Net-Zero America - national state report

2021-03-05

These data underlie graphs and tables presented in the Princeton Net-Zero America study:

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Notes

- These data are all data from the study available at https://netzeroamerica.princeton.edu.
- The Net-Zero America study describes five pathways to reach net-zero emissions and one "no new policies" reference scenario. In this document, state-level results are grouped by scenario. For some scenarios, the study generated national, but not state-level results.
- Within results for a given scenario, data tables are organized into corresponding sections of the full net-zero study (e.g., Pillar 1, Pillar 2, etc.)
- For Pillar 6 (Land sinks), values shown are maximum carbon storage potentials.

Data by category and subcategory

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

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr (million $2018)	0	1,047,657	1,162,511	0	0	0	0
Sales of cooking units - Electric Resistance (%)	32.5	46.4	80	86.6	87	87	87
Sales of cooking units - Gas (%)	67.5	53.6	20	13.4	13	13	13
Sales of space heating units - Electric Heat Pump (%)	2.95	17.6	52.9	76.9	80.6	80.8	80.8
Sales of space heating units - Electric Resistance (%)	7.91	9.07	14.4	17.7	18.4	18.4	18.4
Sales of space heating units - Fossil (%)	3.94	3.28	0.655	0.028	0	0	0
Sales of space heating units - Gas Furnace (%)	85.2	70.1	32.1	5.37	1.07	0.82	0.817
Sales of water heating units - Electric Heat Pump (%)	0.385	7.96	43.3	59.2	61.2	61.3	61.3
Sales of water heating units - Electric Resistance (%)	3.8	7.16	24	35.7	37.5	37.6	37.6
Sales of water heating units - Gas Furnace (%)	94.1	83.3	31.5	4.03	0.235	0.003	0
Sales of water heating units - Other (%)	1.66	1.59	1.2	1.1	1.1	1.11	1.11

Table 2: *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)		182	187	336	359	314	329

Table 3: *E+ scenario - PILLAR 1: Efficiency/Electrification - Overview*

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	9,015	8,942	8,619	8,103	7,608	7,344	7,297
Final energy use - Industry (PJ)	25,107	26,056	26,110	25,372	25,108	24,870	24,572
Final energy use - Residential (PJ)	11,788	11,090	10,221	8,966	7,776	6,967	6,512
Final energy use - Transportation (PJ)	27,996	26,390	23,464	19,872	16,608	14,565	13,649

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion $2018)	0	254	307	0	0	0	0
Sales of cooking units - Electric Resistance (%)	61.3	69.6	94.8	99.7	100	100	100
Sales of cooking units - Gas (%)	38.7	30.4	5.2	0.262	0	0	0
Sales of space heating units - Electric Heat Pump (%)	14.6	27.2	64.4	85	88	88.1	88.1
Sales of space heating units - Electric Resistance (%)	20.3	22.6	12.3	8.07	7.57	7.66	7.68
Sales of space heating units - Fossil (%)	9.95	13.2	6.18	3.41	3.02	2.91	2.9
Sales of space heating units - Gas (%)	55.2	36.9	17.1	3.52	1.45	1.32	1.3
Sales of water heating units - Electric Heat Pump (%)	0	7.44	41.8	56.2	58.5	59.2	59
Sales of water heating units - Electric Resistance (%)	38.4	49.2	38.5	39.8	39.9	39.3	39.5
Sales of water heating units - Gas Furnace (%)	58	40.9	18	2.56	0.155	0.003	0
Sales of water heating units - Other (%)	3.58	2.47	1.63	1.47	1.51	1.54	1.53

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

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs - Cumulative 5-yr (million $2018)	0	51,477	133,974	213,805	325,180	352,492	336,852
Public EV charging plugs - DC Fast (1000 units)	14.4	0	93.9	0	391	0	628
Public EV charging plugs - L2 (1000 units)	66.2	0	2,256	0	9,394	0	15,098
Vehicle sales - Heavy-duty - diesel (%)	97.2	92.1	67	23.3	4.22	0.628	0
Vehicle sales - Heavy-duty - EV (%)	0.588	3.81	19	45.6	57.4	59.6	60
Vehicle sales - Heavy-duty - gasoline (%)	0.227	0.227	0.176	0.066	0.013	0.002	0
Vehicle sales - Heavy-duty - hybrid (%)	0.082	0.09	0.077	0.031	0.007	0.001	0
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.392	2.54	12.7	30.4	38.2	39.7	40
Vehicle sales - Heavy-duty - other (%)	1.5	1.23	1.07	0.568	0.163	0.038	0
Vehicle sales - Light-duty - diesel (%)	1.4	1.68	1.2	0.382	0.072	0.013	0
Vehicle sales - Light-duty - EV (%)	4.41	16.7	48.7	82.7	96.4	99.3	100
Vehicle sales - Light-duty - gasoline (%)	89.1	76.3	46.4	15.6	3.17	0.586	0
Vehicle sales - Light-duty - hybrid (%)	4.91	4.89	3.38	1.24	0.304	0.067	0
Vehicle sales - Light-duty - hydrogen FC (%)	0.11	0.331	0.191	0.059	0.012	0.002	0
Vehicle sales - Light-duty - other (%)	0.095	0.091	0.058	0.02	0.004	0.001	0
Vehicle sales - Medium-duty - diesel (%)	64.7	59.7	42.3	14.4	2.59	0.384	0
Vehicle sales - Medium-duty - EV (%)	0.784	5.07	25.3	60.8	76.5	79.5	80
Vehicle sales - Medium-duty - gasoline (%)	33.7	33.3	25.5	9.32	1.77	0.277	0
Vehicle sales - Medium-duty - hybrid (%)	0.363	0.402	0.341	0.14	0.03	0.005	0
Vehicle sales - Medium-duty - hydrogen FC (%)	0.196	1.27	6.33	15.2	19.1	19.9	20
Vehicle sales - Medium-duty - other (%)	0.253	0.255	0.205	0.083	0.019	0.004	0

Table 6: *E+ scenario - PILLAR 2: Clean Electricity - Generating capacity*

Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Biomass power plant (billion $2018)	0	0	0.005	0.001	0.003	0.001	0
Capital invested - Biomass w/ccu allam power plant (billion $2018)	0	0	0	0.349	0.094	0.108	0.381
Capital invested - Biomass w/ccu power plant (billion $2018)	0	0	19.4	0.015	30.1	20.7	2.42
Installed - Biomass (MW)	9,996	9,132	7,837	6,117	4,696	3,379	2,472
Installed - Biomass w cc (MW)	0	0	2,920	2,968	7,511	10,643	11,058
Installed - Ccgt & gas steam (MW)	334,471	336,439	376,538	400,087	346,238	264,930	232,629
Installed - Ccgt w cc (MW)	0	0	243	15,162	25,271	36,796	60,031
Installed - Coal (MW)	215,907	48,614	171	170	150	122	43.4
Installed - Ct (MW)	146,567	135,736	127,617	148,354	213,247	242,832	242,414
Installed - Geothermal (MW)	2,390	2,393	2,409	2,411	2,414	2,422	2,440
Installed - Grid battery storage (MW)	0	626	2,536	15,363	51,414	131,610	178,317
Installed - Hydro (MW)	78,608	78,608	78,608	78,608	78,608	78,608	78,608
Installed - Nuclear (MW)	98,470	95,134	90,007	76,067	68,456	57,259	61,447
Installed - Offshore wind (MW)	29.3	1,034	4,949	16,240	40,241	103,788	223,624
Installed - Onshore wind (MW)	97,767	185,353	346,695	547,707	776,470	970,335	1,194,150
Installed - Other (MW)	68,045	57,078	55,303	54,113	52,213	51,122	48,463
Installed - Pumped hydro storage (MW)	0	19,418	19,418	19,418	19,418	19,418	19,418
Installed - Solar (MW)	69,875	174,828	354,594	609,266	877,752	1,166,400	1,505,790

Table 7: *E+ scenario - PILLAR 2: Clean Electricity - Generation*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass (TWh)	18.2	19.7	39.5	26.3	18.7	13.4	0.436
Biomass power plant (GWh)	3,540	820	10,266	6,546	3,884	1,366	57.9
Biomass w cc (TWh)	0	0	21.7	21.9	53.7	76.5	79.7
Biomass w/ccu allam power plant (GWh)	0	0	0	265	294	386	767
Biomass w/ccu power plant (GWh)	0	0	21,701	21,661	53,456	76,143	78,946

Table 7: *E+ scenario - PILLAR 2: Clean Electricity - Generation (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Coal (TWh)	982	284	0.599	0.598	0.526	0.429	0.152
Gas (TWh)	1,490	1,742	1,453	1,117	853	443	202
Gas w cc (TWh)	0	0	1.42	114	152	181	231
Geothermal (TWh)	14.5	14.5	14.3	14.2	13.8	13.7	13.1
Hydro (TWh)	300	312	295	295	302	292	292
Nuclear (TWh)	802	775	733	620	558	467	503
Offshore wind (TWh)	0.093	3.9	20.3	80.7	182	455	934
Onshore wind (TWh)	412	764	1,446	2,199	3,029	3,710	4,485
Solar pv (TWh)	144	379	761	1,296	1,863	2,480	3,084

Table 8: *E+ scenario - PILLAR 2: Clean Electricity - Transmission*

Item	2020	2025	2030	2035	2040	2045	2050
Total HV transmission (for wind and solar) - Base all (%)	0	13.7	34	66.3	110	159	216
Total HV transmission (for wind and solar) - Constrained all (%)	0	16.2	43	81.5	130	179	247

Table 9: *E+ scenario - PILLAR 3: Clean fuels - Bioenergy*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass input - BECCS-H2 (1000 tonnes)	0	0	0	73,607	137,071	279,102	426,955
Biomass input - Bio-FT w/ CC (1000 tonnes)	0	0	0	108	124	156	209
Biomass input - Bio-SNG w/ CC (1000 tonnes)	0	0	19.2	11.8	9.26	8.74	7.28
Biomass input - Biopower (1000 tonnes)	10,423	20,617	56,097	42,541	34,517	26,793	639
Biomass input - Biopower w/ cc (1000 tonnes)	0	0	13,108	13,204	32,422	46,168	48,033
Biomass input - Ethanol (1000 tonnes)	129,506	129,506	129,536	125,006	67,634	10,261	905
Biomass input - FT diesel (1000 tonnes)	0	0	0	90.5	101	104	79.1
Biomass input - Pyrolysis liquids (1000 tonnes)	0	0	0	149	170	197	14,252
Biomass input - Pyrolysis liquids w/ cc (1000 tonnes)	0	0	0	102	118	164	93,276
Biomass input - SNG (1000 tonnes)	0	7.13	10.7	7.2	6.76	6.79	2.63
Number of facilities - Allam power w ccu (quantity)	0	0	0	14	21	32	44
Number of facilities - Beccs hydrogen (quantity)	0	0	0	95	183	377	563
Number of facilities - Diesel (quantity)	0	0	0	14	14	15	16
Number of facilities - Diesel ccu (quantity)	0	0	0	14	23	34	45
Number of facilities - Power (quantity)	0	12	16	16	17	17	17
Number of facilities - Power ccu (quantity)	0	0	26	30	57	81	95
Number of facilities - Pyrolysis (quantity)	0	0	0	14	14	15	31
Number of facilities - Pyrolysis ccu (quantity)	0	0	0	14	23	34	171
Number of facilities - Sng (quantity)	0	14	15	15	15	16	17
Number of facilities - Sng ccu (quantity)	0	0	14	14	14	19	22

Table 10: *E+ scenario - PILLAR 4: CCUS - CO2 pipelines*

Item	2020	2025	2030	2035	2040	2045	2050
All (km)		708	18,603	40,784	51,430	69,835	105,857
Cumulative investment - All (million $2018)		3,706	69,248	115,112	124,026	139,961	167,114
Cumulative investment - Spur (million $2018)		0	2,974	14,456	23,370	39,305	66,458
Cumulative investment - Trunk (million $2018)		3,706	66,274	100,656	100,656	100,656	100,656

Table 10: *E+ scenario - PILLAR 4: CCUS - CO2 pipelines (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Spur (km)		0	4,432	19,716	30,362	48,767	84,789
Trunk (km)		708	14,170	21,068	21,068	21,068	21,068

Table 11: *E+ scenario - PILLAR 4: CCUS - CO2 storage*

Item	2020	2025	2030	2035	2040	2045	2050
CO2 storage (MMT)	0	2.71	64.8	246	435	687	929
Injection wells (wells)	0	0	71	356	612	998	1,260
Resource characterization, appraisal, permitting costs (million $2020)	0	1,500	8,750	13,000	13,000	13,000	13,000
Wells and facilities construction costs (million $2020)	0	0	2,264	10,683	18,483	29,950	37,860

Table 12: *E+ scenario - PILLAR 6: Land sinks - Agriculture*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y)							-23,286
Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y)							-203,503
Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y)							-7,391
Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y)							-234,180
Carbon sink potential - Moderate deployment - Corn-ethanol to energy grasses (1000 tCO2e/y)							-23,286
Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y)							-106,430
Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y)							-3,696
Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y)							-133,412
Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares)							11,287
Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares)							136,405
Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares)							12,749
Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares)							160,442
Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares)							11,287
Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares)							71,390
Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares)							6,375
Land impacted for carbon sink - Moderate deployment - Total (1000 hectares)							89,052

Table 13: *E+ scenario - PILLAR 6: Land sinks - Forests*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y)							-48,900
Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y)							-1,535,900
Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y)							-84,000
Carbon sink potential - High - Extend rotation length (1000 tCO2e/y)							-302,000
Carbon sink potential - High - Improve plantations (1000 tCO2e/y)							-57,000
Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y)							-300,000
Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y)							-60,000
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)							-242,000
Carbon sink potential - High - Reforest pasture (1000 tCO2e/y)							-264,000
Carbon sink potential - High - Restore productivity (1000 tCO2e/y)							-178,000
Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)							-24,500
Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)							-505,500
Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)							-14,000
Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)							-116,000
Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)							-29,000
Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y)							-100,000
Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)							-21,000
Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)							-121,000
Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y)							-20,000
Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)							-60,000
Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)							-36,700
Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)							-1,020,200
Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)							-49,000
Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)							-209,000
Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)							-42,500
Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)							-200,000
Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)							-40,500
Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)							-181,500
Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)							-142,000
Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)							-119,000

Table 13: *E+ scenario - PILLAR 6: Land sinks - Forests (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)							8,000
Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)							11,373
Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)							154,000
Land impacted for carbon sink potential - High - Improve plantations (1000 hectares)							21,000
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)							5,700
Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares)							16,000
Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares)							7,500
Land impacted for carbon sink potential - High - Restore productivity (1000 hectares)							59,000
Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares)							282,573
Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares)							4,000
Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares)							10,677
Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares)							59,000
Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares)							10,500
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)							3,000
Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares)							8,000
Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares)							1,300
Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares)							35,700
Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares)							132,177
Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares)							6,000

Table 13: *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)							11,025
Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares)							106,500
Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares)							15,800
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)							4,350
Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares)							12,000
Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares)							9,400
Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares)							71,900
Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares)							236,975

Table 14: *E+ scenario - PILLAR 6: Land sinks - Total assumed land sink*

Item	2020	2025	2030	2035	2040	2045	2050
Total assumed land sink (Gt CO2e/y)	-0.7	-0.73	-0.75	-0.78	-0.8	-0.83	-0.85

Table 15: *E+ scenario - IMPACTS - Capital Investments*

Item	2020	2025	2030	2035	2040	2045	2050
Capital under construction - Cumulative from 2021 - CO2 Transport & Storage (billion $2018)	126	343	647	1,082	1,632	2,353	2,515
Capital under construction - Cumulative from 2021 - Distribution (billion $2018)	0.3	93	47.6	6.65	11.4	30.4	0
Capital under construction - Cumulative from 2021 - Fuels Conversion (billion $2018)	196	622	1,263	2,037	2,888	3,815	4,450
Capital under construction - Cumulative from 2021 - Industry (billion $2018)	38.1	227	450	800	1,161	1,488	1,758
Capital under construction - Cumulative from 2021 - Power Generation (billion $2018)	36	37	65.4	69.9	61.7	64.6	0
Capital under construction - Cumulative from 2021 - Total System (billion $2018)	398	1,326	2,510	4,064	5,863	7,997	8,724
Capital under construction - Cumulative from 2021 - Transmission (billion $2018)	2.43	3.8	36.8	67.2	109	246	0

Table 16: *E+ scenario - IMPACTS - Fossil fuel industries*

Item	2020	2025	2030	2035	2040	2045	2050
Natural gas consumption - Annual (tcf)		23,206	19,562	15,689	11,811	7,431	5,154
Natural gas consumption - Cumulative (tcf)		0	0	0	0	0	472,555
Natural gas production - Annual (tcf)		36,257	34,274	29,850	25,241	20,015	15,548
Natural gas production - Cumulative (tcf)		0	0	0	0	0	872,962
Oil consumption - Annual (million bbls)		5,924	5,196	4,119	3,106	2,308	1,650

Table 16: *E+ scenario - IMPACTS - Fossil fuel industries (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Oil consumption - Cumulative (million bbls)		0	0	0	0	0	126,839
Oil production - Annual (million bbls)		5,198	5,216	5,209	4,127	3,354	2,232
Oil production - Cumulative (million bbls)		0	0	0	0	0	136,632

Table 17: *E+ scenario - IMPACTS - Health*

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019$)		22,661	29.5	28.3	24.2	16.6	1.24
Monetary damages from air pollution - Natural Gas (million 2019$)		13,340	9,212	6,424	5,716	3,438	1,376
Monetary damages from air pollution - Transportation (million 2019$)		102,386	96,814	74,557	43,657	20,044	7,790
Premature deaths from air pollution - Coal (deaths)		2,559	3.33	3.2	2.73	1.88	0.14
Premature deaths from air pollution - Natural Gas (deaths)		1,506	1,040	725	645	388	155
Premature deaths from air pollution - Transportation (deaths)		11,515	10,889	8,385	4,910	2,254	876

Table 18: *E+ scenario - IMPACTS - Jobs*

Item	2020	2025	2030	2035	2040	2045	2050
By economic sector - Agriculture (jobs)		31,616	38,522	43,996	38,634	36,139	47,266
By economic sector - Construction (jobs)		580,064	723,845	923,207	1,030,957	1,125,842	1,362,050
By economic sector - Manufacturing (jobs)		626,159	816,219	958,346	880,897	806,619	910,451
By economic sector - Mining (jobs)		458,886	352,163	267,470	175,190	114,496	65,837
By economic sector - Other (jobs)		55,963	80,318	117,907	146,042	174,989	239,733
By economic sector - Pipeline (jobs)		46,153	47,909	40,500	29,005	22,744	20,678
By economic sector - Professional (jobs)		329,442	391,194	505,157	591,345	679,998	852,768
By economic sector - Trade (jobs)		298,081	309,842	357,203	384,375	422,446	520,017
By economic sector - Utilities (jobs)		479,672	554,950	731,228	852,603	944,853	1,147,421
By education level - All sectors - Associates degree or some college (jobs)		874,912	1,015,251	1,226,424	1,301,277	1,373,772	1,647,937
By education level - All sectors - Bachelors degree (jobs)		642,516	708,555	822,294	849,811	887,001	1,052,119
By education level - All sectors - Doctoral degree (jobs)		21,320	23,411	27,652	29,842	32,509	39,510
By education level - All sectors - High school diploma or less (jobs)		1,215,732	1,401,313	1,673,456	1,742,024	1,815,521	2,163,478
By education level - All sectors - Masters or professional degree (jobs)		151,556	166,432	195,189	206,094	219,322	263,178
By education level - Biomass sector - Associates degree or some college (jobs)		15,986	17,669	21,356	22,114	29,865	47,668
By education level - Biomass sector - Bachelors degree (jobs)		14,722	15,948	18,940	20,437	29,494	47,871
By education level - Biomass sector - Doctoral degree (jobs)		722	813	1,007	1,194	1,857	3,040
By education level - Biomass sector - High school diploma or less (jobs)		47,969	54,390	62,467	57,137	63,198	93,676
By education level - Biomass sector - Masters or professional degree (jobs)		4,048	4,493	5,404	5,950	8,640	13,975
By education level - CO2 sector - Associates degree or some college (jobs)		1,558	22,572	19,168	8,857	13,541	26,104
By education level - CO2 sector - Bachelors degree (jobs)		825	10,799	9,539	4,738	7,228	12,830
By education level - CO2 sector - Doctoral degree (jobs)		18.6	201	194	110	168	259

Table 18: *E+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - CO2 sector - High school diploma or less (jobs)		1,928	27,904	23,782	11,037	16,909	32,608
By education level - CO2 sector - Masters or professional degree (jobs)		187	2,381	2,128	1,079	1,645	2,848
By education level - Coal sector - Associates degree or some college (jobs)		21,423	5,650	2,974	2,582	2,322	2,057
By education level - Coal sector - Bachelors degree (jobs)		13,942	3,430	1,692	1,518	1,411	1,291
By education level - Coal sector - Doctoral degree (jobs)		511	123	51.5	48	46.1	43.4
By education level - Coal sector - High school diploma or less (jobs)		30,308	8,917	5,756	4,901	4,320	3,747
By education level - Coal sector - Masters or professional degree (jobs)		3,429	835	370	334	313	288
By education level - Grid sector - Associates degree or some college (jobs)		181,208	239,261	372,899	465,469	541,393	669,232
By education level - Grid sector - Bachelors degree (jobs)		103,842	136,215	210,933	261,630	302,411	371,528
By education level - Grid sector - Doctoral degree (jobs)		2,994	3,861	5,878	7,168	8,146	9,840
By education level - Grid sector - High school diploma or less (jobs)		231,717	307,496	481,654	604,229	706,290	877,399
By education level - Grid sector - Masters or professional degree (jobs)		26,130	34,169	52,749	65,228	75,170	92,077
By education level - Natural gas sector - Associates degree or some college (jobs)		180,210	145,444	118,725	106,910	75,492	53,529
By education level - Natural gas sector - Bachelors degree (jobs)		125,434	99,145	78,646	68,153	47,005	32,235
By education level - Natural gas sector - Doctoral degree (jobs)		4,168	3,263	2,560	2,196	1,499	1,002
By education level - Natural gas sector - High school diploma or less (jobs)		220,352	177,991	144,372	127,389	89,118	62,586
By education level - Natural gas sector - Masters or professional degree (jobs)		30,731	24,150	19,086	16,571	11,420	7,815
By education level - Nuclear sector - Associates degree or some college (jobs)		13,674	13,245	13,298	10,139	9,866	14,521
By education level - Nuclear sector - Bachelors degree (jobs)		14,781	14,284	14,307	10,882	10,565	15,514
By education level - Nuclear sector - Doctoral degree (jobs)		648	622	619	468	452	660
By education level - Nuclear sector - High school diploma or less (jobs)		16,974	16,486	16,595	12,684	12,374	18,257
By education level - Nuclear sector - Masters or professional degree (jobs)		4,001	3,860	3,859	2,931	2,841	4,164
By education level - Oil sector - Associates degree or some college (jobs)		205,517	181,086	156,220	113,377	84,105	53,454
By education level - Oil sector - Bachelors degree (jobs)		211,988	183,998	156,434	111,473	81,174	50,468
By education level - Oil sector - Doctoral degree (jobs)		6,849	5,981	5,123	3,669	2,686	1,676
By education level - Oil sector - High school diploma or less (jobs)		317,656	281,308	243,630	178,026	132,908	85,196
By education level - Oil sector - Masters or professional degree (jobs)		48,078	41,558	35,209	24,945	18,063	11,149
By education level - Solar PV sector - Associates degree or some college (jobs)		164,788	234,837	307,393	320,490	343,060	443,850
By education level - Solar PV sector - Bachelors degree (jobs)		95,882	138,470	182,673	191,608	206,823	269,992
By education level - Solar PV sector - Doctoral degree (jobs)		3,060	4,368	6,000	6,748	7,640	10,419

Table 18: *E+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - Solar PV sector - High school diploma or less (jobs)		231,393	327,184	424,471	437,706	463,185	591,893
By education level - Solar PV sector - Masters or professional degree (jobs)		20,683	29,884	40,194	43,503	48,096	64,253
By education level - Wind sector - Associates degree or some college (jobs)		90,548	155,487	214,391	251,340	274,127	337,524
By education level - Wind sector - Bachelors degree (jobs)		61,100	106,265	149,131	179,373	200,891	250,390
By education level - Wind sector - Doctoral degree (jobs)		2,350	4,179	6,218	8,241	10,015	12,570
By education level - Wind sector - High school diploma or less (jobs)		117,435	199,638	270,729	308,916	327,219	398,115
By education level - Wind sector - Masters or professional degree (jobs)		14,270	25,102	36,192	45,552	53,135	66,610
By resource sector - Biomass (jobs)		83,448	93,313	109,174	106,831	133,053	206,231
By resource sector - CO2 (jobs)		4,517	63,856	54,811	25,821	39,491	74,649
By resource sector - Coal (jobs)		69,612	18,956	10,843	9,383	8,412	7,426
By resource sector - Grid (jobs)		545,891	721,002	1,124,114	1,403,724	1,633,410	2,020,076
By resource sector - Natural Gas (jobs)		560,896	449,993	363,389	321,219	224,534	157,167
By resource sector - Nuclear (jobs)		50,077	48,496	48,678	37,104	36,098	53,115
By resource sector - Oil (jobs)		790,088	693,932	596,616	431,490	318,938	201,943
By resource sector - Solar (jobs)		515,805	734,743	960,731	1,000,054	1,068,804	1,380,406
By resource sector - Wind (jobs)		285,703	490,671	676,661	793,422	865,386	1,065,209
Median wages - Annual - Biomass ($2019 per job)		51,939	53,204	55,103	58,458	62,415	64,160
Median wages - Annual - CO2 ($2019 per job)		63,115	62,869	64,234	66,184	67,224	67,032
Median wages - Annual - Coal ($2019 per job)		60,501	59,195	55,643	56,541	57,484	58,469
Median wages - Annual - Grid ($2019 per job)		62,539	63,375	64,248	65,159	66,110	67,102
Median wages - Annual - Natural Gas ($2019 per job)		66,244	67,110	67,844	68,369	69,119	69,706
Median wages - Annual - Nuclear ($2019 per job)		71,486	73,188	74,974	76,846	78,808	80,864
Median wages - Annual - Oil ($2019 per job)		65,834	66,720	67,650	68,456	69,277	69,993
Median wages - Annual - Solar ($2019 per job)		55,418	56,093	56,985	58,064	59,155	60,323
Median wages - Annual - Wind ($2019 per job)		58,179	59,132	60,462	62,327	64,299	65,507
On-Site or In-Plant Training - Biomass sector - 1 to 4 years (jobs)		8,420	9,462	11,465	11,778	15,479	24,303
On-Site or In-Plant Training - Biomass sector - 4 to 10 years (jobs)		2,630	2,899	3,633	3,912	5,516	8,939
On-Site or In-Plant Training - Biomass sector - None (jobs)		13,478	15,270	18,154	18,473	23,872	36,959
On-Site or In-Plant Training - Biomass sector - Over 10 years (jobs)		584	624	716	660	802	1,299
On-Site or In-Plant Training - Biomass sector - Up to 1 year (jobs)		58,337	65,059	75,205	72,008	87,384	134,729
On-Site or In-Plant Training - CO2 sector - 1 to 4 years (jobs)		822	11,889	10,111	4,681	7,161	13,796
On-Site or In-Plant Training - CO2 sector - 4 to 10 years (jobs)		398	5,916	4,982	2,263	3,464	6,818
On-Site or In-Plant Training - CO2 sector - None (jobs)		696	9,738	8,397	3,989	6,102	11,439
On-Site or In-Plant Training - CO2 sector - Over 10 years (jobs)		47.2	703	590	267	408	805
On-Site or In-Plant Training - CO2 sector - Up to 1 year (jobs)		2,554	35,610	30,731	14,621	22,355	41,790

