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## Table E1.gen. Electricity generation: World, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 692 | 688 | 328 | 163 | 88 | 54 | 39 | -9.2 |
| Natural gas | 6,450 | 7,011 | 7,791 | 7,540 | 7,818 | 8,034 | 8,434 | 0.9 |
| Coal | 8,233 | 8,204 | 7,781 | 8,261 | 8,504 | 8,861 | 9,516 | 0.5 |
| Nuclear | 2,630 | 2,836 | 2,939 | 3,078 | 3,125 | 3,052 | 3,075 | 0.5 |
| Renewables | 6,989 | 10,248 | 13,262 | 16,855 | 20,785 | 25,097 | 28,778 | 4.8 |
| Hydro | 4,034 | 4,629 | 5,012 | 5,207 | 5,385 | 5,700 | 5,917 | 1.3 |
| Wind | 1,741 | 2,847 | 3,806 | 5,087 | 6,292 | 7,242 | 7,860 | 5.2 |
| Geothermal | 90 | 129 | 192 | 216 | 241 | 252 | 256 | 3.5 |
| Solar | 832 | 2,296 | 3,817 | 5,790 | 8,224 | 11,183 | 13,919 | 9.8 |
| Other | 292 | 346 | 436 | 556 | 642 | 721 | 826 | 3.5 |
| Net generation to grid | 24,994 | 28,987 | 32,101 | 35,897 | 40,319 | 45,098 | 49,842 | 2.3 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753; and EIA, *Annual Energy Outlook 2021* , (February 2021), www.eia.gov/aeo

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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## Table E2.gen. Electricity generation: OECD, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 182 | 175 | 83 | 51 | 35 | 25 | 23 | -6.7 |
| Natural gas | 3,345 | 3,351 | 3,475 | 3,498 | 3,674 | 3,784 | 3,963 | 0.6 |
| Coal | 1,842 | 1,640 | 1,546 | 1,535 | 1,453 | 1,403 | 1,342 | -1.0 |
| Nuclear | 1,859 | 1,898 | 1,793 | 1,758 | 1,635 | 1,435 | 1,326 | -1.1 |
| Renewables | 3,128 | 4,257 | 5,115 | 5,998 | 6,898 | 8,025 | 9,038 | 3.6 |
| Hydro | 1,479 | 1,607 | 1,680 | 1,702 | 1,728 | 1,792 | 1,813 | 0.7 |
| Wind | 960 | 1,493 | 1,817 | 2,371 | 2,949 | 3,607 | 4,097 | 5.0 |
| Geothermal | 52 | 58 | 80 | 92 | 100 | 106 | 110 | 2.6 |
| Solar | 466 | 914 | 1,329 | 1,581 | 1,823 | 2,204 | 2,670 | 6.0 |
| Other | 171 | 185 | 208 | 253 | 298 | 316 | 348 | 2.4 |
| Net generation to grid | 10,356 | 11,321 | 12,012 | 12,841 | 13,694 | 14,673 | 15,692 | 1.4 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753; and EIA, *Annual Energy Outlook 2021* , (February 2021), www.eia.gov/aeo

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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## Table E3.gen. Electricity generation: United States, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 16 | 11 | 9 | 9 | 8 | 6 | 6 | -2.9 |
| Natural gas | 1,628 | 1,587 | 1,619 | 1,684 | 1,850 | 2,007 | 2,170 | 1.0 |
| Coal | 782 | 733 | 722 | 690 | 662 | 644 | 634 | -0.7 |
| Nuclear | 785 | 745 | 655 | 634 | 636 | 632 | 634 | -0.7 |
| Renewables | 851 | 1,329 | 1,605 | 1,831 | 2,004 | 2,217 | 2,465 | 3.6 |
| Hydro | 283 | 295 | 295 | 295 | 294 | 294 | 293 | 0.1 |
| Wind | 343 | 632 | 676 | 737 | 752 | 767 | 809 | 2.9 |
| Geothermal | 16 | 19 | 26 | 34 | 42 | 48 | 52 | 4.1 |
| Solar | 132 | 298 | 517 | 666 | 809 | 994 | 1,188 | 7.6 |
| Other | 77 | 85 | 91 | 99 | 107 | 115 | 123 | 1.6 |
| Net generation to grid | 4,062 | 4,405 | 4,610 | 4,847 | 5,160 | 5,506 | 5,909 | 1.3 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753; and EIA, *Annual Energy Outlook 2021* , (February 2021), www.eia.gov/aeo

