sink enhancement potential - All (not counting overlap) | 83823.5 |
| Carbon sink enhancement potential - Avoid deforestation | 2023.794 |
| Carbon sink enhancement potential - corn-ethanol to energy grasses | -1273.132 |
| Carbon sink enhancement potential - cropland measures | -8614.034 |
| Carbon sink enhancement potential - Cropland to woody energy crops | 0 |
| Carbon sink enhancement potential - Extend rotation length | 14175.3 |
| Carbon sink enhancement potential - Improve plantations | 8917.6 |
| Carbon sink enhancement potential - Increase retention of HWP | 26171.8 |
| Carbon sink enhancement potential - Increase trees outside forests | 1354.403 |
| Carbon sink enhancement potential - pasture to energy crops | 0 |
| Carbon sink enhancement potential - permanent conservation cover | -87.173 |
| Carbon sink enhancement potential - Reforest cropland | 11413.5 |
| Carbon sink enhancement potential - Reforest pasture | 10085.7 |
| Carbon sink enhancement potential - Restore productivity | 8374.7 |
| Carbon sink enhancement potential - total | -9974.34 |
| Land impacted for carbon sink enhancement - Accelerate regeneration | 526.602 |
| Land impacted for carbon sink enhancement - All (not counting overlap) | 17371.1 |
| Land impacted for carbon sink enhancement - Avoid deforestation | 543.25 |
| Land impacted for carbon sink enhancement - corn-ethanol to energy grasses | 513.12 |
| Land impacted for carbon sink enhancement - cropland measures | 4904.735 |

Table 41: *RE+ scenario - PILLAR 6: Land carbon sinks - Agriculture (continued)*

| variable_name | 2050 |
|---|---|
| Land impacted for carbon sink enhancement - Cropland to woody energy crops | 238.44 |
| Land impacted for carbon sink enhancement - Extend rotation length | 7808.9 |
| Land impacted for carbon sink enhancement - Improve plantations | 4956.256 |
| Land impacted for carbon sink enhancement - Increase retention of HWP | 5234.4 |
| Land impacted for carbon sink enhancement - Increase trees outside forests | 382.063 |
| Land impacted for carbon sink enhancement - pasture to energy crops | 530.103 |
| Land impacted for carbon sink enhancement - permanent conservation cover | 158.552 |
| Land impacted for carbon sink enhancement - Reforest cropland | 3800.008 |
| Land impacted for carbon sink enhancement - Reforest pasture | 762.643 |
| Land impacted for carbon sink enhancement - Restore productivity | 4726 |
| Land impacted for carbon sink enhancement - total | 6345 |
| Land impacted for carbon sink enhancement - Total impacted (over 30 years) | 11368.9 |

Table 42: *RE+ scenario - PILLAR 6: Land carbon sinks - Forests*

| variable_name | 2050 |
|---|---|
| Business-as-usual carbon sink - Accelerate regeneration | 122.111 |
| Business-as-usual carbon sink - Avoid deforestation | 173.054 |
| Business-as-usual carbon sink - Extend rotation length | 4272 |
| Business-as-usual carbon sink - Improve plantations | 1882.1 |
| Business-as-usual carbon sink - Increase retention of HWP | 0 |
| Business-as-usual carbon sink - Increase trees outside forests | 76.817 |
| Business-as-usual carbon sink - Reforest cropland | 431.206 |
| Business-as-usual carbon sink - Reforest pasture | 186.313 |
| Business-as-usual carbon sink - Restore productivity | 1663.7 |
| Business-as-usual carbon sink - Total impacted (over 30 years) | 431.206 |

Table 43: *B+ scenario - PILLAR 6: Land carbon sinks - Agriculture*

| variable_name | 2050 |
|---|---|
| Carbon sink enhancement potential - Accelerate regeneration | 1306.585 |
| Carbon sink enhancement potential - All (not counting overlap) | 83823.5 |
| Carbon sink enhancement potential - Avoid deforestation | 2023.794 |
| Carbon sink enhancement potential - corn-ethanol to energy grasses | -344.92 |
| Carbon sink enhancement potential - cropland measures | -9542.727 |
| Carbon sink enhancement potential - Extend rotation length | 14175.3 |
| Carbon sink enhancement potential - Improve plantations | 8917.6 |
| Carbon sink enhancement potential - Increase retention of HWP | 26171.8 |
| Carbon sink enhancement potential - Increase trees outside forests | 1354.403 |
| Carbon sink enhancement potential - permanent conservation cover | -102.909 |
| Carbon sink enhancement potential - Reforest cropland | 11413.5 |
| Carbon sink enhancement potential - Reforest pasture | 10085.7 |
| Carbon sink enhancement potential - Restore productivity | 8374.7 |
| Carbon sink enhancement potential - total | -9990.558 |
| Land impacted for carbon sink enhancement - Accelerate regeneration | 526.602 |
| Land impacted for carbon sink enhancement - All (not counting overlap) | 17371.1 |
| Land impacted for carbon sink enhancement - Avoid deforestation | 543.25 |
| Land impacted for carbon sink enhancement - corn-ethanol to energy grasses | 139.044 |
| Land impacted for carbon sink enhancement - cropland measures | 2753.269 |
| Land impacted for carbon sink enhancement - Extend rotation length | 7808.9 |
| Land impacted for carbon sink enhancement - Improve plantations | 4956.256 |
| Land impacted for carbon sink enhancement - Increase retention of HWP | 5234.4 |
| Land impacted for carbon sink enhancement - Increase trees outside forests | 382.063 |
| Land impacted for carbon sink enhancement - permanent conservation cover | 187.173 |
| Land impacted for carbon sink enhancement - Reforest cropland | 3800.008 |
| Land impacted for carbon sink enhancement - Reforest pasture | 762.643 |
| Land impacted for carbon sink enhancement - Restore productivity | 4726 |
| Land impacted for carbon sink enhancement - total | 3079.6 |
| Land impacted for carbon sink enhancement - Total impacted (over 30 years) | 11368.9 |

Table 44: *B+ scenario - PILLAR 6: Land carbon sinks - Forests*

| variable_name | 2050 |
|---|---|
| Business-as-usual carbon sink - Accelerate regeneration | 122.111 |
| Business-as-usual carbon sink - Avoid deforestation | 173.054 |
| Business-as-usual carbon sink - Extend rotation length | 4272 |
| Business-as-usual carbon sink - Improve plantations | 1882.1 |
| Business-as-usual carbon sink - Increase retention of HWP | 0 |
| Business-as-usual carbon sink - Increase trees outside forests | 76.817 |
| Business-as-usual carbon sink - Reforest cropland | 431.206 |
| Business-as-usual carbon sink - Reforest pasture | 186.313 |
| Business-as-usual carbon sink - Restore productivity | 1663.7 |
| Business-as-usual carbon sink - Total impacted (over 30 years) | 431.206 |