Table 18: *E+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Coal sector - 1 to 4 years (jobs)		10,870	2,930	1,588	1,369	1,222	1,074
On-Site or In-Plant Training - Coal sector - 4 to 10 years (jobs)		4,169	1,017	428	368	328	287
On-Site or In-Plant Training - Coal sector - None (jobs)		10,259	2,664	1,410	1,245	1,139	1,026
On-Site or In-Plant Training - Coal sector - Over 10 years (jobs)		502	120	47.1	41.7	38.2	34.4
On-Site or In-Plant Training - Coal sector - Up to 1 year (jobs)		43,813	12,226	7,370	6,360	5,685	5,004
On-Site or In-Plant Training - Grid sector - 1 to 4 years (jobs)		94,286	124,689	194,641	243,343	283,483	350,975
On-Site or In-Plant Training - Grid sector - 4 to 10 years (jobs)		41,409	54,750	85,444	106,798	124,383	153,955
On-Site or In-Plant Training - Grid sector - None (jobs)		83,130	109,551	170,425	212,356	246,578	304,311
On-Site or In-Plant Training - Grid sector - Over 10 years (jobs)		5,368	7,093	11,063	13,819	16,084	19,896
On-Site or In-Plant Training - Grid sector - Up to 1 year (jobs)		321,698	424,920	662,541	827,408	962,883	1,190,940
On-Site or In-Plant Training - Natural gas sector - 1 to 4 years (jobs)		94,541	76,217	61,976	55,313	38,887	27,463
On-Site or In-Plant Training - Natural gas sector - 4 to 10 years (jobs)		41,989	34,111	28,034	25,381	17,986	12,842
On-Site or In-Plant Training - Natural gas sector - None (jobs)		89,308	71,273	57,315	50,611	35,322	24,690
On-Site or In-Plant Training - Natural gas sector - Over 10 years (jobs)		4,983	4,077	3,385	3,110	2,221	1,594
On-Site or In-Plant Training - Natural gas sector - Up to 1 year (jobs)		330,074	264,314	212,678	186,805	130,118	90,578
On-Site or In-Plant Training - Nuclear sector - 1 to 4 years (jobs)		7,389	7,165	7,200	5,494	5,352	7,883
On-Site or In-Plant Training - Nuclear sector - 4 to 10 years (jobs)		2,675	2,592	2,605	1,987	1,935	2,850
On-Site or In-Plant Training - Nuclear sector - None (jobs)		8,964	8,672	8,696	6,622	6,437	9,462
On-Site or In-Plant Training - Nuclear sector - Over 10 years (jobs)		251	243	244	186	181	266
On-Site or In-Plant Training - Nuclear sector - Up to 1 year (jobs)		30,798	29,824	29,934	22,814	22,194	32,654
On-Site or In-Plant Training - Oil sector - 1 to 4 years (jobs)		116,425	102,660	88,637	64,336	47,729	30,322
On-Site or In-Plant Training - Oil sector - 4 to 10 years (jobs)		41,052	36,459	31,686	23,187	17,338	11,117
On-Site or In-Plant Training - Oil sector - None (jobs)		127,218	110,889	94,600	67,873	49,768	31,263
On-Site or In-Plant Training - Oil sector - Over 10 years (jobs)		4,547	4,112	3,638	2,706	2,055	1,336
On-Site or In-Plant Training - Oil sector - Up to 1 year (jobs)		500,847	439,812	378,054	273,388	202,047	127,906
On-Site or In-Plant Training - Solar PV sector - 1 to 4 years (jobs)		82,983	117,488	153,335	159,628	170,308	219,490
On-Site or In-Plant Training - Solar PV sector - 4 to 10 years (jobs)		29,899	41,330	54,513	58,499	63,477	83,065
On-Site or In-Plant Training - Solar PV sector - None (jobs)		88,134	125,796	164,778	171,845	184,034	238,197
On-Site or In-Plant Training - Solar PV sector - Over 10 years (jobs)		4,143	5,851	7,655	8,016	8,585	11,107
On-Site or In-Plant Training - Solar PV sector - Up to 1 year (jobs)		310,646	444,278	580,450	602,066	642,399	828,547

Table 18: *E+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Total jobs - 1 to 4 years (jobs)		460,684	529,457	634,960	670,336	705,271	841,598
On-Site or In-Plant Training - Total jobs - 4 to 10 years (jobs)		180,122	206,337	249,955	270,475	289,645	347,264
On-Site or In-Plant Training - Total jobs - None (jobs)		470,789	539,227	641,862	672,087	705,638	845,311
On-Site or In-Plant Training - Total jobs - Over 10 years (jobs)		22,722	26,766	32,811	35,322	37,584	45,188
On-Site or In-Plant Training - Total jobs - Up to 1 year (jobs)		1,771,719	2,013,176	2,385,426	2,480,828	2,589,988	3,086,860
On-Site or In-Plant Training - Wind sector - 1 to 4 years (jobs)		44,948	76,957	106,007	124,393	135,650	166,292
On-Site or In-Plant Training - Wind sector - 4 to 10 years (jobs)		15,900	27,264	38,630	48,080	55,219	67,391
On-Site or In-Plant Training - Wind sector - None (jobs)		49,603	85,374	118,087	139,074	152,387	187,964
On-Site or In-Plant Training - Wind sector - Over 10 years (jobs)		2,298	3,943	5,473	6,518	7,209	8,850
On-Site or In-Plant Training - Wind sector - Up to 1 year (jobs)		172,952	297,133	408,463	475,357	514,922	634,712
On-the-Job Training - All sectors - 1 to 4 years (jobs)		588,008	676,480	812,850	861,245	908,184	1,084,724
On-the-Job Training - All sectors - 4 to 10 years (jobs)		169,526	196,581	241,260	264,166	284,985	343,527
On-the-Job Training - All sectors - None (jobs)		161,120	181,252	213,541	222,332	233,363	279,915
On-the-Job Training - All sectors - Over 10 years (jobs)		29,074	33,921	40,044	40,959	42,037	49,756
On-the-Job Training - All sectors - Up to 1 year (jobs)		1,958,309	2,226,727	2,637,320	2,740,346	2,859,558	3,408,299
On-the-Job Training - Biomass sector - 1 to 4 years (jobs)		9,212	10,374	12,819	13,599	18,521	29,345
On-the-Job Training - Biomass sector - 4 to 10 years (jobs)		2,109	2,385	3,105	3,464	4,955	7,973
On-the-Job Training - Biomass sector - None (jobs)		5,212	5,588	6,391	6,163	7,872	12,541
On-the-Job Training - Biomass sector - Over 10 years (jobs)		598	640	747	710	894	1,449
On-the-Job Training - Biomass sector - Up to 1 year (jobs)		66,316	74,326	86,112	82,895	100,811	154,923
On-the-Job Training - CO2 sector - 1 to 4 years (jobs)		1,091	15,833	13,446	6,211	9,500	18,344
On-the-Job Training - CO2 sector - 4 to 10 years (jobs)		398	5,980	5,013	2,256	3,455	6,872
On-the-Job Training - CO2 sector - None (jobs)		217	2,962	2,581	1,248	1,911	3,519
On-the-Job Training - CO2 sector - Over 10 years (jobs)		45	643	552	260	398	761
On-the-Job Training - CO2 sector - Up to 1 year (jobs)		2,767	38,439	33,219	15,847	24,226	45,154
On-the-Job Training - Coal sector - 1 to 4 years (jobs)		13,806	3,667	1,903	1,643	1,469	1,294
On-the-Job Training - Coal sector - 4 to 10 years (jobs)		4,083	1,004	421	359	318	276
On-the-Job Training - Coal sector - None (jobs)		3,439	897	504	443	403	361
On-the-Job Training - Coal sector - Over 10 years (jobs)		468	127	70.2	62.7	58	53
On-the-Job Training - Coal sector - Up to 1 year (jobs)		47,816	13,261	7,946	6,876	6,164	5,442

Table 18: *E+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-the-Job Training - Grid sector - 1 to 4 years (jobs)		122,626	162,087	252,894	316,014	367,956	455,329
On-the-Job Training - Grid sector - 4 to 10 years (jobs)		41,676	55,137	86,103	107,688	125,497	155,428
On-the-Job Training - Grid sector - None (jobs)		26,716	35,237	54,865	68,427	79,528	98,244
On-the-Job Training - Grid sector - Over 10 years (jobs)		4,375	5,789	9,042	11,312	13,187	16,339
On-the-Job Training - Grid sector - Up to 1 year (jobs)		350,498	462,751	721,208	900,283	1,047,242	1,294,736
On-the-Job Training - Natural gas sector - 1 to 4 years (jobs)		124,350	100,227	81,565	72,994	51,383	36,361
On-the-Job Training - Natural gas sector - 4 to 10 years (jobs)		39,977	32,555	26,896	24,586	17,510	12,595
On-the-Job Training - Natural gas sector - None (jobs)		29,256	23,161	18,408	15,980	11,043	7,637
On-the-Job Training - Natural gas sector - Over 10 years (jobs)		5,326	4,263	3,418	2,974	2,062	1,437
On-the-Job Training - Natural gas sector - Up to 1 year (jobs)		361,987	289,787	233,101	204,684	142,536	99,137
On-the-Job Training - Nuclear sector - 1 to 4 years (jobs)		9,695	9,399	9,444	7,206	7,018	10,337
On-the-Job Training - Nuclear sector - 4 to 10 years (jobs)		2,338	2,267	2,278	1,739	1,694	2,495
On-the-Job Training - Nuclear sector - None (jobs)		3,363	3,256	3,267	2,489	2,420	3,560
On-the-Job Training - Nuclear sector - Over 10 years (jobs)		521	506	508	388	378	558
On-the-Job Training - Nuclear sector - Up to 1 year (jobs)		34,159	33,069	33,180	25,282	24,588	36,166
On-the-Job Training - Oil sector - 1 to 4 years (jobs)		144,006	126,810	109,359	79,265	58,730	37,263
On-the-Job Training - Oil sector - 4 to 10 years (jobs)		34,011	30,239	26,292	19,275	14,437	9,286
On-the-Job Training - Oil sector - None (jobs)		48,070	41,572	35,156	25,044	18,229	11,385
On-the-Job Training - Oil sector - Over 10 years (jobs)		7,713	6,796	5,864	4,255	3,156	2,007
On-the-Job Training - Oil sector - Up to 1 year (jobs)		556,287	488,515	419,945	303,651	224,385	142,002
On-the-Job Training - Solar PV sector - 1 to 4 years (jobs)		105,483	149,158	194,772	203,084	216,861	279,704
On-the-Job Training - Solar PV sector - 4 to 10 years (jobs)		29,617	40,781	53,887	58,122	63,247	82,980
On-the-Job Training - Solar PV sector - None (jobs)		29,164	41,562	54,814	57,873	62,565	81,744
On-the-Job Training - Solar PV sector - Over 10 years (jobs)		6,568	9,287	11,937	12,111	12,638	15,909
On-the-Job Training - Solar PV sector - Up to 1 year (jobs)		344,974	493,955	645,320	668,864	713,493	920,067
On-the-Job Training - Wind sector - 1 to 4 years (jobs)		57,738	98,924	136,648	161,230	176,746	216,748
On-the-Job Training - Wind sector - 4 to 10 years (jobs)		15,317	26,234	37,266	46,677	53,872	65,621
On-the-Job Training - Wind sector - None (jobs)		15,682	27,018	37,554	44,665	49,391	60,924
On-the-Job Training - Wind sector - Over 10 years (jobs)		3,460	5,871	7,904	8,886	9,264	11,243
On-the-Job Training - Wind sector - Up to 1 year (jobs)		193,505	332,624	457,289	531,964	576,113	710,673

Table 18: *E+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - All sectors - 1 to 4 years (jobs)		1,056,537	1,195,884	1,417,749	1,483,718	1,555,896	1,852,919
Related work experience - All sectors - 4 to 10 years (jobs)		673,659	766,235	911,390	958,053	1,006,857	1,200,224
Related work experience - All sectors - None (jobs)		411,112	471,328	563,632	592,544	622,780	745,590
Related work experience - All sectors - Over 10 years (jobs)		186,998	212,488	250,578	259,277	269,155	319,055
Related work experience - All sectors - Up to 1 year (jobs)		577,730	669,027	801,666	835,456	873,438	1,048,434
Related work experience - Biomass sector - 1 to 4 years (jobs)		24,915	28,344	34,009	35,192	46,257	71,775
Related work experience - Biomass sector - 4 to 10 years (jobs)		13,033	14,336	17,291	18,283	25,407	40,776
Related work experience - Biomass sector - None (jobs)		14,115	15,813	18,262	17,227	20,285	30,827
Related work experience - Biomass sector - Over 10 years (jobs)		3,589	3,882	4,597	4,707	6,438	10,462
Related work experience - Biomass sector - Up to 1 year (jobs)		27,797	30,938	35,014	31,422	34,666	52,391
Related work experience - CO2 sector - 1 to 4 years (jobs)		1,623	22,754	19,583	9,276	14,177	26,608
Related work experience - CO2 sector - 4 to 10 years (jobs)		1,115	15,808	13,544	6,363	9,727	18,419
Related work experience - CO2 sector - None (jobs)		691	9,938	8,464	3,932	6,012	11,526
Related work experience - CO2 sector - Over 10 years (jobs)		279	3,841	3,332	1,602	2,448	4,521
Related work experience - CO2 sector - Up to 1 year (jobs)		808	11,516	9,888	4,649	7,127	13,574
Related work experience - Coal sector - 1 to 4 years (jobs)		26,408	7,201	4,147	3,581	3,203	2,820
Related work experience - Coal sector - 4 to 10 years (jobs)		15,512	3,989	2,039	1,786	1,621	1,448
Related work experience - Coal sector - None (jobs)		9,454	2,500	1,349	1,167	1,046	923
Related work experience - Coal sector - Over 10 years (jobs)		3,917	1,045	562	495	451	405
Related work experience - Coal sector - Up to 1 year (jobs)		14,320	4,221	2,746	2,355	2,091	1,829
Related work experience - Grid sector - 1 to 4 years (jobs)		197,397	260,515	405,854	506,416	588,827	727,660
Related work experience - Grid sector - 4 to 10 years (jobs)		129,361	170,600	265,580	331,138	384,737	475,090
Related work experience - Grid sector - None (jobs)		81,081	107,171	167,209	208,939	243,276	301,036
Related work experience - Grid sector - Over 10 years (jobs)		33,530	44,244	68,915	85,976	99,950	123,496
Related work experience - Grid sector - Up to 1 year (jobs)		104,522	138,472	216,555	271,256	316,620	392,794
Related work experience - Natural gas sector - 1 to 4 years (jobs)		206,984	165,949	133,846	118,069	82,427	57,537
Related work experience - Natural gas sector - 4 to 10 years (jobs)		137,737	110,541	89,428	79,407	55,625	39,032
Related work experience - Natural gas sector - None (jobs)		81,233	65,487	53,255	47,552	33,439	23,590
Related work experience - Natural gas sector - Over 10 years (jobs)		37,380	29,816	23,850	20,763	14,387	9,952
Related work experience - Natural gas sector - Up to 1 year (jobs)		97,562	78,199	63,010	55,428	38,657	27,056

Table 18: *E+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - Nuclear sector - 1 to 4 years (jobs)		18,691	18,095	18,157	13,835	13,456	19,792
Related work experience - Nuclear sector - 4 to 10 years (jobs)		12,126	11,737	11,774	8,970	8,722	12,828
Related work experience - Nuclear sector - None (jobs)		6,312	6,119	6,149	4,692	4,569	6,729
Related work experience - Nuclear sector - Over 10 years (jobs)		3,733	3,615	3,629	2,767	2,692	3,962
Related work experience - Nuclear sector - Up to 1 year (jobs)		9,215	8,930	8,969	6,840	6,659	9,804
Related work experience - Oil sector - 1 to 4 years (jobs)		301,085	264,533	227,574	164,533	121,573	76,878
Related work experience - Oil sector - 4 to 10 years (jobs)		182,691	160,250	137,652	99,339	73,274	46,250
Related work experience - Oil sector - None (jobs)		106,469	93,826	80,891	58,779	43,645	27,806
Related work experience - Oil sector - Over 10 years (jobs)		52,541	46,027	39,527	28,483	20,992	13,227
Related work experience - Oil sector - Up to 1 year (jobs)		147,302	129,295	110,972	80,355	59,452	37,782
Related work experience - Solar PV sector - 1 to 4 years (jobs)		178,700	255,062	334,418	349,336	374,646	485,644
Related work experience - Solar PV sector - 4 to 10 years (jobs)		115,524	164,399	215,113	224,295	239,948	310,167
Related work experience - Solar PV sector - None (jobs)		72,936	103,860	136,243	142,633	153,161	198,797
Related work experience - Solar PV sector - Over 10 years (jobs)		32,853	47,093	61,102	62,541	66,045	84,286
Related work experience - Solar PV sector - Up to 1 year (jobs)		115,793	164,330	213,855	221,249	235,003	301,512
Related work experience - Wind sector - 1 to 4 years (jobs)		100,735	173,429	240,161	283,481	311,331	384,205
Related work experience - Wind sector - 4 to 10 years (jobs)		66,560	114,576	158,967	188,472	207,796	256,214
Related work experience - Wind sector - None (jobs)		38,823	66,614	91,811	107,623	117,347	144,355
Related work experience - Wind sector - Over 10 years (jobs)		19,175	32,926	45,063	51,945	55,750	68,743
Related work experience - Wind sector - Up to 1 year (jobs)		60,410	103,126	140,658	161,902	173,162	211,692
Wage income - Biomass (million $2019)		4,334	4,965	6,016	6,245	8,304	13,232
Wage income - CO2 (million $2019)		285	4,015	3,521	1,709	2,655	5,004
Wage income - Coal (million $2019)		4,212	1,122	603	531	484	434
Wage income - Grid (million $2019)		34,140	45,693	72,222	91,465	107,985	135,551
Wage income - Natural Gas (million $2019)		37,156	30,199	24,654	21,962	15,520	10,956
Wage income - Nuclear (million $2019)		3,580	3,549	3,650	2,851	2,845	4,295
Wage income - Oil (million $2019)		52,015	46,299	40,361	29,538	22,095	14,135
Wage income - Solar (million $2019)		28,585	41,214	54,747	58,067	63,225	83,270
Wage income - Wind (million $2019)		16,622	29,014	40,912	49,452	55,644	69,778

Table 19: *E- scenario - PILLAR 1: Efficiency/Electrification - Commercial*

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr (million $2018)	0	1,046,837	1,158,815	0	0	0	0
Sales of cooking units - Electric Resistance (%)	32.5	36.5	41.3	53.8	71.2	81.9	85.6
Sales of cooking units - Gas (%)	67.5	63.5	58.7	46.2	28.8	18.1	14.4
Sales of space heating units - Electric Heat Pump (%)	2.95	11.9	15.9	27.6	48.1	65.9	74.2

Table 19: *E- scenario - PILLAR 1: Efficiency/Electrification - Commercial (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Sales of space heating units - Electric Resistance (%)	7.91	8.18	8.72	10.5	13.8	16.4	17.6
Sales of space heating units - Fossil (%)	3.94	3.79	3.71	2.91	1.53	0.589	0.302
Sales of space heating units - Gas Furnace (%)	85.2	76.1	71.7	59	36.6	17.1	7.89
Sales of water heating units - Electric Heat Pump (%)	0.385	1.8	5.78	17.4	36.6	51.2	57.3
Sales of water heating units - Electric Resistance (%)	3.8	4.53	6.39	12	21.9	30.4	34.4
Sales of water heating units - Gas Furnace (%)	94.1	92	86.2	69	40.2	17.2	7.13
Sales of water heating units - Other (%)	1.66	1.67	1.66	1.51	1.31	1.18	1.14

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)		149	150	201	208	298	315

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

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	9,015	8,958	8,853	8,731	8,513	8,263	8,058
Final energy use - Industry (PJ)	25,084	26,117	26,456	26,354	26,498	26,178	25,748
Final energy use - Residential (PJ)	11,788	11,126	10,656	10,151	9,457	8,609	7,786
Final energy use - Transportation (PJ)	28,030	26,603	24,463	22,703	21,315	19,677	17,739

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion $2018)	0	252	303	0	0	0	0
Sales of cooking units - Electric Resistance (%)	61.2	62.2	65.8	75.1	88.1	96.2	99
Sales of cooking units - Gas (%)	38.8	37.8	34.2	24.9	11.9	3.83	1.03
Sales of space heating units - Electric Heat Pump (%)	14.6	21	25.3	37.6	58.4	75.1	82.4
Sales of space heating units - Electric Resistance (%)	20.3	24.4	23.2	19.9	14.3	10.3	8.67
Sales of space heating units - Fossil (%)	9.95	14.5	13.8	11.4	7.66	5.01	4.02
Sales of space heating units - Gas (%)	55.2	40	37.7	31.1	19.6	9.59	4.95
Sales of water heating units - Electric Heat Pump (%)	0	1.36	5.25	16.7	35.2	49.3	55.3
Sales of water heating units - Electric Resistance (%)	38.4	51.5	50.3	47	42.1	39.6	38.9
Sales of water heating units - Gas Furnace (%)	58	44.5	41.9	34	20.8	9.45	4.17
Sales of water heating units - Other (%)	3.58	2.63	2.51	2.27	1.91	1.68	1.62

Table 23: *E- scenario - PILLAR 1: Efficiency/Electrification - Transportation*

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs - Cumulative 5-yr (million $2018)	0	0	8,683	17,455	59,707	185,491	271,068
Public EV charging plugs - DC Fast (1000 units)	14.4	0	31.9	0	147	0	402
Public EV charging plugs - L2 (1000 units)	66.2	0	766	0	3,537	0	9,670
Vehicle sales - Heavy-duty - diesel (%)	97.4	96	91.3	79.8	58.2	32.1	13.7
Vehicle sales - Heavy-duty - EV (%)	0.498	1.45	4.11	10.8	23.6	39.5	51
Vehicle sales - Heavy-duty - gasoline (%)	0.228	0.236	0.239	0.225	0.179	0.109	0.051

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

Item	2020	2025	2030	2035	2040	2045	2050
Vehicle sales - Heavy-duty - hybrid (%)	0.083	0.094	0.104	0.107	0.092	0.06	0.03
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.332	0.969	2.74	7.17	15.7	26.3	34
Vehicle sales - Heavy-duty - other (%)	1.5	1.28	1.46	1.95	2.25	1.96	1.14
Vehicle sales - Light-duty - diesel (%)	1.39	1.82	2.03	1.61	1.02	0.519	0.223
Vehicle sales - Light-duty - EV (%)	4.05	6.4	12.6	27.1	49.7	72.9	87.9
Vehicle sales - Light-duty - gasoline (%)	89.4	85.5	78.4	65.1	44.7	23.9	10.6
Vehicle sales - Light-duty - hybrid (%)	4.99	5.79	6.54	5.88	4.34	2.52	1.21
Vehicle sales - Light-duty - hydrogen FC (%)	0.11	0.371	0.317	0.239	0.168	0.092	0.043
Vehicle sales - Light-duty - other (%)	0.095	0.098	0.09	0.078	0.056	0.03	0.014
Vehicle sales - Medium-duty - diesel (%)	64.8	62.2	57.7	49.4	35.6	19.6	8.37
Vehicle sales - Medium-duty - EV (%)	0.664	1.94	5.49	14.3	31.4	52.6	68
Vehicle sales - Medium-duty - gasoline (%)	33.8	34.7	34.7	31.9	24.4	14.2	6.33
Vehicle sales - Medium-duty - hybrid (%)	0.363	0.418	0.464	0.478	0.414	0.275	0.141
Vehicle sales - Medium-duty - hydrogen FC (%)	0.166	0.485	1.37	3.58	7.86	13.2	17
Vehicle sales - Medium-duty - other (%)	0.253	0.266	0.279	0.286	0.258	0.184	0.102