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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Release date: October 2021

## Table E4.gen. Electricity generation: Canada, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 5 | 5 | 1 | 0 | 0 | 0 | 0 | -13.2 |
| Natural gas | 64 | 82 | 104 | 139 | 188 | 229 | 260 | 4.8 |
| Coal | 34 | 28 | 9 | 0 | 0 | 0 | 0 | -100.0 |
| Nuclear | 87 | 71 | 77 | 72 | 51 | 39 | 28 | -3.7 |
| Renewables | 430 | 487 | 533 | 569 | 601 | 636 | 673 | 1.5 |
| Hydro | 389 | 411 | 430 | 430 | 430 | 430 | 430 | 0.3 |
| Wind | 33 | 65 | 88 | 120 | 153 | 185 | 215 | 6.4 |
| Geothermal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| Solar | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 0.3 |
| Other | 4 | 7 | 11 | 15 | 15 | 18 | 25 | 6.3 |
| Net generation to grid | 620 | 673 | 723 | 780 | 840 | 905 | 961 | 1.5 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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Release date: October 2021

## Table E5.gen. Electricity generation: Mexico and other OECD Americas, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 38 | 38 | 18 | 10 | 5 | 1 | 1 | -10.6 |
| Natural gas | 256 | 273 | 298 | 332 | 352 | 325 | 307 | 0.6 |
| Coal | 39 | 27 | 27 | 27 | 27 | 27 | 30 | -0.9 |
| Nuclear | 11 | 11 | 20 | 28 | 23 | 17 | 17 | 1.3 |
| Renewables | 153 | 180 | 216 | 250 | 308 | 416 | 501 | 4.0 |
| Hydro | 114 | 136 | 143 | 148 | 148 | 148 | 148 | 0.9 |
| Wind | 17 | 19 | 35 | 48 | 72 | 113 | 138 | 7.2 |
| Geothermal | 5 | 5 | 8 | 8 | 8 | 8 | 8 | 1.5 |
| Solar | 8 | 10 | 20 | 35 | 67 | 133 | 191 | 11.3 |
| Other | 9 | 10 | 11 | 12 | 13 | 15 | 16 | 1.8 |
| Net generation to grid | 497 | 529 | 579 | 648 | 715 | 786 | 856 | 1.8 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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## Table E6.gen. Electricity generation: OECD Europe, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 57 | 57 | 27 | 17 | 12 | 12 | 12 | -5.1 |
| Natural gas | 796 | 772 | 791 | 748 | 744 | 753 | 764 | -0.1 |
| Coal | 397 | 357 | 292 | 277 | 222 | 227 | 233 | -1.8 |
| Nuclear | 741 | 728 | 674 | 658 | 607 | 459 | 363 | -2.3 |
| Renewables | 1,378 | 1,825 | 2,237 | 2,699 | 3,140 | 3,675 | 4,145 | 3.7 |
| Hydro | 568 | 637 | 683 | 698 | 720 | 779 | 800 | 1.2 |
| Wind | 531 | 678 | 859 | 1,211 | 1,572 | 1,952 | 2,221 | 4.9 |
| Geothermal | 21 | 24 | 36 | 39 | 40 | 40 | 40 | 2.2 |
| Solar | 201 | 427 | 590 | 652 | 684 | 766 | 930 | 5.2 |
| Other | 58 | 59 | 69 | 98 | 123 | 138 | 154 | 3.3 |
| Net generation to grid | 3,369 | 3,739 | 4,021 | 4,398 | 4,725 | 5,126 | 5,518 | 1.7 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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Release date: October 2021