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

Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Biomass power plant (billion $2018)	0	0.001	0.009	0	0	0	0.012
Capital invested - Biomass w/ccu allam power plant (billion $2018)	0	0	0	0.477	0.303	0.322	0.134
Capital invested - Biomass w/ccu power plant (billion $2018)	0	0	65.9	57.4	23.9	0.913	0.238
Installed - Biomass (MW)	10,004	9,140	7,850	6,124	4,692	3,372	2,478
Installed - Biomass w cc (MW)	0	0	9,932	18,649	22,298	22,479	22,533
Installed - Ccgt & gas steam (MW)	334,698	308,455	302,510	290,709	215,137	143,639	117,846
Installed - Ccgt w cc (MW)	0	0	67.8	17,456	40,085	51,995	52,067
Installed - Coal (MW)	215,962	59,668	162	122	55.9	42	34.5
Installed - Ct (MW)	146,430	140,119	132,908	111,206	98,767	148,426	241,143
Installed - Geothermal (MW)	2,393	2,397	2,422	2,418	2,427	2,437	2,450
Installed - Grid battery storage (MW)	0	989	3,715	13,014	37,934	87,773	142,016
Installed - Hydro (MW)	78,608	78,608	78,608	78,608	78,608	78,608	78,608
Installed - Nuclear (MW)	98,481	95,135	93,041	82,240	81,173	73,631	70,690
Installed - Offshore wind (MW)	29.3	1,001	5,040	13,607	38,613	103,767	217,041
Installed - Onshore wind (MW)	97,778	190,523	360,186	535,006	755,512	1,070,110	1,512,260
Installed - Other (MW)	68,061	57,347	55,269	53,804	51,795	50,874	49,607
Installed - Pumped hydro storage (MW)	0	19,418	19,418	19,418	19,418	19,418	19,418
Installed - Solar (MW)	71,005	181,655	370,622	573,098	801,472	1,137,720	1,489,910

Table 25: *E- scenario - PILLAR 2: Clean Electricity - Generation*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass (TWh)	19.1	23.2	39.7	22.2	3.11	0.406	0.051
Biomass power plant (GWh)	3,564	883	10,475	3,401	1,584	157	35
Biomass w cc (TWh)	0	0	73.9	139	163	165	149
Biomass w/ccu allam power plant (GWh)	0	0	0	391	668	983	1,033
Biomass w/ccu power plant (GWh)	0	0	73,933	138,288	161,856	164,137	147,859
Coal (TWh)	979	260	0.568	0.427	0.196	0.147	0.121
Gas (TWh)	1,491	1,682	1,051	443	166	54.4	41.6
Gas w cc (TWh)	0	0	0.342	110	179	217	178
Geothermal (TWh)	14.5	14.5	14.2	14.1	13.4	13.4	13.2
Hydro (TWh)	300	312	295	294	300	291	292
Nuclear (TWh)	802	775	759	671	664	603	580
Offshore wind (TWh)	0.092	3.66	20.4	66.3	168	454	902
Onshore wind (TWh)	412	780	1,497	2,111	2,909	4,105	5,840

Table 25: *E- scenario - PILLAR 2: Clean Electricity - Generation (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Solar pv (TWh)	146	393	795	1,215	1,675	2,402	3,116

Table 26: *E- scenario - PILLAR 3: Clean fuels - Bioenergy*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass input - BECCS-H2 (1000 tonnes)	0	0	0	143,697	365,549	383,408	381,319
Biomass input - Bio-FT w/ CC (1000 tonnes)	0	0	0	148	207	242	231
Biomass input - Bio-SNG w/ CC (1000 tonnes)	0	0	31	15.3	10.2	8.15	4.09
Biomass input - Biopower (1000 tonnes)	12,353	27,983	56,287	38,442	4,029	416	43.3
Biomass input - Biopower w/ cc (1000 tonnes)	0	0	44,659	83,709	98,070	99,590	89,779
Biomass input - Ethanol (1000 tonnes)	129,506	129,506	129,536	125,006	67,634	10,261	905
Biomass input - FT diesel (1000 tonnes)	0	0	0	103	97.2	78.2	60.2
Biomass input - Pyrolysis liquids (1000 tonnes)	0	0	0	197	5,801	5,774	3,174
Biomass input - Pyrolysis liquids w/ cc (1000 tonnes)	0	0	0	160	2,119	81,909	109,355
Biomass input - SNG (1000 tonnes)	0	8.87	15.7	8.5	7.52	5.18	1.6

Table 27: *E- scenario - PILLAR 6: Land sinks - Agriculture*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y)							-23,286
Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y)							-203,503
Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y)							-7,391
Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y)							-234,180
Carbon sink potential - Moderate deployment - Corn-ethanol to energy grasses (1000 tCO2e/y)							-23,286
Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y)							-106,430
Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y)							-3,696
Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y)							-133,412
Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares)							11,287
Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares)							136,405
Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares)							12,749
Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares)							160,442
Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares)							11,287

Table 27: *E- scenario - PILLAR 6: Land sinks - Agriculture (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares)							71,390
Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares)							6,375
Land impacted for carbon sink - Moderate deployment - Total (1000 hectares)							89,052

Table 28: *E- scenario - PILLAR 6: Land sinks - Forests*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y)							-48,900
Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y)							-1,535,900
Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y)							-84,000
Carbon sink potential - High - Extend rotation length (1000 tCO2e/y)							-302,000
Carbon sink potential - High - Improve plantations (1000 tCO2e/y)							-57,000
Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y)							-300,000
Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y)							-60,000
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)							-242,000
Carbon sink potential - High - Reforest pasture (1000 tCO2e/y)							-264,000
Carbon sink potential - High - Restore productivity (1000 tCO2e/y)							-178,000
Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)							-24,500
Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)							-505,500
Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)							-14,000
Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)							-116,000
Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)							-29,000
Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y)							-100,000
Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)							-21,000
Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)							-121,000
Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y)							-20,000
Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)							-60,000
Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)							-36,700
Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)							-1,020,200
Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)							-49,000
Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)							-209,000

Table 28: *E- scenario - PILLAR 6: Land sinks - Forests (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)							-42,500
Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)							-200,000
Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)							-40,500
Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)							-181,500
Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)							-142,000
Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)							-119,000
Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)							8,000
Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)							11,373
Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)							154,000
Land impacted for carbon sink potential - High - Improve plantations (1000 hectares)							21,000
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)							5,700
Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares)							16,000
Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares)							7,500
Land impacted for carbon sink potential - High - Restore productivity (1000 hectares)							59,000
Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares)							282,573
Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares)							4,000
Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares)							10,677
Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares)							59,000
Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares)							10,500
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)							3,000
Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares)							8,000

Table 28: *E- scenario - PILLAR 6: Land sinks - Forests (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares)							1,300
Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares)							35,700
Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares)							132,177
Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares)							6,000
Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares)							11,025
Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares)							106,500
Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares)							15,800
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)							4,350
Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares)							12,000
Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares)							9,400
Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares)							71,900
Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares)							236,975

Table 29: *E- scenario - PILLAR 6: Land sinks - Total assumed land sink*

Item	2020	2025	2030	2035	2040	2045	2050
Total assumed land sink (Gt CO2e/y)	-0.7	-0.73	-0.75	-0.78	-0.8	-0.83	-0.85

Table 30: *E- scenario - IMPACTS - Fossil fuel industries*

Item	2020	2025	2030	2035	2040	2045	2050
Natural gas consumption - Annual (tcf)		23,207	18,132	13,835	11,458	9,451	7,359
Natural gas consumption - Cumulative (tcf)		0	0	0	0	0	471,240
Natural gas production - Annual (tcf)		36,153	32,458	26,253	21,869	19,030	16,824
Natural gas production - Cumulative (tcf)		0	0	0	0	0	827,513
Oil consumption - Annual (million bbls)		5,987	5,545	5,112	4,510	3,786	2,730
Oil consumption - Cumulative (million bbls)		0	0	0	0	0	151,515
Oil production - Annual (million bbls)		5,198	5,216	5,209	5,074	4,832	3,313
Oil production - Cumulative (million bbls)		0	0	0	0	0	151,997

Table 31: *E- scenario - IMPACTS - Health*

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019$)		22,661	29.5	28.3	24.2	16.6	1.24

Table 31: *E- scenario - IMPACTS - Health (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Natural Gas (million 2019$)		12,934	7,464	3,616	1,603	552	382
Monetary damages from air pollution - Transportation (million 2019$)		104,258	107,043	105,711	96,553	77,882	54,050
Premature deaths from air pollution - Coal (deaths)		2,559	3.33	3.2	2.73	1.88	0.14
Premature deaths from air pollution - Natural Gas (deaths)		1,460	843	408	181	62.3	43.1
Premature deaths from air pollution - Transportation (deaths)		11,726	12,039	11,890	10,859	8,759	6,079

Table 32: *E- scenario - IMPACTS - Jobs*

Item	2020	2025	2030	2035	2040	2045	2050
By economic sector - Agriculture (jobs)		32,671	42,263	55,525	55,304	48,631	47,267
By economic sector - Construction (jobs)		581,151	740,531	848,062	963,235	1,231,236	1,521,901
By economic sector - Manufacturing (jobs)		643,588	841,653	842,392	846,575	1,022,744	1,121,180
By economic sector - Mining (jobs)		459,533	349,848	267,959	202,834	155,840	95,673
By economic sector - Other (jobs)		56,713	82,057	105,315	133,287	185,287	253,398
By economic sector - Pipeline (jobs)		46,559	52,128	44,106	34,087	32,405	32,455
By economic sector - Professional (jobs)		329,757	396,268	484,820	601,655	769,834	955,468
By economic sector - Trade (jobs)		299,111	313,315	344,813	391,852	480,920	587,900
By economic sector - Utilities (jobs)		467,151	555,052	647,545	754,638	1,013,321	1,274,330
By education level - All sectors - Associates degree or some college (jobs)		877,317	1,032,448	1,120,830	1,235,677	1,554,721	1,876,871
By education level - All sectors - Bachelors degree (jobs)		644,556	719,700	766,180	835,715	1,022,709	1,204,395
By education level - All sectors - Doctoral degree (jobs)		21,371	23,756	26,444	30,321	37,262	44,622
By education level - All sectors - High school diploma or less (jobs)		1,221,244	1,428,512	1,544,246	1,678,342	2,074,673	2,464,577
By education level - All sectors - Masters or professional degree (jobs)		151,747	168,698	182,837	203,411	250,853	299,109
By education level - Biomass sector - Associates degree or some college (jobs)		16,251	19,569	31,894	45,570	47,098	45,477
By education level - Biomass sector - Bachelors degree (jobs)		14,930	17,672	29,620	45,296	48,357	46,565
By education level - Biomass sector - Doctoral degree (jobs)		736	920	1,676	2,768	3,070	2,979
By education level - Biomass sector - High school diploma or less (jobs)		49,010	59,413	84,349	99,696	94,444	90,761
By education level - Biomass sector - Masters or professional degree (jobs)		4,115	5,002	8,479	13,078	14,098	13,643
By education level - CO2 sector - Associates degree or some college (jobs)		2,515	38,458	32,848	15,318	23,219	44,587
By education level - CO2 sector - Bachelors degree (jobs)		1,259	18,272	16,339	8,256	12,395	21,828
By education level - CO2 sector - Doctoral degree (jobs)		25.6	334	332	195	289	436
By education level - CO2 sector - High school diploma or less (jobs)		3,107	47,531	40,756	19,094	28,995	55,693
By education level - CO2 sector - Masters or professional degree (jobs)		281	4,019	3,644	1,884	2,820	4,839
By education level - Coal sector - Associates degree or some college (jobs)		22,072	6,164	2,995	2,610	2,316	1,994
By education level - Coal sector - Bachelors degree (jobs)		14,426	3,788	1,704	1,536	1,407	1,249
By education level - Coal sector - Doctoral degree (jobs)		527	139	51.8	48.4	45.9	42.2

Table 32: *E- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - Coal sector - High school diploma or less (jobs)		31,106	9,425	5,799	4,961	4,315	3,636
By education level - Coal sector - Masters or professional degree (jobs)		3,542	934	372	338	312	279
By education level - Grid sector - Associates degree or some college (jobs)		173,353	228,027	308,713	396,350	576,086	740,915
By education level - Grid sector - Bachelors degree (jobs)		99,341	129,819	174,626	222,780	321,789	411,323
By education level - Grid sector - Doctoral degree (jobs)		2,864	3,680	4,867	6,104	8,668	10,894
By education level - Grid sector - High school diploma or less (jobs)		221,673	293,057	398,748	514,506	751,549	971,380
By education level - Grid sector - Masters or professional degree (jobs)		24,997	32,564	43,669	55,542	79,987	101,940
By education level - Natural gas sector - Associates degree or some college (jobs)		177,428	132,902	100,712	86,735	70,072	57,130
By education level - Natural gas sector - Bachelors degree (jobs)		123,689	90,752	66,362	54,800	43,112	34,393
By education level - Natural gas sector - Doctoral degree (jobs)		4,108	2,986	2,148	1,737	1,341	1,055
By education level - Natural gas sector - High school diploma or less (jobs)		217,308	162,916	122,486	104,023	83,752	67,883
By education level - Natural gas sector - Masters or professional degree (jobs)		30,288	22,094	16,086	13,254	10,379	8,263
By education level - Nuclear sector - Associates degree or some college (jobs)		13,677	15,250	15,745	15,139	13,819	12,177
By education level - Nuclear sector - Bachelors degree (jobs)		14,784	16,445	16,939	16,249	14,798	13,010
By education level - Nuclear sector - Doctoral degree (jobs)		648	716	733	699	633	553
By education level - Nuclear sector - High school diploma or less (jobs)		16,977	18,981	19,648	18,941	17,332	15,311
By education level - Nuclear sector - Masters or professional degree (jobs)		4,002	4,444	4,569	4,376	3,978	3,492
By education level - Oil sector - Associates degree or some college (jobs)		206,241	184,787	166,010	145,737	125,155	81,627
By education level - Oil sector - Bachelors degree (jobs)		212,702	187,569	165,668	142,894	120,528	76,911
By education level - Oil sector - Doctoral degree (jobs)		6,871	6,092	5,410	4,694	3,983	2,552
By education level - Oil sector - High school diploma or less (jobs)		318,831	287,355	259,739	229,389	198,127	130,297
By education level - Oil sector - Masters or professional degree (jobs)		48,234	42,333	37,202	31,924	26,788	16,973
By education level - Solar PV sector - Associates degree or some college (jobs)		171,543	245,159	261,046	283,736	371,089	450,507
By education level - Solar PV sector - Bachelors degree (jobs)		99,886	144,608	154,725	169,434	224,069	274,121
By education level - Solar PV sector - Doctoral degree (jobs)		3,167	4,544	5,240	6,063	8,065	10,514
By education level - Solar PV sector - High school diploma or less (jobs)		240,887	341,586	360,137	387,232	501,802	601,052
By education level - Solar PV sector - Masters or professional degree (jobs)		21,498	31,168	34,439	38,712	51,558	65,067
By education level - Wind sector - Associates degree or some college (jobs)		94,236	162,133	200,866	244,482	325,867	442,456
By education level - Wind sector - Bachelors degree (jobs)		63,539	110,775	140,196	174,471	236,253	324,995
By education level - Wind sector - Doctoral degree (jobs)		2,424	4,346	5,986	8,014	11,167	15,597

Table 32: *E- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - Wind sector - High school diploma or less (jobs)		122,346	208,247	252,585	300,502	394,358	528,566
By education level - Wind sector - Masters or professional degree (jobs)		14,791	26,141	34,377	44,303	60,931	84,613
By resource sector - Biomass (jobs)		85,042	102,575	156,018	206,408	207,068	199,424
By resource sector - CO2 (jobs)		7,188	108,613	93,920	44,746	67,718	127,383
By resource sector - Coal (jobs)		71,673	20,450	10,922	9,493	8,396	7,200
By resource sector - Grid (jobs)		522,228	687,148	930,623	1,195,282	1,738,078	2,236,452
By resource sector - Natural Gas (jobs)		552,821	411,650	307,795	260,549	208,657	168,724
By resource sector - Nuclear (jobs)		50,088	55,836	57,634	55,404	50,559	44,544
By resource sector - Oil (jobs)		792,878	708,136	634,028	554,637	474,581	308,359
By resource sector - Solar (jobs)		536,980	767,065	815,587	885,178	1,156,584	1,401,261
By resource sector - Wind (jobs)		297,337	511,641	634,011	771,770	1,028,576	1,396,226
Median wages - Annual - Biomass ($2019 per job)		51,978	53,602	56,740	60,498	62,984	64,202
Median wages - Annual - CO2 ($2019 per job)		62,505	62,790	64,228	66,288	67,225	66,970
Median wages - Annual - Coal ($2019 per job)		60,563	59,804	55,633	56,515	57,451	58,453
Median wages - Annual - Grid ($2019 per job)		62,539	63,375	64,248	65,159	66,110	67,102
Median wages - Annual - Natural Gas ($2019 per job)		66,265	67,136	67,771	68,258	68,978	69,760
Median wages - Annual - Nuclear ($2019 per job)		71,486	73,188	74,974	76,846	78,808	80,864
Median wages - Annual - Oil ($2019 per job)		65,828	66,678	67,513	68,348	69,194	69,918
Median wages - Annual - Solar ($2019 per job)		55,399	56,082	57,093	58,129	59,038	60,292
Median wages - Annual - Wind ($2019 per job)		58,122	59,113	60,675	62,325	63,655	64,920
On-Site or In-Plant Training - Biomass sector - 1 to 4 years (jobs)		8,583	10,499	16,845	23,383	23,942	23,154
On-Site or In-Plant Training - Biomass sector - 4 to 10 years (jobs)		2,669	3,231	5,551	8,269	8,664	8,399
On-Site or In-Plant Training - Biomass sector - None (jobs)		13,768	16,945	26,595	36,348	37,151	35,807
On-Site or In-Plant Training - Biomass sector - Over 10 years (jobs)		589	670	994	1,303	1,282	1,237
On-Site or In-Plant Training - Biomass sector - Up to 1 year (jobs)		59,432	71,230	106,033	137,105	136,029	130,827
On-Site or In-Plant Training - CO2 sector - 1 to 4 years (jobs)		1,325	20,254	17,327	8,097	12,280	23,564
On-Site or In-Plant Training - CO2 sector - 4 to 10 years (jobs)		652	10,094	8,539	3,907	5,940	11,656
On-Site or In-Plant Training - CO2 sector - None (jobs)		1,101	16,551	14,388	6,918	10,464	19,512
On-Site or In-Plant Training - CO2 sector - Over 10 years (jobs)		77.5	1,201	1,012	460	699	1,377
On-Site or In-Plant Training - CO2 sector - Up to 1 year (jobs)		4,033	60,513	52,654	25,364	38,334	71,274
On-Site or In-Plant Training - Coal sector - 1 to 4 years (jobs)		11,186	3,182	1,599	1,384	1,219	1,042
On-Site or In-Plant Training - Coal sector - 4 to 10 years (jobs)		4,304	1,136	431	372	326	278
On-Site or In-Plant Training - Coal sector - None (jobs)		10,585	2,911	1,420	1,259	1,136	994
On-Site or In-Plant Training - Coal sector - Over 10 years (jobs)		519	135	47.4	42.1	38	33.4
On-Site or In-Plant Training - Coal sector - Up to 1 year (jobs)		45,080	13,086	7,424	6,436	5,677	4,853

Table 32: *E- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Grid sector - 1 to 4 years (jobs)		90,199	118,834	161,138	207,208	301,648	388,568
On-Site or In-Plant Training - Grid sector - 4 to 10 years (jobs)		39,614	52,179	70,737	90,939	132,353	170,446
On-Site or In-Plant Training - Grid sector - None (jobs)		79,526	104,407	141,090	180,823	262,378	336,907
On-Site or In-Plant Training - Grid sector - Over 10 years (jobs)		5,135	6,760	9,159	11,767	17,115	22,027
On-Site or In-Plant Training - Grid sector - Up to 1 year (jobs)		307,754	404,968	548,500	704,545	1,024,584	1,318,505
On-Site or In-Plant Training - Natural gas sector - 1 to 4 years (jobs)		93,144	69,692	52,578	44,991	36,270	29,485
On-Site or In-Plant Training - Natural gas sector - 4 to 10 years (jobs)		41,339	31,167	23,829	20,702	16,834	13,779
On-Site or In-Plant Training - Natural gas sector - None (jobs)		88,008	65,188	48,520	40,955	32,692	26,390
On-Site or In-Plant Training - Natural gas sector - Over 10 years (jobs)		4,901	3,722	2,877	2,528	2,067	1,700
On-Site or In-Plant Training - Natural gas sector - Up to 1 year (jobs)		325,428	241,881	179,991	151,372	120,795	97,369
On-Site or In-Plant Training - Nuclear sector - 1 to 4 years (jobs)		7,391	8,249	8,525	8,204	7,495	6,611
On-Site or In-Plant Training - Nuclear sector - 4 to 10 years (jobs)		2,675	2,985	3,084	2,967	2,710	2,390
On-Site or In-Plant Training - Nuclear sector - None (jobs)		8,966	9,985	10,296	9,888	9,015	7,935
On-Site or In-Plant Training - Nuclear sector - Over 10 years (jobs)		251	280	288	277	253	223
On-Site or In-Plant Training - Nuclear sector - Up to 1 year (jobs)		30,805	34,338	35,441	34,067	31,085	27,385
On-Site or In-Plant Training - Oil sector - 1 to 4 years (jobs)		116,831	104,736	94,131	82,661	71,002	46,291
On-Site or In-Plant Training - Oil sector - 4 to 10 years (jobs)		41,198	37,215	33,709	29,833	25,820	16,989
On-Site or In-Plant Training - Oil sector - None (jobs)		127,666	113,154	100,522	87,241	74,055	47,738
On-Site or In-Plant Training - Oil sector - Over 10 years (jobs)		4,563	4,197	3,868	3,480	3,059	2,041
On-Site or In-Plant Training - Oil sector - Up to 1 year (jobs)		502,621	448,835	401,798	351,423	300,645	195,301
On-Site or In-Plant Training - Solar PV sector - 1 to 4 years (jobs)		86,342	122,621	130,474	141,459	183,962	222,715
On-Site or In-Plant Training - Solar PV sector - 4 to 10 years (jobs)		30,979	43,032	47,323	52,387	67,399	83,944
On-Site or In-Plant Training - Solar PV sector - None (jobs)		91,756	131,332	139,877	152,108	199,129	241,785
On-Site or In-Plant Training - Solar PV sector - Over 10 years (jobs)		4,308	6,104	6,534	7,115	9,248	11,262
On-Site or In-Plant Training - Solar PV sector - Up to 1 year (jobs)		323,595	463,976	491,379	532,109	696,846	841,554
On-Site or In-Plant Training - Total jobs - 1 to 4 years (jobs)		461,757	538,301	582,068	638,384	798,608	958,943
On-Site or In-Plant Training - Total jobs - 4 to 10 years (jobs)		179,879	209,415	230,069	256,135	322,842	392,957
On-Site or In-Plant Training - Total jobs - None (jobs)		472,993	549,490	593,418	650,818	806,800	963,008
On-Site or In-Plant Training - Total jobs - Over 10 years (jobs)		22,731	27,178	29,932	33,312	42,225	51,381
On-Site or In-Plant Training - Total jobs - Up to 1 year (jobs)		1,778,875	2,048,730	2,205,052	2,404,818	2,969,743	3,523,285

Table 32: *E- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Wind sector - 1 to 4 years (jobs)		46,757	80,235	99,452	120,997	160,789	217,513
On-Site or In-Plant Training - Wind sector - 4 to 10 years (jobs)		16,449	28,377	36,866	46,759	62,796	85,076
On-Site or In-Plant Training - Wind sector - None (jobs)		51,616	89,018	110,709	135,277	180,779	245,939
On-Site or In-Plant Training - Wind sector - Over 10 years (jobs)		2,388	4,110	5,153	6,340	8,464	11,480
On-Site or In-Plant Training - Wind sector - Up to 1 year (jobs)		180,127	309,901	381,831	462,397	615,749	836,217
On-the-Job Training - All sectors - 1 to 4 years (jobs)		589,129	687,624	744,333	817,976	1,025,873	1,235,420
On-the-Job Training - All sectors - 4 to 10 years (jobs)		169,191	199,532	221,283	248,227	315,641	387,596
On-the-Job Training - All sectors - None (jobs)		161,830	184,590	198,537	217,212	267,386	317,995
On-the-Job Training - All sectors - Over 10 years (jobs)		29,312	34,688	36,706	39,368	48,413	57,152
On-the-Job Training - All sectors - Up to 1 year (jobs)		1,966,773	2,266,679	2,439,679	2,660,684	3,282,905	3,891,411
On-the-Job Training - Biomass sector - 1 to 4 years (jobs)		9,389	11,579	19,238	27,648	28,734	27,841
On-the-Job Training - Biomass sector - 4 to 10 years (jobs)		2,148	2,693	4,803	7,245	7,639	7,428
On-the-Job Training - Biomass sector - None (jobs)		5,279	6,082	9,258	12,627	12,720	12,160
On-the-Job Training - Biomass sector - Over 10 years (jobs)		604	691	1,053	1,421	1,417	1,369
On-the-Job Training - Biomass sector - Up to 1 year (jobs)		67,622	81,530	121,665	157,468	156,559	150,626
On-the-Job Training - CO2 sector - 1 to 4 years (jobs)		1,763	26,977	23,043	10,740	16,291	31,334
On-the-Job Training - CO2 sector - 4 to 10 years (jobs)		656	10,212	8,592	3,891	5,924	11,754
On-the-Job Training - CO2 sector - None (jobs)		338	5,026	4,422	2,168	3,276	5,997
On-the-Job Training - CO2 sector - Over 10 years (jobs)		71.9	1,094	946	450	683	1,298
On-the-Job Training - CO2 sector - Up to 1 year (jobs)		4,360	65,304	56,917	27,497	41,543	77,000
On-the-Job Training - Coal sector - 1 to 4 years (jobs)		14,210	4,006	1,915	1,660	1,465	1,255
On-the-Job Training - Coal sector - 4 to 10 years (jobs)		4,211	1,121	423	363	316	268
On-the-Job Training - Coal sector - None (jobs)		3,553	972	508	448	402	350
On-the-Job Training - Coal sector - Over 10 years (jobs)		482	139	70.7	63.4	57.9	51.4
On-the-Job Training - Coal sector - Up to 1 year (jobs)		49,217	14,212	8,005	6,959	6,155	5,276
On-the-Job Training - Grid sector - 1 to 4 years (jobs)		117,311	154,477	209,364	269,088	391,534	504,100
On-the-Job Training - Grid sector - 4 to 10 years (jobs)		39,869	52,548	71,283	91,697	133,538	172,077
On-the-Job Training - Grid sector - None (jobs)		25,558	33,583	45,422	58,266	84,624	108,767
On-the-Job Training - Grid sector - Over 10 years (jobs)		4,185	5,517	7,486	9,632	14,032	18,089
On-the-Job Training - Grid sector - Up to 1 year (jobs)		335,305	441,023	597,069	766,598	1,114,349	1,433,419

Table 32: *E- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-the-Job Training - Natural gas sector - 1 to 4 years (jobs)		122,490	91,627	69,213	59,363	47,896	38,975
On-the-Job Training - Natural gas sector - 4 to 10 years (jobs)		39,335	29,727	22,887	20,072	16,397	13,478
On-the-Job Training - Natural gas sector - None (jobs)		28,855	21,202	15,568	12,935	10,235	8,197
On-the-Job Training - Natural gas sector - Over 10 years (jobs)		5,256	3,904	2,898	2,430	1,942	1,564
On-the-Job Training - Natural gas sector - Up to 1 year (jobs)		356,885	265,191	197,228	165,749	132,187	106,510
On-the-Job Training - Nuclear sector - 1 to 4 years (jobs)		9,697	10,822	11,182	10,760	9,829	8,669
On-the-Job Training - Nuclear sector - 4 to 10 years (jobs)		2,339	2,610	2,697	2,596	2,372	2,092
On-the-Job Training - Nuclear sector - None (jobs)		3,364	3,749	3,868	3,717	3,390	2,986
On-the-Job Training - Nuclear sector - Over 10 years (jobs)		521	582	602	580	530	468
On-the-Job Training - Nuclear sector - Up to 1 year (jobs)		34,167	38,073	39,285	37,751	34,438	30,330
On-the-Job Training - Oil sector - 1 to 4 years (jobs)		144,505	129,357	116,099	101,822	87,357	56,884
On-the-Job Training - Oil sector - 4 to 10 years (jobs)		34,135	30,881	28,017	24,834	21,524	14,206
On-the-Job Training - Oil sector - None (jobs)		48,244	42,447	37,430	32,239	27,156	17,403
On-the-Job Training - Oil sector - Over 10 years (jobs)		7,740	6,934	6,229	5,469	4,697	3,065
On-the-Job Training - Oil sector - Up to 1 year (jobs)		558,254	498,517	446,253	390,274	333,848	216,802
On-the-Job Training - Solar PV sector - 1 to 4 years (jobs)		109,729	155,655	165,906	180,069	234,031	283,751
On-the-Job Training - Solar PV sector - 4 to 10 years (jobs)		30,665	42,443	46,934	52,136	66,972	83,805
On-the-Job Training - Solar PV sector - None (jobs)		30,332	43,367	46,764	51,367	67,382	82,880
On-the-Job Training - Solar PV sector - Over 10 years (jobs)		6,844	9,701	10,071	10,680	13,771	16,180
On-the-Job Training - Solar PV sector - Up to 1 year (jobs)		359,410	515,899	545,912	590,926	774,427	934,644
On-the-Job Training - Wind sector - 1 to 4 years (jobs)		60,037	103,125	128,372	156,825	208,736	282,610
On-the-Job Training - Wind sector - 4 to 10 years (jobs)		15,832	27,298	35,647	45,394	60,958	82,489
On-the-Job Training - Wind sector - None (jobs)		16,306	28,164	35,298	43,444	58,200	79,256
On-the-Job Training - Wind sector - Over 10 years (jobs)		3,608	6,126	7,349	8,644	11,283	15,067
On-the-Job Training - Wind sector - Up to 1 year (jobs)		201,554	346,928	427,344	517,462	689,400	936,803
Related work experience - All sectors - 1 to 4 years (jobs)		1,059,755	1,215,937	1,309,813	1,433,440	1,776,043	2,113,756
Related work experience - All sectors - 4 to 10 years (jobs)		675,403	778,883	839,366	920,779	1,145,764	1,369,722
Related work experience - All sectors - None (jobs)		412,312	479,693	520,232	570,168	708,706	848,028
Related work experience - All sectors - Over 10 years (jobs)		187,752	216,027	230,005	249,597	308,897	365,935
Related work experience - All sectors - Up to 1 year (jobs)		581,013	682,574	741,123	809,483	1,000,808	1,192,133

Table 32: *E- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - Biomass sector - 1 to 4 years (jobs)		25,475	31,590	50,358	69,822	71,904	69,386
Related work experience - Biomass sector - 4 to 10 years (jobs)		13,243	15,909	26,334	38,711	40,580	39,157
Related work experience - Biomass sector - None (jobs)		14,396	17,318	25,423	31,889	31,116	29,868
Related work experience - Biomass sector - Over 10 years (jobs)		3,634	4,259	6,881	10,001	10,410	10,054
Related work experience - Biomass sector - Up to 1 year (jobs)		28,293	33,498	47,022	55,985	53,058	50,959
Related work experience - CO2 sector - 1 to 4 years (jobs)		2,572	38,682	33,555	16,084	24,311	45,391
Related work experience - CO2 sector - 4 to 10 years (jobs)		1,778	26,893	23,208	11,024	16,680	31,434
Related work experience - CO2 sector - None (jobs)		1,111	16,924	14,505	6,804	10,308	19,683
Related work experience - CO2 sector - Over 10 years (jobs)		438	6,520	5,709	2,781	4,197	7,707
Related work experience - CO2 sector - Up to 1 year (jobs)		1,290	19,595	16,943	8,053	12,221	23,169
Related work experience - Coal sector - 1 to 4 years (jobs)		27,190	7,760	4,177	3,623	3,197	2,734
Related work experience - Coal sector - 4 to 10 years (jobs)		16,006	4,373	2,054	1,806	1,616	1,403
Related work experience - Coal sector - None (jobs)		9,744	2,719	1,358	1,180	1,044	895
Related work experience - Coal sector - Over 10 years (jobs)		4,035	1,138	566	500	450	393
Related work experience - Coal sector - Up to 1 year (jobs)		14,699	4,460	2,767	2,384	2,089	1,775
Related work experience - Grid sector - 1 to 4 years (jobs)		188,840	248,283	335,996	431,217	626,558	805,601
Related work experience - Grid sector - 4 to 10 years (jobs)		123,754	162,589	219,867	281,967	409,391	525,979
Related work experience - Grid sector - None (jobs)		77,566	102,139	138,428	177,913	258,865	333,281
Related work experience - Grid sector - Over 10 years (jobs)		32,077	42,166	57,053	73,209	106,355	136,724
Related work experience - Grid sector - Up to 1 year (jobs)		99,992	131,970	179,280	230,976	336,909	434,867
Related work experience - Natural gas sector - 1 to 4 years (jobs)		204,017	151,824	113,306	95,655	76,470	61,747
Related work experience - Natural gas sector - 4 to 10 years (jobs)		135,709	101,088	75,757	64,353	51,598	41,784
Related work experience - Natural gas sector - None (jobs)		80,026	59,877	45,157	38,619	31,112	25,287
Related work experience - Natural gas sector - Over 10 years (jobs)		36,871	27,298	20,171	16,819	13,357	10,719
Related work experience - Natural gas sector - Up to 1 year (jobs)		96,199	71,564	53,404	45,103	36,121	29,186
Related work experience - Nuclear sector - 1 to 4 years (jobs)		18,695	20,834	21,497	20,659	18,846	16,599
Related work experience - Nuclear sector - 4 to 10 years (jobs)		12,128	13,513	13,940	13,394	12,216	10,758
Related work experience - Nuclear sector - None (jobs)		6,313	7,045	7,280	7,006	6,399	5,644
Related work experience - Nuclear sector - Over 10 years (jobs)		3,734	4,163	4,297	4,132	3,771	3,322
Related work experience - Nuclear sector - Up to 1 year (jobs)		9,217	10,281	10,619	10,214	9,327	8,222

Table 32: *E- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - Oil sector - 1 to 4 years (jobs)		302,135	269,872	241,614	211,329	180,792	117,324
Related work experience - Oil sector - 4 to 10 years (jobs)		183,324	163,462	146,091	127,563	108,950	70,576
Related work experience - Oil sector - None (jobs)		106,857	95,809	86,141	75,674	65,021	42,502
Related work experience - Oil sector - Over 10 years (jobs)		52,718	46,922	41,873	36,525	31,181	20,166
Related work experience - Oil sector - Up to 1 year (jobs)		147,845	132,071	118,309	103,547	88,636	57,791
Related work experience - Solar PV sector - 1 to 4 years (jobs)		186,024	266,270	284,039	309,311	405,153	492,891
Related work experience - Solar PV sector - 4 to 10 years (jobs)		120,241	171,610	182,799	198,639	259,422	314,784
Related work experience - Solar PV sector - None (jobs)		75,899	108,403	115,902	126,397	165,406	201,697
Related work experience - Solar PV sector - Over 10 years (jobs)		34,260	49,212	51,438	55,099	72,032	85,728
Related work experience - Solar PV sector - Up to 1 year (jobs)		120,556	171,570	181,408	195,732	254,570	306,160
Related work experience - Wind sector - 1 to 4 years (jobs)		104,807	180,823	225,270	275,742	368,812	502,083
Related work experience - Wind sector - 4 to 10 years (jobs)		69,220	119,444	149,316	183,323	245,311	333,848
Related work experience - Wind sector - None (jobs)		40,401	69,459	86,038	104,686	139,433	189,172
Related work experience - Wind sector - Over 10 years (jobs)		19,986	34,349	42,016	50,530	67,143	91,120
Related work experience - Wind sector - Up to 1 year (jobs)		62,923	107,564	131,370	157,489	207,877	280,004
Wage income - Biomass (million $2019)		4,420	5,498	8,852	12,487	13,042	12,804
Wage income - CO2 (million $2019)		449	6,820	6,032	2,966	4,552	8,531
Wage income - Coal (million $2019)		4,341	1,223	608	536	482	421
Wage income - Grid (million $2019)		32,660	43,548	59,790	77,883	114,904	150,070
Wage income - Natural Gas (million $2019)		36,633	27,637	20,860	17,785	14,393	11,770
Wage income - Nuclear (million $2019)		3,581	4,087	4,321	4,258	3,984	3,602
Wage income - Oil (million $2019)		52,193	47,217	42,805	37,909	32,838	21,560
Wage income - Solar (million $2019)		29,748	43,018	46,564	51,454	68,283	84,485
Wage income - Wind (million $2019)		17,282	30,245	38,469	48,100	65,475	90,643

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

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr (million $2018)	0	1,047,657	1,162,511	0	0	0	0
Sales of cooking units - Electric Resistance (%)	32.5	46.4	80	86.6	87	87	87
Sales of cooking units - Gas (%)	67.5	53.6	20	13.4	13	13	13
Sales of space heating units - Electric Heat Pump (%)	2.95	17.6	52.9	76.9	80.6	80.8	80.8
Sales of space heating units - Electric Resistance (%)	7.91	9.07	14.4	17.7	18.4	18.4	18.4
Sales of space heating units - Fossil (%)	3.94	3.28	0.655	0.028	0	0	0
Sales of space heating units - Gas Furnace (%)	85.2	70.1	32.1	5.37	1.07	0.82	0.817
Sales of water heating units - Electric Heat Pump (%)	0.385	7.96	43.3	59.2	61.2	61.3	61.3
Sales of water heating units - Electric Resistance (%)	3.8	7.16	24	35.7	37.5	37.6	37.6
Sales of water heating units - Gas Furnace (%)	94.1	83.3	31.5	4.03	0.235	0.003	0

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

Item	2020	2025	2030	2035	2040	2045	2050
Sales of water heating units - Other (%)	1.66	1.59	1.2	1.1	1.1	1.11	1.11

Table 34: *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)		182	187	336	359	314	329

Table 35: *E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Overview*

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	9,015	8,942	8,619	8,103	7,608	7,344	7,297
Final energy use - Industry (PJ)	25,107	26,056	26,110	25,372	25,108	24,870	24,572
Final energy use - Residential (PJ)	11,788	11,090	10,221	8,966	7,776	6,967	6,512
Final energy use - Transportation (PJ)	27,996	26,390	23,464	19,872	16,608	14,565	13,649

Table 36: *E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Residential*

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion $2018)	0	254	307	0	0	0	0
Sales of cooking units - Electric Resistance (%)	61.3	69.6	94.8	99.7	100	100	100
Sales of cooking units - Gas (%)	38.7	30.4	5.2	0.262	0	0	0
Sales of space heating units - Electric Heat Pump (%)	14.6	27.2	64.4	85	88	88.1	88.1
Sales of space heating units - Electric Resistance (%)	20.3	22.6	12.3	8.07	7.57	7.66	7.68
Sales of space heating units - Fossil (%)	9.95	13.2	6.18	3.41	3.02	2.91	2.9
Sales of space heating units - Gas (%)	55.2	36.9	17.1	3.52	1.45	1.32	1.3
Sales of water heating units - Electric Heat Pump (%)	0	7.44	41.8	56.2	58.5	59.2	59
Sales of water heating units - Electric Resistance (%)	38.4	49.2	38.5	39.8	39.9	39.3	39.5
Sales of water heating units - Gas Furnace (%)	58	40.9	18	2.56	0.155	0.003	0
Sales of water heating units - Other (%)	3.58	2.47	1.63	1.47	1.51	1.54	1.53

Table 37: *E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Transportation*

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs - Cumulative 5-yr (million $2018)	0	51,477	133,974	213,805	325,180	352,492	336,852
Public EV charging plugs - DC Fast (1000 units)	14.4	0	93.9	0	391	0	628
Public EV charging plugs - L2 (1000 units)	66.2	0	2,256	0	9,394	0	15,098
Vehicle sales - Heavy-duty - diesel (%)	97.2	92.1	67	23.3	4.22	0.628	0
Vehicle sales - Heavy-duty - EV (%)	0.588	3.81	19	45.6	57.4	59.6	60
Vehicle sales - Heavy-duty - gasoline (%)	0.227	0.227	0.176	0.066	0.013	0.002	0
Vehicle sales - Heavy-duty - hybrid (%)	0.082	0.09	0.077	0.031	0.007	0.001	0
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.392	2.54	12.7	30.4	38.2	39.7	40
Vehicle sales - Heavy-duty - other (%)	1.5	1.23	1.07	0.568	0.163	0.038	0
Vehicle sales - Light-duty - diesel (%)	1.4	1.68	1.2	0.382	0.072	0.013	0
Vehicle sales - Light-duty - EV (%)	4.41	16.7	48.7	82.7	96.4	99.3	100
Vehicle sales - Light-duty - gasoline (%)	89.1	76.3	46.4	15.6	3.17	0.586	0
Vehicle sales - Light-duty - hybrid (%)	4.91	4.89	3.38	1.24	0.304	0.067	0
Vehicle sales - Light-duty - hydrogen FC (%)	0.11	0.331	0.191	0.059	0.012	0.002	0
Vehicle sales - Light-duty - other (%)	0.095	0.091	0.058	0.02	0.004	0.001	0

Table 37: *E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Transportation (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Vehicle sales - Medium-duty - diesel (%)	64.7	59.7	42.3	14.4	2.59	0.384	0
Vehicle sales - Medium-duty - EV (%)	0.784	5.07	25.3	60.8	76.5	79.5	80
Vehicle sales - Medium-duty - gasoline (%)	33.7	33.3	25.5	9.32	1.77	0.277	0
Vehicle sales - Medium-duty - hybrid (%)	0.363	0.402	0.341	0.14	0.03	0.005	0
Vehicle sales - Medium-duty - hydrogen FC (%)	0.196	1.27	6.33	15.2	19.1	19.9	20
Vehicle sales - Medium-duty - other (%)	0.253	0.255	0.205	0.083	0.019	0.004	0

Table 38: *E+RE+ scenario - PILLAR 2: Clean Electricity - Generating capacity*

Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Biomass power plant (billion $2018)	0	0.001	0.006	0.011	0.001	0	0
Capital invested - Biomass w/ccu allam power plant (billion $2018)	0	0	0	0.175	0.15	0.086	0.162
Capital invested - Biomass w/ccu power plant (billion $2018)	0	0	0.198	0.008	0.074	0.13	0.137
Installed - Biomass (MW)	10,003	9,140	7,854	6,156	4,735	3,409	2,488
Installed - Biomass w cc (MW)	0	0	29.9	54.6	85.8	108	150
Installed - Ccgt & gas steam (MW)	334,781	312,898	343,874	346,127	273,137	203,281	171,091
Installed - Ccgt w cc (MW)	0	0	77.3	164	233	304	331
Installed - Coal (MW)	216,076	60,056	185	104	84.5	61	26.1
Installed - Ct (MW)	146,242	137,398	142,744	165,901	204,190	319,096	515,962
Installed - Geothermal (MW)	2,390	2,394	2,414	2,426	2,428	2,457	4,871
Installed - Grid battery storage (MW)	0	987	11,630	42,944	105,233	143,960	186,175
Installed - Hydro (MW)	78,608	78,608	78,608	78,608	78,608	78,608	78,608
Installed - Nuclear (MW)	98,501	94,063	83,809	56,742	41,522	14,825	0
Installed - Offshore wind (MW)	29.3	1,026	4,957	36,176	99,902	227,465	457,951
Installed - Onshore wind (MW)	97,803	200,500	386,229	693,913	1,069,220	1,521,230	2,186,500
Installed - Other (MW)	68,093	57,211	55,709	54,353	52,339	51,350	40,191
Installed - Pumped hydro storage (MW)	0	19,418	19,418	19,418	19,418	19,418	19,418
Installed - Solar (MW)	70,059	204,578	431,979	816,379	1,237,320	1,813,750	2,640,440

Table 39: *E+RE+ scenario - PILLAR 2: Clean Electricity - Generation*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass (TWh)	18.8	17.7	39	29.3	21.4	15.2	0.108
Biomass power plant (GWh)	3,549	620	9,773	9,073	6,438	2,637	31.1
Biomass w cc (TWh)	0	0	0.079	0.098	0.188	0.358	0.556
Biomass w/ccu allam power plant (GWh)	0	0	0	51.1	90	161	285
Biomass w/ccu power plant (GWh)	0	0	79	47.1	97.6	197	271
Coal (TWh)	981	328	0.647	0.364	0.296	0.214	0.092
Gas (TWh)	1,489	1,589	1,262	737	422	151	51.9
Gas w cc (TWh)	0	0	0.154	0.216	0.297	0.344	0.23
Geothermal (TWh)	14.5	14.5	14.1	14.2	13.7	13.5	25.7
Hydro (TWh)	300	312	295	294	300	291	291
Nuclear (TWh)	802	766	683	462	338	121	0
Offshore wind (TWh)	0.092	3.82	20.2	183	437	978	1,833
Onshore wind (TWh)	413	816	1,593	2,720	4,109	5,852	8,245
Solar pv (TWh)	145	446	929	1,741	2,603	3,857	5,503

Table 40: *E+RE+ scenario - PILLAR 2: Clean Electricity - Transmission*

Item	2020	2025	2030	2035	2040	2045	2050
Total HV transmission (for wind and solar) - Base all (%)	0	13.4	35.1	86.8	162	267	430

Table 41: *E+RE+ scenario - PILLAR 3: Clean fuels - Bioenergy*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass input - BECCS-H2 (1000 tonnes)	0	0	0	2.28	19,065	118,177	120,886
Biomass input - Bio-FT w/ CC (1000 tonnes)	0	0	0	67.5	112	276	352
Biomass input - Bio-SNG w/ CC (1000 tonnes)	0	0	9.39	4.81	7.06	45.5	179,016
Biomass input - Biopower (1000 tonnes)	11,647	16,788	55,652	45,494	37,066	28,898	161
Biomass input - Biopower w/ cc (1000 tonnes)	0	0	47.7	51.6	99.5	192	292
Biomass input - Ethanol (1000 tonnes)	129,506	129,506	129,536	125,006	67,634	10,261	905
Biomass input - FT diesel (1000 tonnes)	0	0	0	158	201	193	104
Biomass input - Pyrolysis liquids (1000 tonnes)	0	0	0	64,735	133,702	142,225	140,053
Biomass input - Pyrolysis liquids w/ cc (1000 tonnes)	0	0	0	65.4	117	7,078	142,580
Biomass input - SNG (1000 tonnes)	0	9.34	18.9	26	25.6	52.2	8.78

Table 42: *E+RE+ scenario - PILLAR 4: CCUS - CO2 storage*

Item	2020	2025	2030	2035	2040	2045	2050
CO2 storage (MMT)	0	0	0	0	0	0	0

Table 43: *E+RE+ scenario - PILLAR 6: Land sinks - Agriculture*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y)							-23,286
Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y)							-203,503
Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y)							-7,391
Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y)							-234,180
Carbon sink potential - Moderate deployment - Corn-ethanol to energy grasses (1000 tCO2e/y)							-23,286
Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y)							-106,430
Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y)							-3,696
Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y)							-133,412
Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares)							11,287
Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares)							136,405
Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares)							12,749
Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares)							160,442
Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares)							11,287

Table 43: *E+RE+ scenario - PILLAR 6: Land sinks - Agriculture (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares)							71,390
Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares)							6,375
Land impacted for carbon sink - Moderate deployment - Total (1000 hectares)							89,052

Table 44: *E+RE+ scenario - PILLAR 6: Land sinks - Forests*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y)							-48,900
Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y)							-1,535,900
Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y)							-84,000
Carbon sink potential - High - Extend rotation length (1000 tCO2e/y)							-302,000
Carbon sink potential - High - Improve plantations (1000 tCO2e/y)							-57,000
Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y)							-300,000
Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y)							-60,000
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)							-242,000
Carbon sink potential - High - Reforest pasture (1000 tCO2e/y)							-264,000
Carbon sink potential - High - Restore productivity (1000 tCO2e/y)							-178,000
Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)							-24,500
Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)							-505,500
Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)							-14,000
Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)							-116,000
Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)							-29,000
Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y)							-100,000
Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)							-21,000
Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)							-121,000
Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y)							-20,000
Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)							-60,000
Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)							-36,700
Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)							-1,020,200
Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)							-49,000
Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)							-209,000

Table 44: *E+RE+ scenario - PILLAR 6: Land sinks - Forests (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)							-42,500
Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)							-200,000
Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)							-40,500
Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)							-181,500
Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)							-142,000
Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)							-119,000
Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)							8,000
Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)							11,373
Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)							154,000
Land impacted for carbon sink potential - High - Improve plantations (1000 hectares)							21,000
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)							5,700
Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares)							16,000
Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares)							7,500
Land impacted for carbon sink potential - High - Restore productivity (1000 hectares)							59,000
Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares)							282,573
Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares)							4,000
Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares)							10,677
Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares)							59,000
Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares)							10,500
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)							3,000
Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares)							8,000

Table 44: *E+RE+ scenario - PILLAR 6: Land sinks - Forests (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares)							1,300
Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares)							35,700
Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares)							132,177
Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares)							6,000
Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares)							11,025
Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares)							106,500
Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares)							15,800
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)							4,350
Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares)							12,000
Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares)							9,400
Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares)							71,900
Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares)							236,975

Table 45: *E+RE+ scenario - PILLAR 6: Land sinks - Total assumed land sink*

Item	2020	2025	2030	2035	2040	2045	2050
Total assumed land sink (Gt CO2e/y)	-0.7	-0.73	-0.75	-0.78	-0.8	-0.83	-0.85

Table 46: *E+RE+ scenario - IMPACTS - Fossil fuel industries*

Item	2020	2025	2030	2035	2040	2045	2050
Natural gas consumption - Annual (tcf)		22,299	18,474	12,539	8,059	4,669	3,040
Natural gas consumption - Cumulative (tcf)		0	0	0	0	0	408,044
Natural gas production - Annual (tcf)		35,349	33,543	27,543	22,024	15,809	9,807
Natural gas production - Cumulative (tcf)		0	0	0	0	0	798,868
Oil consumption - Annual (million bbls)		5,925	5,139	3,984	2,776	1,608	0.837
Oil consumption - Cumulative (million bbls)		0	0	0	0	0	115,785
Oil production - Annual (million bbls)		5,198	5,216	5,078	3,797	2,654	583
Oil production - Cumulative (million bbls)		0	0	0	0	0	125,883

Table 47: *E+RE+ scenario - IMPACTS - Health*

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019$)		22,661	29.5	28.3	24.2	16.6	1.24

Table 47: *E+RE+ scenario - IMPACTS - Health (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Natural Gas (million 2019$)		11,869	8,363	4,638	3,236	1,166	340
Monetary damages from air pollution - Transportation (million 2019$)		102,386	96,814	74,557	43,657	20,044	7,790
Premature deaths from air pollution - Coal (deaths)		2,559	3.33	3.2	2.73	1.88	0.14
Premature deaths from air pollution - Natural Gas (deaths)		1,340	944	524	365	132	38.4
Premature deaths from air pollution - Transportation (deaths)		11,515	10,889	8,385	4,910	2,254	876