## Table E7.gen. Electricity generation: Japan, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 48 | 48 | 25 | 15 | 9 | 5 | 3 | -9.3 |
| Natural gas | 367 | 376 | 376 | 333 | 304 | 285 | 277 | -0.9 |
| Coal | 283 | 271 | 283 | 328 | 328 | 291 | 236 | -0.6 |
| Nuclear | 58 | 115 | 139 | 139 | 121 | 102 | 102 | 1.9 |
| Renewables | 204 | 214 | 228 | 256 | 325 | 426 | 517 | 3.2 |
| Hydro | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 0.0 |
| Wind | 11 | 20 | 34 | 62 | 120 | 229 | 320 | 12.0 |
| Geothermal | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0.0 |
| Solar | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 0.0 |
| Other | 11 | 11 | 12 | 12 | 23 | 14 | 14 | 1.0 |
| Net generation to grid | 959 | 1,023 | 1,052 | 1,072 | 1,088 | 1,110 | 1,135 | 0.6 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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Release date: October 2021

## Table E8.gen. Electricity generation: South Korea, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 13 | 12 | 2 | 0 | 0 | 0 | 0 | -14.2 |
| Natural gas | 173 | 205 | 231 | 214 | 195 | 152 | 151 | -0.4 |
| Coal | 159 | 143 | 142 | 149 | 156 | 159 | 159 | 0.0 |
| Nuclear | 178 | 228 | 228 | 226 | 196 | 186 | 183 | 0.1 |
| Renewables | 27 | 39 | 62 | 104 | 174 | 253 | 285 | 8.2 |
| Hydro | 3 | 4 | 4 | 5 | 5 | 5 | 5 | 1.1 |
| Wind | 3 | 9 | 24 | 55 | 121 | 201 | 233 | 16.2 |
| Geothermal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -- |
| Solar | 10 | 16 | 21 | 30 | 36 | 36 | 36 | 4.4 |
| Other | 11 | 10 | 13 | 14 | 13 | 11 | 11 | 0.1 |
| Net generation to grid | 549 | 627 | 665 | 694 | 721 | 750 | 777 | 1.2 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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Release date: October 2021