Table 48: *E+RE+ scenario - IMPACTS - Jobs*

Item	2020	2025	2030	2035	2040	2045	2050
By economic sector - Agriculture (jobs)		31,644	36,897	42,750	36,387	31,197	47,266
By economic sector - Construction (jobs)		615,091	766,830	1,095,266	1,315,338	1,662,012	2,268,223
By economic sector - Manufacturing (jobs)		708,145	931,655	1,298,402	1,269,224	1,433,061	1,851,180
By economic sector - Mining (jobs)		455,199	345,035	249,121	151,098	81,299	14,201
By economic sector - Other (jobs)		62,554	92,801	154,006	200,123	276,352	415,903
By economic sector - Pipeline (jobs)		44,749	39,489	31,071	21,589	13,204	3,548
By economic sector - Professional (jobs)		343,678	420,403	600,437	759,221	993,617	1,406,825
By economic sector - Trade (jobs)		307,034	326,576	410,763	477,213	603,718	845,202
By economic sector - Utilities (jobs)		489,095	552,098	796,794	1,016,890	1,333,474	1,878,475
By education level - All sectors - Associates degree or some college (jobs)		923,227	1,076,952	1,462,875	1,664,246	2,059,407	2,814,023
By education level - All sectors - Bachelors degree (jobs)		670,997	748,208	965,469	1,070,614	1,301,578	1,756,710
By education level - All sectors - Doctoral degree (jobs)		22,068	24,725	32,096	37,384	46,651	64,043
By education level - All sectors - High school diploma or less (jobs)		1,283,452	1,486,758	1,991,046	2,216,725	2,701,665	3,661,110
By education level - All sectors - Masters or professional degree (jobs)		157,445	175,142	227,123	258,114	318,631	434,938
By education level - Biomass sector - Associates degree or some college (jobs)		15,552	16,889	19,994	22,250	26,445	49,645
By education level - Biomass sector - Bachelors degree (jobs)		14,138	15,252	17,355	20,555	25,986	49,050
By education level - Biomass sector - Doctoral degree (jobs)		685	770	905	1,198	1,633	3,096
By education level - Biomass sector - High school diploma or less (jobs)		47,358	52,271	59,779	55,811	55,334	96,306
By education level - Biomass sector - Masters or professional degree (jobs)		3,886	4,287	4,946	5,961	7,609	14,274
By education level - CO2 sector - Associates degree or some college (jobs)		0	0.004	0.003	0.004	0.006	0.003
By education level - CO2 sector - Bachelors degree (jobs)		0	0.004	0.003	0.004	0.006	0.003
By education level - CO2 sector - Doctoral degree (jobs)		0	0	0	0	0	0
By education level - CO2 sector - High school diploma or less (jobs)		0.001	0.005	0.004	0.006	0.007	0.004
By education level - CO2 sector - Masters or professional degree (jobs)		0	0.001	0.001	0.001	0.001	0.001
By education level - Coal sector - Associates degree or some college (jobs)		22,915	6,176	2,967	2,570	2,312	1,923
By education level - Coal sector - Bachelors degree (jobs)		14,923	3,797	1,687	1,511	1,405	1,200
By education level - Coal sector - Doctoral degree (jobs)		540	139	51.4	47.7	45.9	40.7

Table 48: *E+RE+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - Coal sector - High school diploma or less (jobs)		32,770	9,431	5,745	4,884	4,306	3,504
By education level - Coal sector - Masters or professional degree (jobs)		3,640	937	369	332	311	269
By education level - Grid sector - Associates degree or some college (jobs)		191,619	259,230	444,808	596,108	824,718	1,195,826
By education level - Grid sector - Bachelors degree (jobs)		109,809	147,584	251,609	335,059	460,670	663,869
By education level - Grid sector - Doctoral degree (jobs)		3,166	4,183	7,012	9,180	12,409	17,582
By education level - Grid sector - High school diploma or less (jobs)		245,031	333,160	574,535	773,813	1,075,909	1,567,793
By education level - Grid sector - Masters or professional degree (jobs)		27,631	37,021	62,921	83,535	114,508	164,530
By education level - Natural gas sector - Associates degree or some college (jobs)		173,454	138,732	102,315	85,093	58,524	45,741
By education level - Natural gas sector - Bachelors degree (jobs)		120,841	94,837	68,163	54,426	35,865	26,072
By education level - Natural gas sector - Doctoral degree (jobs)		4,018	3,128	2,237	1,770	1,141	785
By education level - Natural gas sector - High school diploma or less (jobs)		212,153	169,881	124,164	100,764	67,931	51,285
By education level - Natural gas sector - Masters or professional degree (jobs)		29,607	23,107	16,579	13,286	8,767	6,406
By education level - Nuclear sector - Associates degree or some college (jobs)		13,635	13,082	9,708	6,639	3,957	1,115
By education level - Nuclear sector - Bachelors degree (jobs)		14,739	14,107	10,444	7,125	4,238	1,191
By education level - Nuclear sector - Doctoral degree (jobs)		646	615	452	307	181	50.7
By education level - Nuclear sector - High school diploma or less (jobs)		16,926	16,282	12,115	8,305	4,964	1,402
By education level - Nuclear sector - Masters or professional degree (jobs)		3,990	3,812	2,817	1,919	1,139	320
By education level - Oil sector - Associates degree or some college (jobs)		205,534	180,474	151,993	103,553	64,672	10,464
By education level - Oil sector - Bachelors degree (jobs)		212,005	183,408	152,219	101,861	62,544	10,118
By education level - Oil sector - Doctoral degree (jobs)		6,849	5,963	4,985	3,354	2,073	341
By education level - Oil sector - High school diploma or less (jobs)		317,683	280,308	237,011	162,536	102,033	16,377
By education level - Oil sector - Masters or professional degree (jobs)		48,082	41,430	34,263	22,801	13,932	2,261
By education level - Solar PV sector - Associates degree or some college (jobs)		199,096	287,606	435,512	467,266	589,662	824,354
By education level - Solar PV sector - Bachelors degree (jobs)		116,255	169,874	259,498	279,991	356,591	502,913
By education level - Solar PV sector - Doctoral degree (jobs)		3,596	5,264	8,256	9,557	12,503	18,225
By education level - Solar PV sector - High school diploma or less (jobs)		279,619	400,826	601,954	639,042	798,578	1,104,496
By education level - Solar PV sector - Masters or professional degree (jobs)		24,804	36,432	56,429	62,798	81,195	116,575
By education level - Wind sector - Associates degree or some college (jobs)		101,421	174,762	295,578	380,766	489,116	684,955
By education level - Wind sector - Bachelors degree (jobs)		68,289	119,349	204,494	270,085	354,280	502,298
By education level - Wind sector - Doctoral degree (jobs)		2,569	4,664	8,198	11,971	16,666	23,922

Table 48: *E+RE+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - Wind sector - High school diploma or less (jobs)		131,912	224,599	375,743	471,570	592,611	819,947
By education level - Wind sector - Masters or professional degree (jobs)		15,806	28,118	48,799	67,482	91,169	130,304
By resource sector - Biomass (jobs)		81,618	89,469	102,980	105,776	117,006	212,370
By resource sector - CO2 (jobs)		0.001	0.013	0.011	0.016	0.02	0.012
By resource sector - Coal (jobs)		74,788	20,480	10,819	9,345	8,380	6,937
By resource sector - Grid (jobs)		577,256	781,177	1,340,885	1,797,695	2,488,215	3,609,601
By resource sector - Natural Gas (jobs)		540,072	429,685	313,458	255,339	172,228	130,289
By resource sector - Nuclear (jobs)		49,936	47,897	35,536	24,295	14,480	4,078
By resource sector - Oil (jobs)		790,152	691,583	580,471	394,105	245,253	39,559
By resource sector - Solar (jobs)		623,369	900,002	1,361,648	1,458,654	1,838,529	2,566,564
By resource sector - Wind (jobs)		319,998	551,492	932,812	1,201,874	1,543,842	2,161,427
Median wages - Annual - Biomass ($2019 per job)		51,709	53,024	54,711	58,635	62,473	64,124
Median wages - Annual - CO2 ($2019 per job)		70,992	72,624	74,331	76,115	77,980	79,929
Median wages - Annual - Coal ($2019 per job)		60,299	59,831	55,635	56,518	57,460	58,461
Median wages - Annual - Grid ($2019 per job)		62,539	63,375	64,248	65,159	66,110	67,102
Median wages - Annual - Natural Gas ($2019 per job)		66,255	67,149	67,918	68,399	68,816	68,665
Median wages - Annual - Nuclear ($2019 per job)		71,486	73,188	74,974	76,846	78,808	80,864
Median wages - Annual - Oil ($2019 per job)		65,834	66,727	67,655	68,473	69,353	70,884
Median wages - Annual - Solar ($2019 per job)		55,327	56,038	56,875	57,941	58,924	60,009
Median wages - Annual - Wind ($2019 per job)		58,021	59,082	60,123	61,956	63,600	64,825
On-Site or In-Plant Training - Biomass sector - 1 to 4 years (jobs)		8,227	9,032	10,798	11,784	13,705	25,340
On-Site or In-Plant Training - Biomass sector - 4 to 10 years (jobs)		2,556	2,763	3,401	3,988	4,919	9,426
On-Site or In-Plant Training - Biomass sector - None (jobs)		13,142	14,575	17,029	18,260	20,980	37,999
On-Site or In-Plant Training - Biomass sector - Over 10 years (jobs)		572	605	679	668	712	1,355
On-Site or In-Plant Training - Biomass sector - Up to 1 year (jobs)		57,121	62,494	71,072	71,076	76,689	138,249
On-Site or In-Plant Training - CO2 sector - 1 to 4 years (jobs)		0	0.002	0.002	0.002	0.003	0.002
On-Site or In-Plant Training - CO2 sector - 4 to 10 years (jobs)		0	0.001	0.001	0.001	0.001	0.001
On-Site or In-Plant Training - CO2 sector - None (jobs)		0	0.002	0.002	0.003	0.003	0.002
On-Site or In-Plant Training - CO2 sector - Over 10 years (jobs)		0	0	0	0	0	0
On-Site or In-Plant Training - CO2 sector - Up to 1 year (jobs)		0.001	0.008	0.007	0.01	0.012	0.007
On-Site or In-Plant Training - Coal sector - 1 to 4 years (jobs)		11,633	3,188	1,585	1,363	1,217	1,005
On-Site or In-Plant Training - Coal sector - 4 to 10 years (jobs)		4,427	1,140	427	366	326	268
On-Site or In-Plant Training - Coal sector - None (jobs)		10,986	2,917	1,406	1,239	1,134	957
On-Site or In-Plant Training - Coal sector - Over 10 years (jobs)		532	135	47	41.4	38	32.2
On-Site or In-Plant Training - Coal sector - Up to 1 year (jobs)		47,210	13,101	7,354	6,336	5,665	4,674

Table 48: *E+RE+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Grid sector - 1 to 4 years (jobs)		99,703	135,096	232,175	311,640	431,837	627,144
On-Site or In-Plant Training - Grid sector - 4 to 10 years (jobs)		43,788	59,319	101,921	136,772	189,475	275,097
On-Site or In-Plant Training - Grid sector - None (jobs)		87,906	118,694	203,289	271,956	375,618	543,762
On-Site or In-Plant Training - Grid sector - Over 10 years (jobs)		5,676	7,685	13,196	17,697	24,502	35,551
On-Site or In-Plant Training - Grid sector - Up to 1 year (jobs)		340,182	460,384	790,303	1,059,630	1,466,784	2,128,047
On-Site or In-Plant Training - Natural gas sector - 1 to 4 years (jobs)		91,008	72,717	53,365	43,919	29,964	23,136
On-Site or In-Plant Training - Natural gas sector - 4 to 10 years (jobs)		40,405	32,509	24,091	20,136	13,945	11,033
On-Site or In-Plant Training - Natural gas sector - None (jobs)		85,997	68,068	49,491	40,303	27,179	20,634
On-Site or In-Plant Training - Natural gas sector - Over 10 years (jobs)		4,794	3,885	2,913	2,474	1,732	1,384
On-Site or In-Plant Training - Natural gas sector - Up to 1 year (jobs)		317,869	252,506	183,598	148,507	99,407	74,103
On-Site or In-Plant Training - Nuclear sector - 1 to 4 years (jobs)		7,369	7,076	5,256	3,598	2,147	605
On-Site or In-Plant Training - Nuclear sector - 4 to 10 years (jobs)		2,667	2,560	1,901	1,301	776	219
On-Site or In-Plant Training - Nuclear sector - None (jobs)		8,938	8,565	6,348	4,336	2,582	727
On-Site or In-Plant Training - Nuclear sector - Over 10 years (jobs)		250	240	178	122	72.4	20.4
On-Site or In-Plant Training - Nuclear sector - Up to 1 year (jobs)		30,712	29,456	21,852	14,938	8,903	2,507
On-Site or In-Plant Training - Oil sector - 1 to 4 years (jobs)		116,435	102,317	86,241	58,766	36,712	5,954
On-Site or In-Plant Training - Oil sector - 4 to 10 years (jobs)		41,055	36,334	30,828	21,174	13,322	2,156
On-Site or In-Plant Training - Oil sector - None (jobs)		127,228	110,514	92,040	61,993	38,270	6,123
On-Site or In-Plant Training - Oil sector - Over 10 years (jobs)		4,547	4,098	3,539	2,472	1,580	261
On-Site or In-Plant Training - Oil sector - Up to 1 year (jobs)		500,887	438,320	367,823	249,700	155,369	25,065
On-Site or In-Plant Training - Solar PV sector - 1 to 4 years (jobs)		100,025	143,715	216,807	232,302	291,908	406,416
On-Site or In-Plant Training - Solar PV sector - 4 to 10 years (jobs)		35,315	49,977	75,490	83,404	105,119	147,501
On-Site or In-Plant Training - Solar PV sector - None (jobs)		106,536	154,101	233,551	250,640	316,508	442,691
On-Site or In-Plant Training - Solar PV sector - Over 10 years (jobs)		4,979	7,145	10,791	11,628	14,635	20,426
On-Site or In-Plant Training - Solar PV sector - Up to 1 year (jobs)		376,514	545,064	825,009	880,680	1,110,360	1,549,529
On-Site or In-Plant Training - Total jobs - 1 to 4 years (jobs)		484,678	559,607	752,069	851,450	1,048,770	1,426,206
On-Site or In-Plant Training - Total jobs - 4 to 10 years (jobs)		187,730	215,098	289,739	337,916	421,771	576,579
On-Site or In-Plant Training - Total jobs - None (jobs)		496,271	573,379	765,795	859,173	1,053,568	1,433,509
On-Site or In-Plant Training - Total jobs - Over 10 years (jobs)		23,913	28,218	38,829	44,899	55,961	76,771
On-Site or In-Plant Training - Total jobs - Up to 1 year (jobs)		1,864,597	2,135,484	2,832,177	3,153,645	3,847,864	5,217,758

Table 48: *E+RE+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Wind sector - 1 to 4 years (jobs)		50,279	86,466	145,842	188,079	241,280	336,605
On-Site or In-Plant Training - Wind sector - 4 to 10 years (jobs)		17,516	30,496	51,680	70,775	93,888	130,879
On-Site or In-Plant Training - Wind sector - None (jobs)		55,538	95,944	162,639	210,445	271,296	380,616
On-Site or In-Plant Training - Wind sector - Over 10 years (jobs)		2,563	4,426	7,487	9,797	12,690	17,742
On-Site or In-Plant Training - Wind sector - Up to 1 year (jobs)		194,101	334,160	565,164	722,779	924,688	1,295,584
On-the-Job Training - All sectors - 1 to 4 years (jobs)		618,296	714,244	961,804	1,093,576	1,350,249	1,838,355
On-the-Job Training - All sectors - 4 to 10 years (jobs)		176,961	205,039	280,398	331,116	416,603	572,624
On-the-Job Training - All sectors - None (jobs)		169,235	192,437	253,227	282,712	345,779	470,199
On-the-Job Training - All sectors - Over 10 years (jobs)		30,947	36,394	48,635	53,200	64,096	85,918
On-the-Job Training - All sectors - Up to 1 year (jobs)		2,061,750	2,363,671	3,134,544	3,486,479	4,251,206	5,763,728
On-the-Job Training - Biomass sector - 1 to 4 years (jobs)		8,979	9,877	12,031	13,677	16,440	30,702
On-the-Job Training - Biomass sector - 4 to 10 years (jobs)		2,054	2,258	2,913	3,534	4,432	8,465
On-the-Job Training - Biomass sector - None (jobs)		5,066	5,387	5,981	6,164	6,923	12,884
On-the-Job Training - Biomass sector - Over 10 years (jobs)		586	619	708	722	796	1,521
On-the-Job Training - Biomass sector - Up to 1 year (jobs)		64,933	71,327	81,346	81,677	88,415	158,798
On-the-Job Training - CO2 sector - 1 to 4 years (jobs)		0	0.002	0.002	0.003	0.004	0.002
On-the-Job Training - CO2 sector - 4 to 10 years (jobs)		0	0.001	0.001	0.001	0.001	0.001
On-the-Job Training - CO2 sector - None (jobs)		0	0.001	0.001	0.001	0.001	0.001
On-the-Job Training - CO2 sector - Over 10 years (jobs)		0	0	0	0	0	0
On-the-Job Training - CO2 sector - Up to 1 year (jobs)		0.001	0.009	0.008	0.011	0.014	0.008
On-the-Job Training - Coal sector - 1 to 4 years (jobs)		14,738	4,014	1,898	1,635	1,463	1,211
On-the-Job Training - Coal sector - 4 to 10 years (jobs)		4,330	1,125	419	357	316	258
On-the-Job Training - Coal sector - None (jobs)		3,704	973	503	441	401	336
On-the-Job Training - Coal sector - Over 10 years (jobs)		500	139	70	62.4	57.8	49.6
On-the-Job Training - Coal sector - Up to 1 year (jobs)		51,515	14,229	7,928	6,850	6,142	5,081
On-the-Job Training - Grid sector - 1 to 4 years (jobs)		129,672	175,615	301,662	404,707	560,517	813,611
On-the-Job Training - Grid sector - 4 to 10 years (jobs)		44,070	59,739	102,707	137,912	191,172	277,729
On-the-Job Training - Grid sector - None (jobs)		28,251	38,178	65,446	87,631	121,147	175,548
On-the-Job Training - Grid sector - Over 10 years (jobs)		4,626	6,272	10,786	14,487	20,089	29,196
On-the-Job Training - Grid sector - Up to 1 year (jobs)		370,636	501,373	860,284	1,152,958	1,595,290	2,313,517

Table 48: *E+RE+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-the-Job Training - Natural gas sector - 1 to 4 years (jobs)		119,696	95,608	70,226	57,982	39,688	30,848
On-the-Job Training - Natural gas sector - 4 to 10 years (jobs)		38,459	31,003	23,091	19,510	13,659	11,015
On-the-Job Training - Natural gas sector - None (jobs)		28,179	22,136	15,903	12,710	8,434	6,257
On-the-Job Training - Natural gas sector - Over 10 years (jobs)		5,129	4,071	2,940	2,350	1,565	1,166
On-the-Job Training - Natural gas sector - Up to 1 year (jobs)		348,610	276,866	201,297	162,788	108,882	81,003
On-the-Job Training - Nuclear sector - 1 to 4 years (jobs)		9,668	9,283	6,895	4,718	2,815	794
On-the-Job Training - Nuclear sector - 4 to 10 years (jobs)		2,332	2,239	1,663	1,138	679	192
On-the-Job Training - Nuclear sector - None (jobs)		3,354	3,216	2,385	1,630	971	273
On-the-Job Training - Nuclear sector - Over 10 years (jobs)		520	499	371	254	152	42.8
On-the-Job Training - Nuclear sector - Up to 1 year (jobs)		34,063	32,660	24,223	16,554	9,863	2,777
On-the-Job Training - Oil sector - 1 to 4 years (jobs)		144,018	126,388	106,403	72,405	45,178	7,322
On-the-Job Training - Oil sector - 4 to 10 years (jobs)		34,014	30,133	25,578	17,598	11,082	1,779
On-the-Job Training - Oil sector - None (jobs)		48,074	41,427	34,202	22,869	14,003	2,203
On-the-Job Training - Oil sector - Over 10 years (jobs)		7,714	6,774	5,705	3,886	2,427	392
On-the-Job Training - Oil sector - Up to 1 year (jobs)		556,332	486,861	408,582	277,346	172,564	27,863
On-the-Job Training - Solar PV sector - 1 to 4 years (jobs)		127,012	182,347	275,103	295,223	371,019	516,749
On-the-Job Training - Solar PV sector - 4 to 10 years (jobs)		34,865	49,217	74,363	82,591	104,163	146,379
On-the-Job Training - Solar PV sector - None (jobs)		35,086	50,776	77,297	83,961	106,609	150,156
On-the-Job Training - Solar PV sector - Over 10 years (jobs)		7,976	11,410	17,025	17,793	22,040	30,143
On-the-Job Training - Solar PV sector - Up to 1 year (jobs)		418,430	606,251	917,859	979,086	1,234,697	1,723,136
On-the-Job Training - Wind sector - 1 to 4 years (jobs)		64,513	111,110	187,587	243,229	313,130	437,118
On-the-Job Training - Wind sector - 4 to 10 years (jobs)		16,836	29,325	49,662	68,475	91,099	126,807
On-the-Job Training - Wind sector - None (jobs)		17,520	30,343	51,510	67,305	87,290	122,541
On-the-Job Training - Wind sector - Over 10 years (jobs)		3,897	6,610	11,029	13,645	16,970	23,408
On-the-Job Training - Wind sector - Up to 1 year (jobs)		217,231	374,104	633,024	809,220	1,035,353	1,451,553
Related work experience - All sectors - 1 to 4 years (jobs)		1,109,104	1,264,286	1,674,545	1,878,001	2,299,966	3,119,060
Related work experience - All sectors - 4 to 10 years (jobs)		707,289	809,720	1,077,428	1,215,185	1,492,852	2,027,011
Related work experience - All sectors - None (jobs)		432,155	498,000	666,430	750,787	922,233	1,256,756
Related work experience - All sectors - Over 10 years (jobs)		196,988	225,752	298,693	331,047	402,870	543,997
Related work experience - All sectors - Up to 1 year (jobs)		611,652	714,028	961,513	1,072,062	1,310,012	1,784,001

Table 48: *E+RE+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - Biomass sector - 1 to 4 years (jobs)		24,277	26,997	31,853	34,825	40,687	73,929
Related work experience - Biomass sector - 4 to 10 years (jobs)		12,619	13,694	16,064	18,393	22,461	42,237
Related work experience - Biomass sector - None (jobs)		13,859	15,184	17,335	16,944	17,786	31,692
Related work experience - Biomass sector - Over 10 years (jobs)		3,478	3,729	4,280	4,755	5,696	10,830
Related work experience - Biomass sector - Up to 1 year (jobs)		27,386	29,866	33,448	30,859	30,376	53,683
Related work experience - CO2 sector - 1 to 4 years (jobs)		0.001	0.005	0.004	0.006	0.008	0.004
Related work experience - CO2 sector - 4 to 10 years (jobs)		0	0.003	0.003	0.004	0.005	0.003
Related work experience - CO2 sector - None (jobs)		0	0.002	0.002	0.002	0.003	0.002
Related work experience - CO2 sector - Over 10 years (jobs)		0	0.001	0.001	0.001	0.001	0.001
Related work experience - CO2 sector - Up to 1 year (jobs)		0	0.002	0.002	0.003	0.003	0.002
Related work experience - Coal sector - 1 to 4 years (jobs)		28,389	7,771	4,137	3,566	3,191	2,634
Related work experience - Coal sector - 4 to 10 years (jobs)		16,591	4,383	2,034	1,778	1,613	1,351
Related work experience - Coal sector - None (jobs)		10,136	2,723	1,346	1,162	1,042	862
Related work experience - Coal sector - Over 10 years (jobs)		4,189	1,141	561	493	449	379
Related work experience - Coal sector - Up to 1 year (jobs)		15,483	4,463	2,741	2,347	2,085	1,710
Related work experience - Grid sector - 1 to 4 years (jobs)		208,739	282,258	484,118	648,547	896,974	1,300,229
Related work experience - Grid sector - 4 to 10 years (jobs)		136,794	184,838	316,794	424,076	586,079	848,922
Related work experience - Grid sector - None (jobs)		85,739	116,116	199,454	267,580	370,589	537,911
Related work experience - Grid sector - Over 10 years (jobs)		35,457	47,936	82,204	110,106	152,256	220,671
Related work experience - Grid sector - Up to 1 year (jobs)		110,528	150,029	258,315	347,387	482,316	701,869
Related work experience - Natural gas sector - 1 to 4 years (jobs)		199,314	158,500	115,534	93,908	63,139	47,424
Related work experience - Natural gas sector - 4 to 10 years (jobs)		132,613	105,533	77,155	63,183	42,812	32,649
Related work experience - Natural gas sector - None (jobs)		78,199	62,490	45,890	37,795	25,770	19,842
Related work experience - Natural gas sector - Over 10 years (jobs)		36,004	28,497	20,599	16,500	10,944	8,038
Related work experience - Natural gas sector - Up to 1 year (jobs)		93,942	74,664	54,280	43,954	29,562	22,336
Related work experience - Nuclear sector - 1 to 4 years (jobs)		18,639	17,871	13,255	9,059	5,397	1,520
Related work experience - Nuclear sector - 4 to 10 years (jobs)		12,092	11,592	8,595	5,873	3,499	985
Related work experience - Nuclear sector - None (jobs)		6,294	6,044	4,489	3,072	1,833	517
Related work experience - Nuclear sector - Over 10 years (jobs)		3,722	3,571	2,650	1,812	1,080	304
Related work experience - Nuclear sector - Up to 1 year (jobs)		9,189	8,820	6,548	4,479	2,671	753

Table 48: *E+RE+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - Oil sector - 1 to 4 years (jobs)		301,109	263,650	221,423	150,297	93,538	15,160
Related work experience - Oil sector - 4 to 10 years (jobs)		182,706	159,719	133,934	90,747	56,384	9,131
Related work experience - Oil sector - None (jobs)		106,478	93,499	78,696	53,672	33,526	5,380
Related work experience - Oil sector - Over 10 years (jobs)		52,545	45,879	38,462	26,026	16,169	2,639
Related work experience - Oil sector - Up to 1 year (jobs)		147,314	128,836	107,956	73,363	45,636	7,249
Related work experience - Solar PV sector - 1 to 4 years (jobs)		215,901	312,361	473,727	509,206	643,629	901,300
Related work experience - Solar PV sector - 4 to 10 years (jobs)		139,474	201,262	304,569	326,808	412,018	575,424
Related work experience - Solar PV sector - None (jobs)		87,975	127,078	192,688	207,571	262,410	367,716
Related work experience - Solar PV sector - Over 10 years (jobs)		40,027	57,947	87,332	92,037	115,384	159,820
Related work experience - Solar PV sector - Up to 1 year (jobs)		139,992	201,354	303,331	323,032	405,087	562,303
Related work experience - Wind sector - 1 to 4 years (jobs)		112,738	194,877	330,496	428,594	553,411	776,866
Related work experience - Wind sector - 4 to 10 years (jobs)		74,402	128,700	218,284	284,327	367,984	516,311
Related work experience - Wind sector - None (jobs)		43,474	74,867	126,533	162,991	209,277	292,837
Related work experience - Wind sector - Over 10 years (jobs)		21,566	37,053	62,605	79,320	100,892	141,315
Related work experience - Wind sector - Up to 1 year (jobs)		67,818	115,995	194,894	246,642	312,279	434,098
Wage income - Biomass (million $2019)		4,220	4,744	5,634	6,202	7,310	13,618
Wage income - CO2 (million $2019)		0	0.001	0.001	0.001	0.002	0.001
Wage income - Coal (million $2019)		4,510	1,225	602	528	482	406
Wage income - Grid (million $2019)		36,101	49,507	86,149	117,136	164,496	242,211
Wage income - Natural Gas (million $2019)		35,783	28,853	21,290	17,465	11,852	8,946
Wage income - Nuclear (million $2019)		3,570	3,505	2,664	1,867	1,141	330
Wage income - Oil (million $2019)		52,019	46,147	39,272	26,986	17,009	2,804
Wage income - Solar (million $2019)		34,489	50,435	77,444	84,516	108,333	154,016
Wage income - Wind (million $2019)		18,567	32,583	56,084	74,464	98,189	140,114

Table 49: *E+RE- scenario - PILLAR 1: Efficiency/Electrification - Commercial*

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr (million $2018)	0	1,047,657	1,162,511	0	0	0	0
Sales of cooking units - Electric Resistance (%)	32.5	46.4	80	86.6	87	87	87
Sales of cooking units - Gas (%)	67.5	53.6	20	13.4	13	13	13
Sales of space heating units - Electric Heat Pump (%)	2.95	17.6	52.9	76.9	80.6	80.8	80.8
Sales of space heating units - Electric Resistance (%)	7.91	9.07	14.4	17.7	18.4	18.4	18.4
Sales of space heating units - Fossil (%)	3.94	3.28	0.655	0.028	0	0	0
Sales of space heating units - Gas Furnace (%)	85.2	70.1	32.1	5.37	1.07	0.82	0.817
Sales of water heating units - Electric Heat Pump (%)	0.385	7.96	43.3	59.2	61.2	61.3	61.3
Sales of water heating units - Electric Resistance (%)	3.8	7.16	24	35.7	37.5	37.6	37.6
Sales of water heating units - Gas Furnace (%)	94.1	83.3	31.5	4.03	0.235	0.003	0

Table 49: *E+RE- scenario - PILLAR 1: Efficiency/Electrification - Commercial (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Sales of water heating units - Other (%)	1.66	1.59	1.2	1.1	1.1	1.11	1.11

Table 50: *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)		182	187	336	359	314	329

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

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	9,015	8,942	8,619	8,103	7,608	7,344	7,297
Final energy use - Industry (PJ)	25,107	26,056	26,110	25,372	25,108	24,870	24,572
Final energy use - Residential (PJ)	11,788	11,090	10,221	8,966	7,776	6,967	6,512
Final energy use - Transportation (PJ)	27,996	26,390	23,464	19,872	16,608	14,565	13,649

Table 52: *E+RE- scenario - PILLAR 1: Efficiency/Electrification - Residential*

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion $2018)	0	254	307	0	0	0	0
Sales of cooking units - Electric Resistance (%)	61.3	69.6	94.8	99.7	100	100	100
Sales of cooking units - Gas (%)	38.7	30.4	5.2	0.262	0	0	0
Sales of space heating units - Electric Heat Pump (%)	14.6	27.2	64.4	85	88	88.1	88.1
Sales of space heating units - Electric Resistance (%)	20.3	22.6	12.3	8.07	7.57	7.66	7.68
Sales of space heating units - Fossil (%)	9.95	13.2	6.18	3.41	3.02	2.91	2.9
Sales of space heating units - Gas (%)	55.2	36.9	17.1	3.52	1.45	1.32	1.3
Sales of water heating units - Electric Heat Pump (%)	0	7.44	41.8	56.2	58.5	59.2	59
Sales of water heating units - Electric Resistance (%)	38.4	49.2	38.5	39.8	39.9	39.3	39.5
Sales of water heating units - Gas Furnace (%)	58	40.9	18	2.56	0.155	0.003	0
Sales of water heating units - Other (%)	3.58	2.47	1.63	1.47	1.51	1.54	1.53

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

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs - Cumulative 5-yr (million $2018)	0	51,477	133,974	213,805	325,180	352,492	336,852
Public EV charging plugs - DC Fast (1000 units)	14.4	0	93.9	0	391	0	628
Public EV charging plugs - L2 (1000 units)	66.2	0	2,256	0	9,394	0	15,098
Vehicle sales - Heavy-duty - diesel (%)	97.2	92.1	67	23.3	4.22	0.628	0
Vehicle sales - Heavy-duty - EV (%)	0.588	3.81	19	45.6	57.4	59.6	60
Vehicle sales - Heavy-duty - gasoline (%)	0.227	0.227	0.176	0.066	0.013	0.002	0
Vehicle sales - Heavy-duty - hybrid (%)	0.082	0.09	0.077	0.031	0.007	0.001	0
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.392	2.54	12.7	30.4	38.2	39.7	40
Vehicle sales - Heavy-duty - other (%)	1.5	1.23	1.07	0.568	0.163	0.038	0
Vehicle sales - Light-duty - diesel (%)	1.4	1.68	1.2	0.382	0.072	0.013	0
Vehicle sales - Light-duty - EV (%)	4.41	16.7	48.7	82.7	96.4	99.3	100
Vehicle sales - Light-duty - gasoline (%)	89.1	76.3	46.4	15.6	3.17	0.586	0
Vehicle sales - Light-duty - hybrid (%)	4.91	4.89	3.38	1.24	0.304	0.067	0
Vehicle sales - Light-duty - hydrogen FC (%)	0.11	0.331	0.191	0.059	0.012	0.002	0
Vehicle sales - Light-duty - other (%)	0.095	0.091	0.058	0.02	0.004	0.001	0

Table 53: *E+RE- scenario - PILLAR 1: Efficiency/Electrification - Transportation (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Vehicle sales - Medium-duty - diesel (%)	64.7	59.7	42.3	14.4	2.59	0.384	0
Vehicle sales - Medium-duty - EV (%)	0.784	5.07	25.3	60.8	76.5	79.5	80
Vehicle sales - Medium-duty - gasoline (%)	33.7	33.3	25.5	9.32	1.77	0.277	0
Vehicle sales - Medium-duty - hybrid (%)	0.363	0.402	0.341	0.14	0.03	0.005	0
Vehicle sales - Medium-duty - hydrogen FC (%)	0.196	1.27	6.33	15.2	19.1	19.9	20
Vehicle sales - Medium-duty - other (%)	0.253	0.255	0.205	0.083	0.019	0.004	0

Table 54: *E+RE- scenario - PILLAR 2: Clean Electricity - Generating capacity*

Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Biomass power plant (billion $2018)	0	0.001	0.245	0	0	0	0
Capital invested - Biomass w/ccu allam power plant (billion $2018)	0	0	0	0.523	0.171	0.171	0.881
Capital invested - Biomass w/ccu power plant (billion $2018)	0	0	66.3	5.89	5.65	48.6	73.9
Installed - Biomass (MW)	10,015	9,155	8,012	6,276	4,837	3,506	2,590
Installed - Biomass w cc (MW)	0	0	9,991	10,948	11,823	19,170	30,427
Installed - Ccgt & gas steam (MW)	337,190	357,350	444,963	472,429	417,657	342,550	265,745
Installed - Ccgt w cc (MW)	0	0	8.75	25,157	76,333	162,793	230,887
Installed - Coal (MW)	215,985	44,884	62.3	136	148	147	33.9
Installed - Ct (MW)	143,739	129,695	94,911	100,127	170,549	157,934	130,899
Installed - Geothermal (MW)	2,397	2,403	24,727	24,718	24,710	24,702	24,666
Installed - Grid battery storage (MW)	0	819	1,328	3,062	13,842	44,320	52,980
Installed - Hydro (MW)	78,608	78,608	78,608	78,608	78,608	78,608	78,608
Installed - Nuclear (MW)	98,486	95,135	95,008	99,119	130,574	191,067	310,836
Installed - Offshore wind (MW)	29.3	5,029	10,029	15,029	20,029	25,000	30,000
Installed - Onshore wind (MW)	92,786	165,010	230,880	275,200	372,928	467,805	527,977
Installed - Other (MW)	68,074	57,101	54,650	53,942	52,322	51,237	44,539
Installed - Pumped hydro storage (MW)	0	19,418	19,418	19,418	19,418	19,418	19,418
Installed - Solar (MW)	67,717	161,887	253,526	348,562	449,562	545,918	635,890

Table 55: *E+RE- scenario - PILLAR 2: Clean Electricity - Generation*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass (TWh)	18.2	19.6	43.4	25.4	19.4	14.6	0.174
Biomass power plant (GWh)	3,616	794	14,160	5,310	4,477	2,155	48
Biomass w cc (TWh)	0	0	74.4	81.5	87.9	143	226
Biomass w/ccu allam power plant (GWh)	0	0	0	484	576	725	1,609
Biomass w/ccu power plant (GWh)	0	0	74,392	80,983	87,310	141,852	224,713
Coal (TWh)	982	225	0.218	0.476	0.52	0.515	0.119
Gas (TWh)	1,518	1,881	1,802	1,967	1,561	643	112
Gas w cc (TWh)	0	0	0.046	198	585	1,189	1,415
Geothermal (TWh)	14.6	14.6	151	151	151	151	150
Hydro (TWh)	300	312	295	296	304	294	296
Nuclear (TWh)	802	775	775	812	1,075	1,580	2,578
Offshore wind (TWh)	0.092	20.3	42.4	76.3	90.7	109	133
Onshore wind (TWh)	390	686	974	1,157	1,585	1,984	2,223
Solar pv (TWh)	140	360	557	762	992	1,211	1,369

Table 56: *E+RE- scenario - PILLAR 2: Clean Electricity - Transmission*

Item	2020	2025	2030	2035	2040	2045	2050
Total HV transmission (for wind and solar) - Base all (%)	0	13.9	24.4	35.9	55.4	75.6	89.4

Table 57: *E+RE- scenario - PILLAR 3: Clean fuels - Bioenergy*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass input - BECCS-H2 (1000 tonnes)	0	0	0	181,112	265,263	317,346	406,847
Biomass input - Bio-FT w/ CC (1000 tonnes)	0	0	0	139	152	169	172
Biomass input - Bio-SNG w/ CC (1000 tonnes)	0	0	92.7	70.2	47	24.8	5.58
Biomass input - Biopower (1000 tonnes)	10,321	20,110	59,104	41,822	35,169	28,144	186
Biomass input - Biopower w/ cc (1000 tonnes)	0	0	44,936	49,136	52,999	86,012	136,463
Biomass input - Ethanol (1000 tonnes)	129,506	129,506	129,537	125,006	67,634	10,261	905
Biomass input - FT diesel (1000 tonnes)	0	0	0	94.3	105	111	67.2
Biomass input - Pyrolysis liquids (1000 tonnes)	0	0	0	205	227	232	9,595
Biomass input - Pyrolysis liquids w/ cc (1000 tonnes)	0	0	0	178	195	225	30,115
Biomass input - SNG (1000 tonnes)	0	11.2	45.8	16.6	9.09	8.18	2.31

Table 58: *E+RE- scenario - PILLAR 4: CCUS - CO2 storage*

Item	2020	2025	2030	2035	2040	2045	2050
CO2 storage (MMT)	0	2.77	197	576	889	1,266	1,649

Table 59: *E+RE- scenario - PILLAR 6: Land sinks - Agriculture*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y)							-23,286
Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y)							-203,503
Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y)							-7,391
Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y)							-234,180
Carbon sink potential - Moderate deployment - Corn-ethanol to energy grasses (1000 tCO2e/y)							-23,286
Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y)							-106,430
Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y)							-3,696
Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y)							-133,412
Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares)							11,287
Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares)							136,405
Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares)							12,749
Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares)							160,442
Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares)							11,287

Table 59: *E+RE- scenario - PILLAR 6: Land sinks - Agriculture (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares)							71,390
Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares)							6,375
Land impacted for carbon sink - Moderate deployment - Total (1000 hectares)							89,052

Table 60: *E+RE- scenario - PILLAR 6: Land sinks - Forests*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y)							-48,900
Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y)							-1,535,900
Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y)							-84,000
Carbon sink potential - High - Extend rotation length (1000 tCO2e/y)							-302,000
Carbon sink potential - High - Improve plantations (1000 tCO2e/y)							-57,000
Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y)							-300,000
Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y)							-60,000
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)							-242,000
Carbon sink potential - High - Reforest pasture (1000 tCO2e/y)							-264,000
Carbon sink potential - High - Restore productivity (1000 tCO2e/y)							-178,000
Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)							-24,500
Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)							-505,500
Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)							-14,000
Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)							-116,000
Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)							-29,000
Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y)							-100,000
Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)							-21,000
Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)							-121,000
Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y)							-20,000
Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)							-60,000
Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)							-36,700
Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)							-1,020,200
Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)							-49,000
Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)							-209,000

Table 60: *E+RE- scenario - PILLAR 6: Land sinks - Forests (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)							-42,500
Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)							-200,000
Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)							-40,500
Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)							-181,500
Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)							-142,000
Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)							-119,000
Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)							8,000
Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)							11,373
Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)							154,000
Land impacted for carbon sink potential - High - Improve plantations (1000 hectares)							21,000
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)							5,700
Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares)							16,000
Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares)							7,500
Land impacted for carbon sink potential - High - Restore productivity (1000 hectares)							59,000
Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares)							282,573
Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares)							4,000
Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares)							10,677
Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares)							59,000
Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares)							10,500
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)							3,000
Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares)							8,000

Table 60: *E+RE- scenario - PILLAR 6: Land sinks - Forests (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares)							1,300
Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares)							35,700
Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares)							132,177
Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares)							6,000
Land impacted for carbon sink potential - Mid - Avoid deforestation (over 30 years) (1000 hectares)							11,025
Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares)							106,500
Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares)							15,800
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)							4,350
Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares)							12,000
Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares)							9,400
Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares)							71,900
Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares)							236,975

Table 61: *E+RE- scenario - PILLAR 6: Land sinks - Total assumed land sink*

Item	2020	2025	2030	2035	2040	2045	2050
Total assumed land sink (Gt CO2e/y)	-0.7	-0.73	-0.75	-0.78	-0.8	-0.83	-0.85

Table 62: *E+RE- scenario - IMPACTS - Fossil fuel industries*

Item	2020	2025	2030	2035	2040	2045	2050
Natural gas consumption - Annual (tcf)		24,131	21,291	20,400	18,525	15,159	12,531
Natural gas consumption - Cumulative (tcf)		0	0	0	0	0	604,218
Natural gas production - Annual (tcf)		37,107	36,554	35,527	33,060	29,484	24,832
Natural gas production - Cumulative (tcf)		0	0	0	0	0	1,031,902
Oil consumption - Annual (million bbls)		5,922	5,196	4,119	3,106	2,384	1,930
Oil consumption - Cumulative (million bbls)		0	0	0	0	0	128,050
Oil production - Annual (million bbls)		5,198	5,216	5,209	4,127	3,429	2,512
Oil production - Cumulative (million bbls)		0	0	0	0	0	137,850

Table 63: *E+RE- scenario - IMPACTS - Health*

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019$)		22,661	29.5	28.3	24.2	16.6	1.24

Table 63: *E+RE- scenario - IMPACTS - Health (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Natural Gas (million 2019$)		13,081	8,360	9,347	8,269	3,897	985
Monetary damages from air pollution - Transportation (million 2019$)		102,386	96,814	74,557	43,657	20,044	7,790
Premature deaths from air pollution - Coal (deaths)		2,559	3.33	3.2	2.73	1.88	0.14
Premature deaths from air pollution - Natural Gas (deaths)		1,477	944	1,055	933	440	111
Premature deaths from air pollution - Transportation (deaths)		11,515	10,889	8,385	4,910	2,254	876

Table 64: *E+RE- scenario - IMPACTS - Jobs*

Item	2020	2025	2030	2035	2040	2045	2050
By economic sector - Agriculture (jobs)		32,312	43,254	55,699	47,806	40,069	47,266
By economic sector - Construction (jobs)		564,240	617,991	685,586	719,730	743,266	850,372
By economic sector - Manufacturing (jobs)		588,096	542,489	535,843	511,626	442,548	427,854
By economic sector - Mining (jobs)		462,328	364,057	291,916	202,222	144,611	95,196
By economic sector - Other (jobs)		53,014	58,064	71,028	84,820	95,569	129,975
By economic sector - Pipeline (jobs)		47,529	56,650	51,074	38,386	34,708	36,901
By economic sector - Professional (jobs)		319,609	332,341	387,337	432,164	465,444	539,068
By economic sector - Trade (jobs)		292,298	275,926	286,155	286,444	289,100	322,851
By economic sector - Utilities (jobs)		476,510	542,229	654,430	753,103	848,724	1,023,980
By education level - All sectors - Associates degree or some college (jobs)		852,749	861,209	922,936	952,528	966,808	1,085,013
By education level - All sectors - Bachelors degree (jobs)		628,739	613,529	644,107	651,344	659,923	737,730
By education level - All sectors - Doctoral degree (jobs)		20,890	20,613	22,291	23,272	24,429	28,105
By education level - All sectors - High school diploma or less (jobs)		1,184,963	1,191,502	1,273,949	1,289,116	1,287,990	1,435,786
By education level - All sectors - Masters or professional degree (jobs)		148,595	146,148	155,786	160,040	164,889	186,829
By education level - Biomass sector - Associates degree or some college (jobs)		15,585	19,605	32,904	34,187	35,394	45,925
By education level - Biomass sector - Bachelors degree (jobs)		14,089	17,574	30,605	33,633	36,161	46,832
By education level - Biomass sector - Doctoral degree (jobs)		682	913	1,736	2,038	2,297	2,992
By education level - Biomass sector - High school diploma or less (jobs)		47,821	60,096	85,822	79,460	73,172	91,357
By education level - Biomass sector - Masters or professional degree (jobs)		3,878	4,982	8,752	9,750	10,586	13,711
By education level - CO2 sector - Associates degree or some college (jobs)		2,815	43,524	37,197	17,230	26,131	50,333
By education level - CO2 sector - Bachelors degree (jobs)		1,395	20,717	18,544	9,251	13,901	24,619
By education level - CO2 sector - Doctoral degree (jobs)		27.8	380	378	217	322	491
By education level - CO2 sector - High school diploma or less (jobs)		3,476	53,796	46,155	21,475	32,628	62,868
By education level - CO2 sector - Masters or professional degree (jobs)		311	4,559	4,139	2,109	3,160	5,456
By education level - Coal sector - Associates degree or some college (jobs)		20,558	5,466	2,968	2,579	2,324	1,926
By education level - Coal sector - Bachelors degree (jobs)		13,402	3,303	1,688	1,517	1,413	1,203
By education level - Coal sector - Doctoral degree (jobs)		496	118	51.4	47.9	46.1	40.8

Table 64: *E+RE- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - Coal sector - High school diploma or less (jobs)		28,741	8,731	5,749	4,896	4,322	3,507
By education level - Coal sector - Masters or professional degree (jobs)		3,317	801	369	334	313	270
By education level - Grid sector - Associates degree or some college (jobs)		175,299	197,833	275,867	328,791	350,586	380,763
By education level - Grid sector - Bachelors degree (jobs)		100,456	112,629	156,046	184,807	195,830	211,382
By education level - Grid sector - Doctoral degree (jobs)		2,896	3,193	4,349	5,063	5,275	5,598
By education level - Grid sector - High school diploma or less (jobs)		224,161	254,252	356,322	426,807	457,367	499,201
By education level - Grid sector - Masters or professional degree (jobs)		25,278	28,252	39,023	46,075	48,677	52,388
By education level - Natural gas sector - Associates degree or some college (jobs)		186,211	163,836	146,374	143,998	121,468	101,198
By education level - Natural gas sector - Bachelors degree (jobs)		129,532	111,273	97,318	92,498	76,385	61,909
By education level - Natural gas sector - Doctoral degree (jobs)		4,301	3,664	3,163	2,968	2,424	1,927
By education level - Natural gas sector - High school diploma or less (jobs)		227,718	199,738	178,905	173,713	145,948	120,878
By education level - Natural gas sector - Masters or professional degree (jobs)		31,729	27,137	23,572	22,376	18,417	14,876
By education level - Nuclear sector - Associates degree or some college (jobs)		13,716	16,539	25,707	38,158	63,147	103,282
By education level - Nuclear sector - Bachelors degree (jobs)		14,826	17,835	27,656	40,956	67,621	110,347
By education level - Nuclear sector - Doctoral degree (jobs)		650	777	1,197	1,763	2,893	4,693
By education level - Nuclear sector - High school diploma or less (jobs)		17,026	20,585	32,080	47,740	79,201	129,855
By education level - Nuclear sector - Masters or professional degree (jobs)		4,013	4,819	7,460	11,030	18,180	29,620
By education level - Oil sector - Associates degree or some college (jobs)		205,502	181,086	156,218	113,373	86,209	60,753
By education level - Oil sector - Bachelors degree (jobs)		211,973	183,998	156,433	111,469	83,191	57,319
By education level - Oil sector - Doctoral degree (jobs)		6,848	5,981	5,123	3,669	2,753	1,903
By education level - Oil sector - High school diploma or less (jobs)		317,630	281,307	243,628	178,020	136,250	96,881
By education level - Oil sector - Masters or professional degree (jobs)		48,075	41,558	35,208	24,944	18,510	12,658
By education level - Solar PV sector - Associates degree or some college (jobs)		152,002	142,267	149,092	155,875	160,624	222,683
By education level - Solar PV sector - Bachelors degree (jobs)		88,302	83,195	87,771	92,558	96,333	134,924
By education level - Solar PV sector - Doctoral degree (jobs)		2,857	2,848	3,206	3,564	3,865	5,638
By education level - Solar PV sector - High school diploma or less (jobs)		213,421	197,918	205,192	212,005	215,748	295,066
By education level - Solar PV sector - Masters or professional degree (jobs)		19,142	18,505	20,120	21,787	23,194	33,243
By education level - Wind sector - Associates degree or some college (jobs)		81,062	91,053	96,609	118,336	120,925	118,151
By education level - Wind sector - Bachelors degree (jobs)		54,764	63,004	68,046	84,657	89,089	89,196
By education level - Wind sector - Doctoral degree (jobs)		2,131	2,738	3,088	3,943	4,554	4,821

Table 64: *E+RE- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - Wind sector - High school diploma or less (jobs)		104,968	115,077	120,097	145,001	143,354	136,172
By education level - Wind sector - Masters or professional degree (jobs)		12,853	15,534	17,144	21,636	23,851	24,608
By resource sector - Biomass (jobs)		82,054	103,170	159,818	159,067	157,610	200,816
By resource sector - CO2 (jobs)		8,025	122,978	106,414	50,282	76,142	143,768
By resource sector - Coal (jobs)		66,513	18,419	10,825	9,372	8,418	6,947
By resource sector - Grid (jobs)		528,090	596,159	831,606	991,543	1,057,735	1,149,332
By resource sector - Natural Gas (jobs)		579,492	505,649	449,332	435,553	364,642	300,788
By resource sector - Nuclear (jobs)		50,231	60,555	94,101	139,647	231,042	377,797
By resource sector - Oil (jobs)		790,028	693,931	596,610	431,475	326,913	229,514
By resource sector - Solar (jobs)		475,723	444,734	465,380	485,789	499,764	691,554
By resource sector - Wind (jobs)		255,779	287,406	304,985	373,573	381,772	372,947
Median wages - Annual - Biomass ($2019 per job)		51,666	53,532	56,879	59,868	62,772	64,193
Median wages - Annual - CO2 ($2019 per job)		62,403	62,811	64,256	66,235	67,173	66,956
Median wages - Annual - Coal ($2019 per job)		60,717	58,966	55,632	56,538	57,489	58,483
Median wages - Annual - Grid ($2019 per job)		62,539	63,375	64,248	65,159	66,110	67,102
Median wages - Annual - Natural Gas ($2019 per job)		66,236	67,055	67,908	68,519	69,331	70,036
Median wages - Annual - Nuclear ($2019 per job)		71,486	73,188	74,974	76,846	78,808	80,864
Median wages - Annual - Oil ($2019 per job)		65,834	66,720	67,650	68,456	69,271	69,967
Median wages - Annual - Solar ($2019 per job)		55,458	56,359	57,373	58,436	59,544	60,749
Median wages - Annual - Wind ($2019 per job)		58,266	59,962	61,252	62,475	64,619	66,554
On-Site or In-Plant Training - Biomass sector - 1 to 4 years (jobs)		8,269	10,558	17,339	17,726	18,126	23,389
On-Site or In-Plant Training - Biomass sector - 4 to 10 years (jobs)		2,558	3,232	5,758	6,103	6,468	8,510
On-Site or In-Plant Training - Biomass sector - None (jobs)		13,221	17,052	27,270	27,875	28,306	36,043
On-Site or In-Plant Training - Biomass sector - Over 10 years (jobs)		572	670	1,022	990	957	1,250
On-Site or In-Plant Training - Biomass sector - Up to 1 year (jobs)		57,434	71,657	108,430	106,373	103,753	131,625
On-Site or In-Plant Training - CO2 sector - 1 to 4 years (jobs)		1,483	22,923	19,621	9,107	13,819	26,600
On-Site or In-Plant Training - CO2 sector - 4 to 10 years (jobs)		731	11,419	9,664	4,399	6,691	13,161
On-Site or In-Plant Training - CO2 sector - None (jobs)		1,228	18,743	16,306	7,771	11,762	22,020
On-Site or In-Plant Training - CO2 sector - Over 10 years (jobs)		86.9	1,358	1,145	518	788	1,555
On-Site or In-Plant Training - CO2 sector - Up to 1 year (jobs)		4,497	68,533	59,677	28,487	43,083	80,432
On-Site or In-Plant Training - Coal sector - 1 to 4 years (jobs)		10,419	2,840	1,585	1,367	1,223	1,007
On-Site or In-Plant Training - Coal sector - 4 to 10 years (jobs)		4,032	975	427	368	328	269
On-Site or In-Plant Training - Coal sector - None (jobs)		9,841	2,576	1,407	1,243	1,140	959
On-Site or In-Plant Training - Coal sector - Over 10 years (jobs)		487	114	47	41.6	38.2	32.3
On-Site or In-Plant Training - Coal sector - Up to 1 year (jobs)		41,734	11,915	7,358	6,353	5,689	4,680