## Table E9.gen. Electricity generation: Australia and New Zealand, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 4 | 4 | 0 | 0 | 0 | 0 | 0 | -11.0 |
| Natural gas | 61 | 56 | 57 | 48 | 41 | 33 | 33 | -2.0 |
| Coal | 149 | 81 | 71 | 65 | 58 | 55 | 51 | -3.5 |
| Nuclear | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| Renewables | 86 | 184 | 234 | 289 | 345 | 402 | 452 | 5.7 |
| Hydro | 36 | 38 | 39 | 41 | 45 | 51 | 51 | 1.2 |
| Wind | 22 | 70 | 99 | 137 | 158 | 161 | 161 | 6.8 |
| Geothermal | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 0.0 |
| Solar | 19 | 67 | 86 | 100 | 131 | 179 | 228 | 8.7 |
| Other | 3 | 3 | 3 | 4 | 4 | 5 | 5 | 2.5 |
| Net generation to grid | 300 | 325 | 362 | 402 | 444 | 490 | 537 | 2.0 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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## Table E10.gen. Electricity generation: Non-OECD, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 511 | 513 | 245 | 111 | 53 | 29 | 16 | -10.9 |
| Natural gas | 3,105 | 3,660 | 4,315 | 4,042 | 4,144 | 4,250 | 4,472 | 1.2 |
| Coal | 6,390 | 6,564 | 6,236 | 6,726 | 7,051 | 7,458 | 8,173 | 0.8 |
| Nuclear | 771 | 939 | 1,146 | 1,320 | 1,490 | 1,617 | 1,749 | 2.8 |
| Renewables | 3,862 | 5,991 | 8,148 | 10,857 | 13,887 | 17,072 | 19,740 | 5.6 |
| Hydro | 2,555 | 3,022 | 3,332 | 3,505 | 3,657 | 3,908 | 4,105 | 1.6 |
| Wind | 781 | 1,354 | 1,988 | 2,716 | 3,343 | 3,635 | 3,763 | 5.4 |
| Geothermal | 38 | 72 | 112 | 125 | 141 | 146 | 146 | 4.6 |
| Solar | 366 | 1,382 | 2,488 | 4,209 | 6,402 | 8,979 | 11,248 | 12.1 |
| Other | 120 | 161 | 227 | 303 | 345 | 405 | 478 | 4.7 |
| Net generation to grid | 14,638 | 17,666 | 20,089 | 23,056 | 26,625 | 30,425 | 34,150 | 2.9 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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## Table E11.gen. Electricity generation: Russia, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 7 | 7 | 0 | 0 | 0 | 3 | 3 | -2.8 |
| Natural gas | 499 | 560 | 634 | 626 | 645 | 648 | 624 | 0.7 |
| Coal | 180 | 186 | 191 | 247 | 252 | 232 | 272 | 1.4 |
| Nuclear | 204 | 229 | 234 | 234 | 234 | 234 | 227 | 0.4 |
| Renewables | 189 | 206 | 219 | 261 | 327 | 416 | 483 | 3.2 |
| Hydro | 187 | 203 | 203 | 205 | 206 | 208 | 209 | 0.4 |
| Wind | 0 | 0 | 6 | 30 | 69 | 100 | 117 | 24.0 |
| Geothermal | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1.3 |
| Solar | 1 | 3 | 8 | 22 | 49 | 104 | 152 | 20.1 |
| Other | 0 | 0 | 1 | 4 | 3 | 3 | 4 | 14.8 |
| Net generation to grid | 1,078 | 1,189 | 1,278 | 1,368 | 1,459 | 1,532 | 1,608 | 1.3 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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## Table E12.gen. Electricity generation: Other Europe and Eurasia, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 9 | 9 | 6 | 6 | 7 | 7 | 8 | -0.5 |
| Natural gas | 200 | 224 | 232 | 233 | 224 | 230 | 246 | 0.7 |
| Coal | 157 | 181 | 170 | 177 | 188 | 200 | 222 | 1.2 |
| Nuclear | 118 | 126 | 140 | 146 | 146 | 146 | 156 | 0.9 |
| Renewables | 141 | 180 | 218 | 283 | 368 | 444 | 503 | 4.3 |
| Hydro | 124 | 127 | 130 | 130 | 130 | 130 | 130 | 0.2 |
| Wind | 12 | 23 | 35 | 55 | 95 | 148 | 200 | 9.8 |
| Geothermal | 0 | 0 | 0 | 1 | 1 | 1 | 1 | -- |
| Solar | 5 | 27 | 51 | 95 | 140 | 162 | 169 | 12.2 |
| Other | 0 | 2 | 2 | 3 | 3 | 3 | 4 | -- |
| Net generation to grid | 625 | 720 | 767 | 845 | 933 | 1,027 | 1,134 | 2.0 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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## Table E13.gen. Electricity generation: China, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 10 | 10 | 2 | 0 | 0 | 0 | 0 | -14.5 |
| Natural gas | 267 | 635 | 1,129 | 850 | 917 | 1,001 | 1,084 | 4.8 |
| Coal | 4,313 | 4,224 | 3,614 | 3,676 | 3,575 | 3,557 | 3,560 | -0.6 |
| Nuclear | 331 | 416 | 538 | 674 | 795 | 905 | 1,002 | 3.8 |
| Renewables | 1,973 | 3,008 | 3,892 | 5,075 | 6,335 | 7,494 | 8,341 | 4.9 |
| Hydro | 1,117 | 1,266 | 1,381 | 1,448 | 1,448 | 1,448 | 1,448 | 0.9 |
| Wind | 574 | 916 | 1,177 | 1,352 | 1,352 | 1,352 | 1,352 | 2.9 |
| Geothermal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| Solar | 281 | 825 | 1,311 | 2,238 | 3,493 | 4,654 | 5,496 | 10.4 |
| Other | 0 | 0 | 23 | 38 | 42 | 40 | 45 | -- |
| Net generation to grid | 6,893 | 8,293 | 9,177 | 10,275 | 11,621 | 12,958 | 13,987 | 2.4 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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Release date: October 2021