Table 64: *E+RE- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Grid sector - 1 to 4 years (jobs)		91,211	103,099	143,993	171,889	183,573	199,689
On-Site or In-Plant Training - Grid sector - 4 to 10 years (jobs)		40,059	45,270	63,211	75,438	80,546	87,593
On-Site or In-Plant Training - Grid sector - None (jobs)		80,419	90,582	126,078	150,001	159,675	173,139
On-Site or In-Plant Training - Grid sector - Over 10 years (jobs)		5,193	5,865	8,184	9,761	10,416	11,320
On-Site or In-Plant Training - Grid sector - Up to 1 year (jobs)		311,208	351,344	490,140	584,453	623,527	677,591
On-Site or In-Plant Training - Natural gas sector - 1 to 4 years (jobs)		97,694	85,725	76,562	74,851	62,980	52,317
On-Site or In-Plant Training - Natural gas sector - 4 to 10 years (jobs)		43,400	38,428	34,575	34,233	29,007	24,312
On-Site or In-Plant Training - Natural gas sector - None (jobs)		92,260	80,124	70,811	68,462	57,144	47,024
On-Site or In-Plant Training - Natural gas sector - Over 10 years (jobs)		5,150	4,603	4,165	4,173	3,558	2,999
On-Site or In-Plant Training - Natural gas sector - Up to 1 year (jobs)		340,988	296,769	263,218	253,834	211,953	174,136
On-Site or In-Plant Training - Nuclear sector - 1 to 4 years (jobs)		7,412	8,946	13,919	20,679	34,252	56,071
On-Site or In-Plant Training - Nuclear sector - 4 to 10 years (jobs)		2,683	3,237	5,035	7,479	12,385	20,271
On-Site or In-Plant Training - Nuclear sector - None (jobs)		8,991	10,828	16,811	24,924	41,197	67,304
On-Site or In-Plant Training - Nuclear sector - Over 10 years (jobs)		252	303	471	699	1,156	1,890
On-Site or In-Plant Training - Nuclear sector - Up to 1 year (jobs)		30,893	37,240	57,866	85,866	142,052	232,261
On-Site or In-Plant Training - Oil sector - 1 to 4 years (jobs)		116,417	102,660	88,636	64,334	48,922	34,459
On-Site or In-Plant Training - Oil sector - 4 to 10 years (jobs)		41,049	36,459	31,686	23,186	17,772	12,638
On-Site or In-Plant Training - Oil sector - None (jobs)		127,208	110,889	94,599	67,871	51,013	35,531
On-Site or In-Plant Training - Oil sector - Over 10 years (jobs)		4,546	4,112	3,638	2,706	2,107	1,519
On-Site or In-Plant Training - Oil sector - Up to 1 year (jobs)		500,808	439,812	378,051	273,378	207,099	145,367
On-Site or In-Plant Training - Solar PV sector - 1 to 4 years (jobs)		76,624	71,589	74,897	78,070	80,117	110,572
On-Site or In-Plant Training - Solar PV sector - 4 to 10 years (jobs)		27,856	26,568	28,545	30,343	31,547	44,146
On-Site or In-Plant Training - Solar PV sector - None (jobs)		81,278	76,117	79,805	83,485	86,082	119,399
On-Site or In-Plant Training - Solar PV sector - Over 10 years (jobs)		3,831	3,594	3,780	3,957	4,075	5,646
On-Site or In-Plant Training - Solar PV sector - Up to 1 year (jobs)		286,134	266,866	278,352	289,934	297,943	411,791
On-Site or In-Plant Training - Total jobs - 1 to 4 years (jobs)		449,799	453,679	484,557	496,638	502,936	562,542
On-Site or In-Plant Training - Total jobs - 4 to 10 years (jobs)		176,731	182,836	197,509	204,440	209,626	236,051
On-Site or In-Plant Training - Total jobs - None (jobs)		458,863	457,024	486,427	497,141	503,608	567,435
On-Site or In-Plant Training - Total jobs - Over 10 years (jobs)		22,179	22,977	24,963	25,925	26,295	29,367
On-Site or In-Plant Training - Total jobs - Up to 1 year (jobs)		1,728,364	1,716,485	1,825,613	1,852,158	1,861,573	2,078,069

Table 64: *E+RE- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Wind sector - 1 to 4 years (jobs)		40,269	45,338	48,004	58,613	59,924	58,439
On-Site or In-Plant Training - Wind sector - 4 to 10 years (jobs)		14,363	17,249	18,609	22,892	24,883	25,149
On-Site or In-Plant Training - Wind sector - None (jobs)		44,417	50,112	53,339	65,509	67,290	66,017
On-Site or In-Plant Training - Wind sector - Over 10 years (jobs)		2,062	2,357	2,511	3,078	3,200	3,156
On-Site or In-Plant Training - Wind sector - Up to 1 year (jobs)		154,667	172,350	182,521	223,481	226,476	220,186
On-the-Job Training - All sectors - 1 to 4 years (jobs)		574,310	580,810	620,936	638,394	648,454	726,654
On-the-Job Training - All sectors - 4 to 10 years (jobs)		166,229	173,803	189,273	197,680	203,748	230,602
On-the-Job Training - All sectors - None (jobs)		157,241	154,903	164,033	166,565	168,895	191,403
On-the-Job Training - All sectors - Over 10 years (jobs)		28,219	27,919	29,123	29,330	29,281	32,777
On-the-Job Training - All sectors - Up to 1 year (jobs)		1,909,937	1,895,566	2,015,705	2,044,332	2,053,661	2,292,028
On-the-Job Training - Biomass sector - 1 to 4 years (jobs)		9,019	11,632	19,857	20,755	21,679	28,149
On-the-Job Training - Biomass sector - 4 to 10 years (jobs)		2,062	2,704	4,989	5,335	5,720	7,539
On-the-Job Training - Biomass sector - None (jobs)		5,063	6,073	9,513	9,580	9,548	12,238
On-the-Job Training - Biomass sector - Over 10 years (jobs)		586	690	1,086	1,071	1,057	1,386
On-the-Job Training - Biomass sector - Up to 1 year (jobs)		65,325	82,070	124,373	122,328	119,606	151,505
On-the-Job Training - CO2 sector - 1 to 4 years (jobs)		1,973	30,531	26,093	12,082	18,335	35,372
On-the-Job Training - CO2 sector - 4 to 10 years (jobs)		736	11,550	9,721	4,383	6,676	13,273
On-the-Job Training - CO2 sector - None (jobs)		376	5,694	5,014	2,434	3,680	6,766
On-the-Job Training - CO2 sector - Over 10 years (jobs)		80.3	1,238	1,072	505	768	1,466
On-the-Job Training - CO2 sector - Up to 1 year (jobs)		4,860	73,964	64,514	30,878	46,684	86,891
On-the-Job Training - Coal sector - 1 to 4 years (jobs)		13,265	3,547	1,899	1,641	1,470	1,214
On-the-Job Training - Coal sector - 4 to 10 years (jobs)		3,950	962	419	359	318	259
On-the-Job Training - Coal sector - None (jobs)		3,285	870	503	442	403	337
On-the-Job Training - Coal sector - Over 10 years (jobs)		450	123	70.1	62.6	58.1	49.7
On-the-Job Training - Coal sector - Up to 1 year (jobs)		45,563	12,917	7,933	6,868	6,168	5,088
On-the-Job Training - Grid sector - 1 to 4 years (jobs)		118,627	134,022	187,088	223,222	238,275	259,062
On-the-Job Training - Grid sector - 4 to 10 years (jobs)		40,317	45,590	63,698	76,067	81,267	88,432
On-the-Job Training - Grid sector - None (jobs)		25,845	29,136	40,589	48,334	51,500	55,896
On-the-Job Training - Grid sector - Over 10 years (jobs)		4,232	4,787	6,689	7,991	8,540	9,296
On-the-Job Training - Grid sector - Up to 1 year (jobs)		339,069	382,625	533,541	635,929	678,155	736,646

Table 64: *E+RE- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-the-Job Training - Natural gas sector - 1 to 4 years (jobs)		128,500	112,783	100,700	98,631	83,035	69,060
On-the-Job Training - Natural gas sector - 4 to 10 years (jobs)		41,324	36,725	33,119	33,043	28,098	23,679
On-the-Job Training - Natural gas sector - None (jobs)		30,220	25,985	22,796	21,727	17,984	14,663
On-the-Job Training - Natural gas sector - Over 10 years (jobs)		5,503	4,776	4,243	4,069	3,392	2,789
On-the-Job Training - Natural gas sector - Up to 1 year (jobs)		373,945	325,379	288,474	278,083	232,133	190,597
On-the-Job Training - Nuclear sector - 1 to 4 years (jobs)		9,725	11,736	18,257	27,122	44,918	73,522
On-the-Job Training - Nuclear sector - 4 to 10 years (jobs)		2,345	2,831	4,404	6,544	10,839	17,746
On-the-Job Training - Nuclear sector - None (jobs)		3,374	4,065	6,315	9,367	15,492	25,322
On-the-Job Training - Nuclear sector - Over 10 years (jobs)		523	631	983	1,461	2,422	3,967
On-the-Job Training - Nuclear sector - Up to 1 year (jobs)		34,264	41,292	64,142	95,153	157,371	257,240
On-the-Job Training - Oil sector - 1 to 4 years (jobs)		143,995	126,810	109,358	79,262	60,197	42,346
On-the-Job Training - Oil sector - 4 to 10 years (jobs)		34,009	30,239	26,292	19,275	14,800	10,561
On-the-Job Training - Oil sector - None (jobs)		48,067	41,572	35,155	25,043	18,687	12,944
On-the-Job Training - Oil sector - Over 10 years (jobs)		7,713	6,796	5,864	4,255	3,235	2,281
On-the-Job Training - Oil sector - Up to 1 year (jobs)		556,244	488,514	419,941	303,640	229,994	161,382
On-the-Job Training - Solar PV sector - 1 to 4 years (jobs)		97,447	91,143	95,492	99,644	102,327	141,330
On-the-Job Training - Solar PV sector - 4 to 10 years (jobs)		27,633	26,443	28,531	30,422	31,696	44,455
On-the-Job Training - Solar PV sector - None (jobs)		26,952	25,479	27,024	28,564	29,719	41,620
On-the-Job Training - Solar PV sector - Over 10 years (jobs)		6,044	5,538	5,655	5,755	5,772	7,765
On-the-Job Training - Solar PV sector - Up to 1 year (jobs)		317,648	296,131	308,678	321,405	330,249	456,384
On-the-Job Training - Wind sector - 1 to 4 years (jobs)		51,759	58,606	62,191	76,037	78,220	76,599
On-the-Job Training - Wind sector - 4 to 10 years (jobs)		13,853	16,760	18,099	22,254	24,333	24,657
On-the-Job Training - Wind sector - None (jobs)		14,059	16,028	17,124	21,074	21,882	21,617
On-the-Job Training - Wind sector - Over 10 years (jobs)		3,088	3,338	3,462	4,161	4,037	3,779
On-the-Job Training - Wind sector - Up to 1 year (jobs)		173,019	192,674	204,109	250,048	253,300	246,295
Related work experience - All sectors - 1 to 4 years (jobs)		1,032,181	1,028,146	1,093,272	1,113,061	1,124,392	1,255,295
Related work experience - All sectors - 4 to 10 years (jobs)		658,043	658,041	699,755	715,684	725,442	811,304
Related work experience - All sectors - None (jobs)		401,506	405,041	433,875	442,516	445,997	499,667
Related work experience - All sectors - Over 10 years (jobs)		182,370	179,985	189,873	192,939	194,433	216,579
Related work experience - All sectors - Up to 1 year (jobs)		561,837	561,788	602,295	612,102	613,776	690,620

Table 64: *E+RE- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - Biomass sector - 1 to 4 years (jobs)		24,432	31,802	51,686	53,347	54,747	69,875
Related work experience - Biomass sector - 4 to 10 years (jobs)		12,623	15,902	27,189	28,912	30,450	39,488
Related work experience - Biomass sector - None (jobs)		13,956	17,458	25,959	24,936	23,845	30,064
Related work experience - Biomass sector - Over 10 years (jobs)		3,473	4,247	7,104	7,467	7,776	10,138
Related work experience - Biomass sector - Up to 1 year (jobs)		27,570	33,760	47,881	44,406	40,793	51,252
Related work experience - CO2 sector - 1 to 4 years (jobs)		2,869	43,804	38,025	18,068	27,328	51,225
Related work experience - CO2 sector - 4 to 10 years (jobs)		1,986	30,448	26,294	12,390	18,757	35,478
Related work experience - CO2 sector - None (jobs)		1,242	19,156	16,427	7,651	11,598	22,218
Related work experience - CO2 sector - Over 10 years (jobs)		488	7,386	6,473	3,122	4,715	8,696
Related work experience - CO2 sector - Up to 1 year (jobs)		1,441	22,184	19,195	9,051	13,744	26,151
Related work experience - Coal sector - 1 to 4 years (jobs)		25,218	7,000	4,140	3,577	3,205	2,638
Related work experience - Coal sector - 4 to 10 years (jobs)		14,899	3,852	2,035	1,784	1,622	1,354
Related work experience - Coal sector - None (jobs)		9,056	2,422	1,346	1,166	1,047	864
Related work experience - Coal sector - Over 10 years (jobs)		3,759	1,011	561	494	452	380
Related work experience - Coal sector - Up to 1 year (jobs)		13,581	4,133	2,742	2,352	2,093	1,712
Related work experience - Grid sector - 1 to 4 years (jobs)		190,960	215,406	300,246	357,715	381,302	414,005
Related work experience - Grid sector - 4 to 10 years (jobs)		125,143	141,060	196,473	233,905	249,141	270,305
Related work experience - Grid sector - None (jobs)		78,437	88,614	123,699	147,587	157,537	171,276
Related work experience - Grid sector - Over 10 years (jobs)		32,437	36,583	50,982	60,730	64,724	70,264
Related work experience - Grid sector - Up to 1 year (jobs)		101,114	114,496	160,205	191,606	205,031	223,482
Related work experience - Natural gas sector - 1 to 4 years (jobs)		213,832	186,439	165,531	160,160	133,948	110,276
Related work experience - Natural gas sector - 4 to 10 years (jobs)		142,303	124,309	110,468	107,416	90,030	74,386
Related work experience - Natural gas sector - None (jobs)		83,936	73,667	65,770	64,307	54,109	44,918
Related work experience - Natural gas sector - Over 10 years (jobs)		38,614	33,442	29,553	28,288	23,520	19,223
Related work experience - Natural gas sector - Up to 1 year (jobs)		100,806	87,791	78,010	75,381	63,035	51,984
Related work experience - Nuclear sector - 1 to 4 years (jobs)		18,749	22,595	35,100	52,071	86,122	140,779
Related work experience - Nuclear sector - 4 to 10 years (jobs)		12,163	14,655	22,761	33,760	55,826	91,239
Related work experience - Nuclear sector - None (jobs)		6,331	7,641	11,886	17,657	29,243	47,865
Related work experience - Nuclear sector - Over 10 years (jobs)		3,744	4,514	7,016	10,413	17,231	28,179
Related work experience - Nuclear sector - Up to 1 year (jobs)		9,244	11,150	17,338	25,745	42,621	69,734

Table 64: *E+RE- scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - Oil sector - 1 to 4 years (jobs)		301,062	264,533	227,572	164,527	124,608	87,357
Related work experience - Oil sector - 4 to 10 years (jobs)		182,677	160,250	137,651	99,336	75,102	52,553
Related work experience - Oil sector - None (jobs)		106,461	93,826	80,890	58,777	44,741	31,613
Related work experience - Oil sector - Over 10 years (jobs)		52,538	46,027	39,527	28,482	21,514	15,025
Related work experience - Oil sector - Up to 1 year (jobs)		147,290	129,295	110,970	80,353	60,948	42,966
Related work experience - Solar PV sector - 1 to 4 years (jobs)		164,836	154,553	162,287	170,021	175,560	243,899
Related work experience - Solar PV sector - 4 to 10 years (jobs)		106,595	99,779	104,579	109,298	112,535	155,848
Related work experience - Solar PV sector - None (jobs)		67,326	63,205	66,491	69,756	72,100	100,288
Related work experience - Solar PV sector - Over 10 years (jobs)		30,190	27,879	28,713	29,563	30,069	41,092
Related work experience - Solar PV sector - Up to 1 year (jobs)		106,777	99,317	103,309	107,150	109,500	150,428
Related work experience - Wind sector - 1 to 4 years (jobs)		90,223	102,014	108,686	133,575	137,572	135,240
Related work experience - Wind sector - 4 to 10 years (jobs)		59,654	67,786	72,306	88,884	91,979	90,653
Related work experience - Wind sector - None (jobs)		34,760	39,050	41,406	50,677	51,776	50,561
Related work experience - Wind sector - Over 10 years (jobs)		17,128	18,895	19,943	24,379	24,433	23,583
Related work experience - Wind sector - Up to 1 year (jobs)		54,014	59,662	62,644	76,057	76,012	72,910
Wage income - Biomass (million $2019)		4,239	5,523	9,090	9,523	9,894	12,891
Wage income - CO2 (million $2019)		501	7,724	6,838	3,330	5,115	9,626
Wage income - Coal (million $2019)		4,038	1,086	602	530	484	406
Wage income - Grid (million $2019)		33,026	37,781	53,429	64,608	69,927	77,122
Wage income - Natural Gas (million $2019)		38,383	33,906	30,513	29,843	25,281	21,066
Wage income - Nuclear (million $2019)		3,591	4,432	7,055	10,731	18,208	30,550
Wage income - Oil (million $2019)		52,011	46,299	40,361	29,537	22,646	16,058
Wage income - Solar (million $2019)		26,383	25,065	26,700	28,387	29,758	42,011
Wage income - Wind (million $2019)		14,903	17,233	18,681	23,339	24,670	24,821

Table 65: *E-B+ scenario - PILLAR 1: Efficiency/Electrification - Commercial*

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr (million $2018)	0	1,046,837	1,158,815	0	0	0	0
Sales of cooking units - Electric Resistance (%)	32.5	36.5	41.3	53.8	71.2	81.9	85.6
Sales of cooking units - Gas (%)	67.5	63.5	58.7	46.2	28.8	18.1	14.4
Sales of space heating units - Electric Heat Pump (%)	2.95	11.9	15.9	27.6	48.1	65.9	74.2
Sales of space heating units - Electric Resistance (%)	7.91	8.18	8.72	10.5	13.8	16.4	17.6
Sales of space heating units - Fossil (%)	3.94	3.79	3.71	2.91	1.53	0.589	0.302
Sales of space heating units - Gas Furnace (%)	85.2	76.1	71.7	59	36.6	17.1	7.89
Sales of water heating units - Electric Heat Pump (%)	0.385	1.8	5.78	17.4	36.6	51.2	57.3
Sales of water heating units - Electric Resistance (%)	3.8	4.53	6.39	12	21.9	30.4	34.4
Sales of water heating units - Gas Furnace (%)	94.1	92	86.2	69	40.2	17.2	7.13

Table 65: *E-B+ scenario - PILLAR 1: Efficiency/Electrification - Commercial (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Sales of water heating units - Other (%)	1.66	1.67	1.66	1.51	1.31	1.18	1.14

Table 66: *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)		149	150	201	208	298	315

Table 67: *E-B+ scenario - PILLAR 1: Efficiency/Electrification - Overview*

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	9,015	8,958	8,853	8,731	8,513	8,263	8,058
Final energy use - Industry (PJ)	25,084	26,117	26,456	26,354	26,498	26,178	25,748
Final energy use - Residential (PJ)	11,788	11,126	10,656	10,151	9,457	8,609	7,786
Final energy use - Transportation (PJ)	28,030	26,603	24,463	22,703	21,315	19,677	17,739

Table 68: *E-B+ scenario - PILLAR 1: Efficiency/Electrification - Residential*

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion $2018)	0	252	303	0	0	0	0
Sales of cooking units - Electric Resistance (%)	61.2	62.2	65.8	75.1	88.1	96.2	99
Sales of cooking units - Gas (%)	38.8	37.8	34.2	24.9	11.9	3.83	1.03
Sales of space heating units - Electric Heat Pump (%)	14.6	21	25.3	37.6	58.4	75.1	82.4
Sales of space heating units - Electric Resistance (%)	20.3	24.4	23.2	19.9	14.3	10.3	8.67
Sales of space heating units - Fossil (%)	9.95	14.5	13.8	11.4	7.66	5.01	4.02
Sales of space heating units - Gas (%)	55.2	40	37.7	31.1	19.6	9.59	4.95
Sales of water heating units - Electric Heat Pump (%)	0	1.36	5.25	16.7	35.2	49.3	55.3
Sales of water heating units - Electric Resistance (%)	38.4	51.5	50.3	47	42.1	39.6	38.9
Sales of water heating units - Gas Furnace (%)	58	44.5	41.9	34	20.8	9.45	4.17
Sales of water heating units - Other (%)	3.58	2.63	2.51	2.27	1.91	1.68	1.62

Table 69: *E-B+ scenario - PILLAR 1: Efficiency/Electrification - Transportation*

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs - Cumulative 5-yr (million $2018)	0	0	8,683	17,455	59,707	185,491	271,068
Public EV charging plugs - DC Fast (1000 units)	14.4	0	31.9	0	147	0	402
Public EV charging plugs - L2 (1000 units)	66.2	0	766	0	3,537	0	9,670
Vehicle sales - Heavy-duty - diesel (%)	97.4	96	91.3	79.8	58.2	32.1	13.7
Vehicle sales - Heavy-duty - EV (%)	0.498	1.45	4.11	10.8	23.6	39.5	51
Vehicle sales - Heavy-duty - gasoline (%)	0.228	0.236	0.239	0.225	0.179	0.109	0.051
Vehicle sales - Heavy-duty - hybrid (%)	0.083	0.094	0.104	0.107	0.092	0.06	0.03
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.332	0.969	2.74	7.17	15.7	26.3	34
Vehicle sales - Heavy-duty - other (%)	1.5	1.28	1.46	1.95	2.25	1.96	1.14
Vehicle sales - Light-duty - diesel (%)	1.39	1.82	2.03	1.61	1.02	0.519	0.223
Vehicle sales - Light-duty - EV (%)	4.05	6.4	12.6	27.1	49.7	72.9	87.9
Vehicle sales - Light-duty - gasoline (%)	89.4	85.5	78.4	65.1	44.7	23.9	10.6
Vehicle sales - Light-duty - hybrid (%)	4.99	5.79	6.54	5.88	4.34	2.52	1.21
Vehicle sales - Light-duty - hydrogen FC (%)	0.11	0.371	0.317	0.239	0.168	0.092	0.043
Vehicle sales - Light-duty - other (%)	0.095	0.098	0.09	0.078	0.056	0.03	0.014

Table 69: *E-B+ scenario - PILLAR 1: Efficiency/Electrification - Transportation (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Vehicle sales - Medium-duty - diesel (%)	64.8	62.2	57.7	49.4	35.6	19.6	8.37
Vehicle sales - Medium-duty - EV (%)	0.664	1.94	5.49	14.3	31.4	52.6	68
Vehicle sales - Medium-duty - gasoline (%)	33.8	34.7	34.7	31.9	24.4	14.2	6.33
Vehicle sales - Medium-duty - hybrid (%)	0.363	0.418	0.464	0.478	0.414	0.275	0.141
Vehicle sales - Medium-duty - hydrogen FC (%)	0.166	0.485	1.37	3.58	7.86	13.2	17
Vehicle sales - Medium-duty - other (%)	0.253	0.266	0.279	0.286	0.258	0.184	0.102

Table 70: *E-B+ scenario - PILLAR 2: Clean Electricity - Generating capacity*

Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Biomass power plant (billion $2018)	0	0.001	0.009	0	0.004	0	0.001
Capital invested - Biomass w/ccu allam power plant (billion $2018)	0	0	0	0.472	0.167	0.105	0.397
Capital invested - Biomass w/ccu power plant (billion $2018)	0	0	66	88.9	162	87	36
Installed - Biomass (MW)	10,005	9,140	7,852	6,129	4,704	3,387	2,483
Installed - Biomass w cc (MW)	0	0	9,955	23,417	47,848	60,968	66,453
Installed - Ccgt & gas steam (MW)	334,478	316,742	319,849	311,404	252,180	173,113	145,943
Installed - Ccgt w cc (MW)	0	0	45.2	4,211	7,837	13,514	25,116
Installed - Coal (MW)	215,959	52,040	132	129	105	90.8	47.3
Installed - Ct (MW)	146,590	139,058	120,032	114,037	120,046	165,945	194,030
Installed - Geothermal (MW)	2,392	2,395	2,420	2,417	2,420	2,426	2,446
Installed - Grid battery storage (MW)	0	890	1,834	10,282	32,471	86,943	123,183
Installed - Hydro (MW)	78,608	78,608	78,608	78,608	78,608	78,608	78,608
Installed - Nuclear (MW)	98,481	95,135	90,008	76,069	68,456	56,274	56,682
Installed - Offshore wind (MW)	29.3	1,005	4,962	13,173	33,174	90,306	207,350
Installed - Onshore wind (MW)	97,778	194,426	370,380	515,269	613,437	779,748	1,020,520
Installed - Other (MW)	68,061	57,088	55,241	53,843	52,087	51,085	49,630
Installed - Pumped hydro storage (MW)	0	19,418	19,418	19,418	19,418	19,418	19,418
Installed - Solar (MW)	70,675	179,815	366,335	537,546	692,444	901,187	1,239,800