## Table E14.gen. Electricity generation: India, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 8 | 8 | 3 | 0 | 0 | 0 | 0 | -15.3 |
| Natural gas | 90 | 73 | 73 | 61 | 51 | 43 | 38 | -2.8 |
| Coal | 965 | 1,048 | 1,092 | 1,220 | 1,333 | 1,425 | 1,631 | 1.8 |
| Nuclear | 36 | 52 | 69 | 76 | 106 | 128 | 151 | 4.9 |
| Renewables | 332 | 887 | 1,559 | 2,253 | 3,059 | 4,132 | 5,220 | 9.6 |
| Hydro | 138 | 223 | 287 | 300 | 305 | 310 | 315 | 2.8 |
| Wind | 109 | 219 | 376 | 679 | 1,053 | 1,222 | 1,245 | 8.5 |
| Geothermal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -- |
| Solar | 45 | 379 | 810 | 1,162 | 1,557 | 2,412 | 3,423 | 15.5 |
| Other | 40 | 66 | 86 | 112 | 144 | 188 | 237 | 6.1 |
| Net generation to grid | 1,431 | 2,067 | 2,795 | 3,610 | 4,550 | 5,729 | 7,040 | 5.5 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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## Table E15.gen. Electricity generation: Other Non-OECD Asia, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 86 | 87 | 47 | 23 | 12 | 4 | 0 | -18.4 |
| Natural gas | 606 | 662 | 662 | 591 | 526 | 468 | 415 | -1.3 |
| Coal | 559 | 682 | 890 | 1,086 | 1,441 | 1,810 | 2,262 | 4.8 |
| Nuclear | 37 | 36 | 36 | 36 | 36 | 36 | 36 | -0.1 |
| Renewables | 293 | 476 | 669 | 967 | 1,201 | 1,371 | 1,506 | 5.6 |
| Hydro | 219 | 316 | 359 | 400 | 437 | 505 | 546 | 3.1 |
| Wind | 10 | 30 | 96 | 204 | 298 | 306 | 317 | 12.3 |
| Geothermal | 29 | 49 | 64 | 65 | 65 | 65 | 65 | 2.7 |
| Solar | 15 | 55 | 116 | 244 | 350 | 436 | 511 | 12.4 |
| Other | 20 | 24 | 34 | 54 | 51 | 59 | 67 | 4.1 |
| Net generation to grid | 1,582 | 1,942 | 2,304 | 2,702 | 3,216 | 3,689 | 4,219 | 3.3 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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## Table E16.gen. Electricity generation: Middle East, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 291 | 291 | 156 | 76 | 33 | 13 | 4 | -13.2 |
| Natural gas | 872 | 933 | 933 | 892 | 941 | 1,035 | 1,153 | 0.9 |
| Coal | 0 | 0 | 6 | 36 | 16 | 36 | 36 | -- |
| Nuclear | 6 | 41 | 58 | 73 | 83 | 83 | 83 | 9.2 |
| Renewables | 22 | 66 | 159 | 343 | 539 | 622 | 678 | 12.1 |
| Hydro | 18 | 18 | 25 | 25 | 25 | 26 | 26 | 1.2 |
| Wind | 1 | 14 | 46 | 54 | 59 | 64 | 69 | 15.8 |
| Geothermal | 0 | 0 | 1 | 1 | 1 | 1 | 1 | -- |
| Solar | 3 | 34 | 86 | 262 | 453 | 531 | 581 | 18.9 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -- |
| Net generation to grid | 1,191 | 1,331 | 1,312 | 1,420 | 1,613 | 1,789 | 1,954 | 1.7 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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Release date: October 2021

## Table E17.gen. Electricity generation: Africa, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 65 | 66 | 22 | 5 | 1 | 1 | 1 | -14.2 |
| Natural gas | 351 | 360 | 456 | 581 | 666 | 670 | 762 | 2.6 |
| Coal | 187 | 221 | 247 | 258 | 214 | 165 | 164 | -0.4 |
| Nuclear | 13 | 13 | 30 | 43 | 52 | 52 | 62 | 5.4 |
| Renewables | 158 | 282 | 377 | 486 | 700 | 1,063 | 1,327 | 7.3 |
| Hydro | 130 | 172 | 178 | 194 | 228 | 300 | 393 | 3.8 |
| Wind | 13 | 52 | 86 | 95 | 108 | 120 | 131 | 8.0 |
| Geothermal | 5 | 17 | 37 | 48 | 64 | 69 | 69 | 9.2 |
| Solar | 9 | 38 | 72 | 143 | 293 | 565 | 725 | 15.9 |
| Other | 2 | 3 | 5 | 6 | 7 | 8 | 10 | 5.9 |
| Net generation to grid | 774 | 941 | 1,132 | 1,373 | 1,633 | 1,950 | 2,315 | 3.7 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

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Release date: October 2021

## Table E18.gen. Electricity generation: Brazil, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 12 | 12 | 3 | 0 | 0 | 0 | 0 | -14.7 |
| Natural gas | 56 | 61 | 61 | 46 | 36 | 28 | 22 | -3.1 |
| Coal | 12 | 8 | 14 | 15 | 3 | 5 | 4 | -3.7 |
| Nuclear | 14 | 14 | 23 | 23 | 23 | 18 | 18 | 0.9 |
| Renewables | 495 | 570 | 650 | 753 | 850 | 941 | 1,015 | 2.4 |
| Hydro | 389 | 413 | 426 | 446 | 487 | 557 | 614 | 1.5 |
| Wind | 56 | 86 | 138 | 211 | 260 | 272 | 283 | 5.6 |
| Geothermal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| Solar | 3 | 16 | 22 | 22 | 23 | 24 | 25 | 7.7 |
| Other | 48 | 55 | 64 | 73 | 80 | 87 | 93 | 2.2 |
| Net generation to grid | 589 | 665 | 751 | 837 | 913 | 992 | 1,059 | 2.0 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.

*International Energy Outlook 2021*

Release date: October 2021

## Table E19.gen. Electricity generation: Other Non-OECD Americas, High Economic Growth case

billion kilowatthours

| Fuel | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | Average annual percentage change, 2020–2050 |
|---|---|---|---|---|---|---|---|---|
| Liquid fuels | 23 | 23 | 5 | 0 | 0 | 0 | 0 | -15.4 |
| Natural gas | 164 | 152 | 135 | 162 | 137 | 127 | 127 | -0.8 |
| Coal | 18 | 15 | 11 | 13 | 28 | 28 | 24 | 0.9 |
| Nuclear | 12 | 12 | 18 | 15 | 15 | 15 | 15 | 0.8 |
| Renewables | 258 | 316 | 404 | 435 | 506 | 589 | 667 | 3.2 |
| Hydro | 234 | 284 | 343 | 356 | 390 | 425 | 425 | 2.0 |
| Wind | 7 | 12 | 28 | 36 | 49 | 49 | 49 | 6.7 |
| Geothermal | 4 | 4 | 9 | 9 | 9 | 9 | 9 | 3.0 |
| Solar | 3 | 5 | 11 | 21 | 44 | 91 | 167 | 13.9 |
| Other | 10 | 11 | 12 | 13 | 15 | 16 | 18 | 2.0 |
| Net generation to grid | 475 | 518 | 573 | 625 | 687 | 760 | 834 | 1.9 |

Sources: U.S. Energy Information Administration (EIA), World Energy Projection System (2021), run hm_210719.163753.

Notes:

* Totals may not equal sum of components due to independent rounding.

* *Net generation to grid* represents gross generation less losses from thermal efficiency and parasitic load.