Table 71: *E-B+ scenario - PILLAR 2: Clean Electricity - Generation*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass (TWh)	18.1	21.4	39.6	23.5	15.6	6.71	0.45
Biomass power plant (GWh)	3,557	827	10,411	3,819	2,256	1,124	63.6
Biomass w cc (TWh)	0	0	74.1	174	356	454	493
Biomass w/ccu allam power plant (GWh)	0	0	0	394	483	569	955
Biomass w/ccu power plant (GWh)	0	0	74,108	173,715	355,539	453,084	491,647
Coal (TWh)	980	280	0.461	0.452	0.368	0.318	0.166
Gas (TWh)	1,492	1,655	1,062	582	369	195	94.1
Gas w cc (TWh)	0	0	0.221	26.2	35.4	50.5	83
Geothermal (TWh)	14.5	14.5	14.3	14.2	13.6	13.6	13.5
Hydro (TWh)	300	312	295	294	301	292	293
Nuclear (TWh)	802	775	733	620	558	458	463
Offshore wind (TWh)	0.092	3.73	20.2	63.9	146	394	885
Onshore wind (TWh)	412	794	1,536	2,051	2,391	3,054	3,994
Solar pv (TWh)	146	389	786	1,140	1,453	1,902	2,546

Table 72: *E-B+ scenario - PILLAR 3: Clean fuels - Bioenergy*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass input - BECCS-H2 (1000 tonnes)	0	0	0	161,322	336,108	552,980	641,173
Biomass input - Bio-FT w/ CC (1000 tonnes)	0	0	0	151	192	227	279
Biomass input - Bio-SNG w/ CC (1000 tonnes)	0	0	38.5	22.5	15.4	14.5	11.9
Biomass input - Biopower (1000 tonnes)	10,249	24,177	56,258	40,450	30,444	12,725	636

Table 72: *E-B+ scenario - PILLAR 3: Clean fuels - Bioenergy (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass input - Biopower w/ cc (1000 tonnes)	0	0	44,765	105,109	214,980	273,940	297,408
Biomass input - Ethanol (1000 tonnes)	129,506	129,506	129,537	125,006	67,634	10,261	905
Biomass input - FT diesel (1000 tonnes)	0	0	0	107	122	124	99.1
Biomass input - Pyrolysis liquids (1000 tonnes)	0	0	0	212	316	1,714	123,715
Biomass input - Pyrolysis liquids w/ cc (1000 tonnes)	0	0	0	158	219	299	56,876
Biomass input - SNG (1000 tonnes)	0	9.94	18.5	8.41	8.23	7.31	3.45
Number of facilities - Allam power w ccu (quantity)	0	0	0	14	24	33	42
Number of facilities - Beccs hydrogen (quantity)	0	0	0	217	453	742	858
Number of facilities - Diesel (quantity)	0	0	0	14	16	18	20
Number of facilities - Diesel ccu (quantity)	0	0	0	14	24	35	39
Number of facilities - Power (quantity)	0	12	16	16	17	17	17
Number of facilities - Power ccu (quantity)	0	0	67	148	296	379	413
Number of facilities - Pyrolysis (quantity)	0	0	0	14	16	19	178
Number of facilities - Pyrolysis ccu (quantity)	0	0	0	14	24	35	119
Number of facilities - Sng (quantity)	0	14	15	15	15	16	17
Number of facilities - Sng ccu (quantity)	0	0	14	14	14	16	19

Table 73: *E-B+ scenario - PILLAR 4: CCUS - CO2 pipelines*

Item	2020	2025	2030	2035	2040	2045	2050
All (km)		708	20,162	46,849	70,569	94,360	111,162
Cumulative investment - All (million $2018)		3,706	73,928	133,899	180,805	209,109	224,560
Cumulative investment - Spur (million $2018)		0	5,264	24,259	46,256	73,186	88,637
Cumulative investment - Trunk (million $2018)		3,706	68,664	109,640	134,549	135,923	135,923
Spur (km)		0	5,992	25,136	45,143	68,934	85,735
Trunk (km)		708	14,170	21,713	25,426	25,426	25,426

Table 74: *E-B+ scenario - PILLAR 4: CCUS - CO2 storage*

Item	2020	2025	2030	2035	2040	2045	2050
CO2 storage (MMT)	0	1.77	98.8	477	941	1,281	1,361
Injection wells (wells)	0	0	124	553	966	1,582	1,993
Resource characterization, appraisal, permitting costs (million $2020)	0	1,500	12,421	19,310	19,310	19,310	19,310
Wells and facilities construction costs (million $2020)	0	0	3,766	16,623	29,044	47,564	59,759

Table 75: *E-B+ scenario - PILLAR 6: Land sinks - Agriculture*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive deployment - Corn-ethanol to energy grasses (1000 tCO2e/y)							-38,876
Carbon sink potential - Aggressive deployment - Cropland measures (1000 tCO2e/y)							-188,807
Carbon sink potential - Aggressive deployment - Cropland to woody energy crops (1000 tCO2e/y)							0

Table 75: *E-B+ scenario - PILLAR 6: Land sinks - Agriculture (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive deployment - Pasture to energy crops (1000 tCO2e/y)							0
Carbon sink potential - Aggressive deployment - Permanent conservation cover (1000 tCO2e/y)							-6,794
Carbon sink potential - Aggressive deployment - Total (1000 tCO2e/y)							-234,477
Carbon sink potential - Moderate deployment - Corn-ethanol to energy grasses (1000 tCO2e/y)							-38,876
Carbon sink potential - Moderate deployment - Cropland measures (1000 tCO2e/y)							-98,674
Carbon sink potential - Moderate deployment - Cropland to woody energy crops (1000 tCO2e/y)							0
Carbon sink potential - Moderate deployment - Pasture to energy crops (1000 tCO2e/y)							0
Carbon sink potential - Moderate deployment - Permanent conservation cover (1000 tCO2e/y)							-3,397
Carbon sink potential - Moderate deployment - Total (1000 tCO2e/y)							-140,947
Land impacted for carbon sink - Aggressive deployment - Corn-ethanol to energy grasses (1000 hectares)							21,138
Land impacted for carbon sink - Aggressive deployment - Cropland measures (1000 hectares)							313,710
Land impacted for carbon sink - Aggressive deployment - Cropland to woody energy crops (1000 hectares)							4,087
Land impacted for carbon sink - Aggressive deployment - Pasture to energy crops (1000 hectares)							14,777
Land impacted for carbon sink - Aggressive deployment - Permanent conservation cover (1000 hectares)							11,710
Land impacted for carbon sink - Aggressive deployment - Total (1000 hectares)							365,421
Land impacted for carbon sink - Moderate deployment - Corn-ethanol to energy grasses (1000 hectares)							21,138
Land impacted for carbon sink - Moderate deployment - Cropland measures (1000 hectares)							66,454
Land impacted for carbon sink - Moderate deployment - Cropland to woody energy crops (1000 hectares)							4,087
Land impacted for carbon sink - Moderate deployment - Pasture to energy crops (1000 hectares)							14,777
Land impacted for carbon sink - Moderate deployment - Permanent conservation cover (1000 hectares)							5,855
Land impacted for carbon sink - Moderate deployment - Total (1000 hectares)							112,310

Table 76: *E-B+ scenario - PILLAR 6: Land sinks - Forests*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y)							-48,900
Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y)							-1,535,900
Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y)							-84,000
Carbon sink potential - High - Extend rotation length (1000 tCO2e/y)							-302,000
Carbon sink potential - High - Improve plantations (1000 tCO2e/y)							-57,000
Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y)							-300,000
Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y)							-60,000
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)							-242,000
Carbon sink potential - High - Reforest pasture (1000 tCO2e/y)							-264,000
Carbon sink potential - High - Restore productivity (1000 tCO2e/y)							-178,000
Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)							-24,500
Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)							-505,500
Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)							-14,000
Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)							-116,000
Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)							-29,000
Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y)							-100,000
Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)							-21,000
Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)							-121,000
Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y)							-20,000
Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)							-60,000
Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)							-36,700
Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)							-1,020,200
Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)							-49,000
Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)							-209,000
Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)							-42,500
Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)							-200,000
Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)							-40,500
Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)							-181,500
Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)							-142,000
Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)							-119,000

Table 76: *E-B+ scenario - PILLAR 6: Land sinks - Forests (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)							8,000
Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)							11,373
Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)							154,000
Land impacted for carbon sink potential - High - Improve plantations (1000 hectares)							21,000
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)							5,700
Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares)							16,000
Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares)							7,500
Land impacted for carbon sink potential - High - Restore productivity (1000 hectares)							59,000
Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares)							282,573
Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares)							4,000
Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares)							10,677
Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares)							59,000
Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares)							10,500
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)							3,000
Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares)							8,000
Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares)							1,300
Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares)							35,700
Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares)							132,177
Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares)							6,000

Table 76: *E-B+ 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)							11,025
Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares)							106,500
Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares)							15,800
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)							4,350
Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares)							12,000
Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares)							9,400
Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares)							71,900
Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares)							236,975

Table 77: *E-B+ scenario - PILLAR 6: Land sinks - Total assumed land sink*

Item	2020	2025	2030	2035	2040	2045	2050
Total assumed land sink (Gt CO2e/y)	-0.7	-0.73	-0.75	-0.78	-0.8	-0.83	-0.85

Table 78: *E-B+ scenario - IMPACTS - Fossil fuel industries*

Item	2020	2025	2030	2035	2040	2045	2050
Natural gas consumption - Annual (tcf)		22,870	18,067	14,168	11,671	9,024	6,935
Natural gas consumption - Cumulative (tcf)		0	0	0	0	0	468,505
Natural gas production - Annual (tcf)		35,855	32,336	26,667	22,472	19,164	16,450
Natural gas production - Cumulative (tcf)		0	0	0	0	0	830,136
Oil consumption - Annual (million bbls)		5,987	5,545	5,112	4,688	3,810	2,612
Oil consumption - Cumulative (million bbls)		0	0	0	0	0	152,170
Oil production - Annual (million bbls)		5,198	5,216	5,209	5,074	4,856	3,195
Oil production - Cumulative (million bbls)		0	0	0	0	0	151,760

Table 79: *E-B+ scenario - IMPACTS - Health*

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019$)		22,661	29.5	28.3	24.2	16.6	1.24
Monetary damages from air pollution - Natural Gas (million 2019$)		12,872	7,230	4,270	3,134	1,787	737
Monetary damages from air pollution - Transportation (million 2019$)		104,258	107,043	105,711	96,553	77,882	54,050
Premature deaths from air pollution - Coal (deaths)		2,559	3.33	3.2	2.73	1.88	0.14
Premature deaths from air pollution - Natural Gas (deaths)		1,453	816	482	354	202	83.2
Premature deaths from air pollution - Transportation (deaths)		11,726	12,039	11,890	10,859	8,759	6,079

Table 80: *E-B+ scenario - IMPACTS - Jobs*

Item	2020	2025	2030	2035	2040	2045	2050
By economic sector - Agriculture (jobs)		32,174	42,288	59,071	62,967	64,464	78,944
By economic sector - Construction (jobs)		581,252	743,826	811,795	829,966	994,703	1,303,457
By economic sector - Manufacturing (jobs)		645,629	844,956	761,043	623,121	736,461	965,790
By economic sector - Mining (jobs)		457,822	349,136	269,459	206,374	156,952	92,010
By economic sector - Other (jobs)		56,622	81,960	98,073	110,779	143,437	220,993
By economic sector - Pipeline (jobs)		46,238	52,377	44,732	34,806	32,366	31,958
By economic sector - Professional (jobs)		330,225	397,849	470,432	536,936	663,638	863,741
By economic sector - Trade (jobs)		298,942	314,042	335,172	352,941	407,909	513,328
By economic sector - Utilities (jobs)		468,318	554,761	621,122	646,604	823,091	1,082,332
By education level - All sectors - Associates degree or some college (jobs)		877,870	1,035,603	1,065,286	1,046,053	1,250,728	1,623,219
By education level - All sectors - Bachelors degree (jobs)		644,751	720,709	732,434	720,161	841,870	1,058,087
By education level - All sectors - Doctoral degree (jobs)		21,373	23,773	25,558	26,898	31,776	40,088
By education level - All sectors - High school diploma or less (jobs)		1,221,443	1,432,217	1,472,040	1,434,199	1,689,837	2,167,284
By education level - All sectors - Masters or professional degree (jobs)		151,786	168,894	175,582	177,183	208,810	263,874
By education level - Biomass sector - Associates degree or some college (jobs)		16,090	19,588	35,004	52,412	68,012	86,972
By education level - Biomass sector - Bachelors degree (jobs)		14,783	17,693	32,769	53,142	71,318	90,755
By education level - Biomass sector - Doctoral degree (jobs)		726	921	1,873	3,279	4,550	5,818
By education level - Biomass sector - High school diploma or less (jobs)		48,466	59,456	90,901	114,020	132,819	166,652
By education level - Biomass sector - Masters or professional degree (jobs)		4,070	5,008	9,386	15,369	20,750	26,476
By education level - CO2 sector - Associates degree or some college (jobs)		2,575	39,321	33,632	15,862	23,943	45,506
By education level - CO2 sector - Bachelors degree (jobs)		1,286	18,604	16,689	8,614	12,834	22,147
By education level - CO2 sector - Doctoral degree (jobs)		26	337	337	205	301	437
By education level - CO2 sector - High school diploma or less (jobs)		3,181	48,591	41,726	19,777	29,903	56,834
By education level - CO2 sector - Masters or professional degree (jobs)		287	4,086	3,719	1,970	2,924	4,900
By education level - Coal sector - Associates degree or some college (jobs)		21,668	5,811	2,994	2,616	2,352	2,073
By education level - Coal sector - Bachelors degree (jobs)		14,117	3,542	1,704	1,540	1,431	1,302
By education level - Coal sector - Doctoral degree (jobs)		517	128	51.8	48.5	46.6	43.7
By education level - Coal sector - High school diploma or less (jobs)		30,641	9,079	5,799	4,970	4,379	3,778
By education level - Coal sector - Masters or professional degree (jobs)		3,469	866	372	338	317	290
By education level - Grid sector - Associates degree or some college (jobs)		174,294	229,691	295,982	334,579	458,099	617,313
By education level - Grid sector - Bachelors degree (jobs)		99,880	130,767	167,424	188,060	255,884	342,705
By education level - Grid sector - Doctoral degree (jobs)		2,880	3,707	4,666	5,153	6,893	9,076
By education level - Grid sector - High school diploma or less (jobs)		222,876	295,197	382,304	434,320	597,625	809,331
By education level - Grid sector - Masters or professional degree (jobs)		25,133	32,802	41,868	46,886	63,605	84,934

Table 80: *E-B+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - Natural gas sector - Associates degree or some college (jobs)		176,526	133,696	100,826	88,327	70,666	53,110
By education level - Natural gas sector - Bachelors degree (jobs)		122,977	91,161	66,596	55,978	43,583	31,999
By education level - Natural gas sector - Doctoral degree (jobs)		4,086	2,999	2,155	1,778	1,363	982
By education level - Natural gas sector - High school diploma or less (jobs)		216,010	163,684	122,940	106,082	84,259	63,187
By education level - Natural gas sector - Masters or professional degree (jobs)		30,123	22,202	16,129	13,537	10,512	7,683
By education level - Nuclear sector - Associates degree or some college (jobs)		13,672	13,246	13,299	10,140	9,242	12,046
By education level - Nuclear sector - Bachelors degree (jobs)		14,779	14,284	14,307	10,884	9,897	12,870
By education level - Nuclear sector - Doctoral degree (jobs)		648	622	619	468	423	547
By education level - Nuclear sector - High school diploma or less (jobs)		16,972	16,487	16,595	12,686	11,592	15,145
By education level - Nuclear sector - Masters or professional degree (jobs)		4,000	3,860	3,859	2,931	2,661	3,455
By education level - Oil sector - Associates degree or some college (jobs)		206,247	184,787	166,011	147,370	125,808	78,548
By education level - Oil sector - Bachelors degree (jobs)		212,707	187,569	165,669	144,398	121,155	74,021
By education level - Oil sector - Doctoral degree (jobs)		6,871	6,092	5,410	4,741	4,004	2,456
By education level - Oil sector - High school diploma or less (jobs)		318,839	287,355	259,740	232,096	199,165	125,368
By education level - Oil sector - Masters or professional degree (jobs)		48,235	42,333	37,202	32,247	26,927	16,337
By education level - Solar PV sector - Associates degree or some college (jobs)		169,748	242,412	231,753	219,532	266,559	420,666
By education level - Solar PV sector - Bachelors degree (jobs)		98,823	142,974	137,113	130,627	160,501	256,096
By education level - Solar PV sector - Doctoral degree (jobs)		3,138	4,497	4,741	4,899	6,051	9,716
By education level - Solar PV sector - High school diploma or less (jobs)		238,365	337,753	319,518	298,959	359,451	561,710
By education level - Solar PV sector - Masters or professional degree (jobs)		21,281	30,826	30,763	30,417	37,639	60,506
By education level - Wind sector - Associates degree or some college (jobs)		97,050	167,051	185,786	175,213	226,046	306,985
By education level - Wind sector - Bachelors degree (jobs)		65,399	114,114	130,163	126,918	165,267	226,191
By education level - Wind sector - Doctoral degree (jobs)		2,481	4,470	5,703	6,327	8,146	11,013
By education level - Wind sector - High school diploma or less (jobs)		126,093	214,615	232,517	211,290	270,645	365,280
By education level - Wind sector - Masters or professional degree (jobs)		15,188	26,911	32,282	33,487	43,476	59,293
By resource sector - Biomass (jobs)		84,135	102,666	169,933	238,222	297,448	376,673
By resource sector - CO2 (jobs)		7,356	110,939	96,104	46,428	69,905	129,825
By resource sector - Coal (jobs)		70,411	19,426	10,921	9,514	8,525	7,486
By resource sector - Grid (jobs)		525,062	692,164	892,244	1,008,997	1,382,106	1,863,359
By resource sector - Natural Gas (jobs)		549,721	413,742	308,646	265,702	210,383	156,961
By resource sector - Nuclear (jobs)		50,072	48,499	48,680	37,109	33,816	44,064
By resource sector - Oil (jobs)		792,899	708,136	634,032	560,853	477,059	296,731
By resource sector - Solar (jobs)		531,355	758,462	723,888	684,434	830,201	1,308,693
By resource sector - Wind (jobs)		306,212	527,160	586,451	553,235	713,579	968,761
Median wages - Annual - Biomass ($2019 per job)		51,941	53,608	57,044	60,729	63,277	64,544

Table 80: *E-B+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Median wages - Annual - CO2 ($2019 per job)		62,479	62,742	64,197	66,395	67,287	66,879
Median wages - Annual - Coal ($2019 per job)		60,506	59,389	55,630	56,524	57,468	58,461
Median wages - Annual - Grid ($2019 per job)		62,539	63,375	64,248	65,159	66,110	67,102
Median wages - Annual - Natural Gas ($2019 per job)		66,255	67,115	67,811	68,308	69,006	69,777
Median wages - Annual - Nuclear ($2019 per job)		71,486	73,188	74,974	76,846	78,808	80,864
Median wages - Annual - Oil ($2019 per job)		65,828	66,678	67,513	68,322	69,194	69,924
Median wages - Annual - Solar ($2019 per job)		55,404	56,085	57,168	58,323	59,248	60,236
Median wages - Annual - Wind ($2019 per job)		58,080	59,100	60,914	63,241	64,158	65,104
On-Site or In-Plant Training - Biomass sector - 1 to 4 years (jobs)		8,490	10,509	18,437	26,783	34,224	43,693
On-Site or In-Plant Training - Biomass sector - 4 to 10 years (jobs)		2,644	3,234	6,114	9,424	12,463	16,088
On-Site or In-Plant Training - Biomass sector - None (jobs)		13,603	16,961	29,104	42,115	53,377	67,470
On-Site or In-Plant Training - Biomass sector - Over 10 years (jobs)		586	671	1,075	1,486	1,863	2,403
On-Site or In-Plant Training - Biomass sector - Up to 1 year (jobs)		58,813	71,291	115,204	158,414	195,521	247,019
On-Site or In-Plant Training - CO2 sector - 1 to 4 years (jobs)		1,357	20,707	17,740	8,386	12,664	24,047
On-Site or In-Plant Training - CO2 sector - 4 to 10 years (jobs)		668	10,330	8,747	4,038	6,119	11,913
On-Site or In-Plant Training - CO2 sector - None (jobs)		1,126	16,898	14,719	7,184	10,807	19,874
On-Site or In-Plant Training - CO2 sector - Over 10 years (jobs)		79.4	1,229	1,037	475	720	1,408
On-Site or In-Plant Training - CO2 sector - Up to 1 year (jobs)		4,125	61,774	53,861	26,345	39,594	72,583
On-Site or In-Plant Training - Coal sector - 1 to 4 years (jobs)		10,991	3,009	1,599	1,387	1,238	1,082
On-Site or In-Plant Training - Coal sector - 4 to 10 years (jobs)		4,217	1,054	430	373	332	289
On-Site or In-Plant Training - Coal sector - None (jobs)		10,380	2,741	1,420	1,262	1,154	1,034
On-Site or In-Plant Training - Coal sector - Over 10 years (jobs)		508	124	47.4	42.2	38.6	34.7
On-Site or In-Plant Training - Coal sector - Up to 1 year (jobs)		44,315	12,498	7,424	6,450	5,763	5,046
On-Site or In-Plant Training - Grid sector - 1 to 4 years (jobs)		90,688	119,702	154,493	174,915	239,868	323,746
On-Site or In-Plant Training - Grid sector - 4 to 10 years (jobs)		39,829	52,560	67,820	76,766	105,246	142,011
On-Site or In-Plant Training - Grid sector - None (jobs)		79,958	105,169	135,271	152,642	208,641	280,703
On-Site or In-Plant Training - Grid sector - Over 10 years (jobs)		5,163	6,809	8,781	9,933	13,610	18,352
On-Site or In-Plant Training - Grid sector - Up to 1 year (jobs)		309,424	407,925	525,879	594,741	814,741	1,098,547
On-Site or In-Plant Training - Natural gas sector - 1 to 4 years (jobs)		92,637	70,073	52,690	45,840	36,543	27,423
On-Site or In-Plant Training - Natural gas sector - 4 to 10 years (jobs)		41,127	31,357	23,855	21,069	16,949	12,811

Table 80: *E-B+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Natural gas sector - None (jobs)		87,524	65,527	48,636	41,762	32,988	24,543
On-Site or In-Plant Training - Natural gas sector - Over 10 years (jobs)		4,878	3,747	2,877	2,572	2,083	1,580
On-Site or In-Plant Training - Natural gas sector - Up to 1 year (jobs)		323,555	243,038	180,589	154,459	121,820	90,603
On-Site or In-Plant Training - Nuclear sector - 1 to 4 years (jobs)		7,389	7,165	7,200	5,495	5,013	6,540
On-Site or In-Plant Training - Nuclear sector - 4 to 10 years (jobs)		2,674	2,593	2,605	1,987	1,813	2,364
On-Site or In-Plant Training - Nuclear sector - None (jobs)		8,963	8,673	8,697	6,623	6,030	7,850
On-Site or In-Plant Training - Nuclear sector - Over 10 years (jobs)		251	243	244	186	169	220
On-Site or In-Plant Training - Nuclear sector - Up to 1 year (jobs)		30,796	29,826	29,935	22,818	20,791	27,089
On-Site or In-Plant Training - Oil sector - 1 to 4 years (jobs)		116,834	104,736	94,131	83,578	71,372	44,546
On-Site or In-Plant Training - Oil sector - 4 to 10 years (jobs)		41,199	37,215	33,709	30,174	25,955	16,347
On-Site or In-Plant Training - Oil sector - None (jobs)		127,669	113,154	100,523	88,217	74,442	45,938
On-Site or In-Plant Training - Oil sector - Over 10 years (jobs)		4,563	4,197	3,868	3,520	3,075	1,964
On-Site or In-Plant Training - Oil sector - Up to 1 year (jobs)		502,634	448,835	401,801	355,364	302,214	187,936
On-Site or In-Plant Training - Solar PV sector - 1 to 4 years (jobs)		85,449	121,254	115,992	109,769	132,480	207,850
On-Site or In-Plant Training - Solar PV sector - 4 to 10 years (jobs)		30,692	42,579	42,649	41,929	50,048	77,768
On-Site or In-Plant Training - Solar PV sector - None (jobs)		90,794	129,859	124,146	117,619	142,962	225,796
On-Site or In-Plant Training - Solar PV sector - Over 10 years (jobs)		4,264	6,037	5,821	5,548	6,693	10,498
On-Site or In-Plant Training - Solar PV sector - Up to 1 year (jobs)		320,155	458,733	435,280	409,568	498,019	786,781
On-Site or In-Plant Training - Total jobs - 1 to 4 years (jobs)		461,970	539,816	554,403	543,290	645,189	829,946
On-Site or In-Plant Training - Total jobs - 4 to 10 years (jobs)		179,918	210,123	220,728	221,617	264,025	339,327
On-Site or In-Plant Training - Total jobs - None (jobs)		473,170	550,697	564,986	554,651	656,003	843,945
On-Site or In-Plant Training - Total jobs - Over 10 years (jobs)		22,749	27,290	28,542	28,393	34,180	44,452
On-Site or In-Plant Training - Total jobs - Up to 1 year (jobs)		1,779,416	2,053,268	2,102,239	2,056,543	2,423,624	3,094,883
On-Site or In-Plant Training - Wind sector - 1 to 4 years (jobs)		48,136	82,662	92,122	87,136	111,787	151,018
On-Site or In-Plant Training - Wind sector - 4 to 10 years (jobs)		16,866	29,202	34,798	35,857	45,100	59,736
On-Site or In-Plant Training - Wind sector - None (jobs)		53,152	91,715	102,471	97,226	125,603	170,738
On-Site or In-Plant Training - Wind sector - Over 10 years (jobs)		2,457	4,233	4,792	4,631	5,928	7,992
On-Site or In-Plant Training - Wind sector - Up to 1 year (jobs)		185,600	319,348	352,268	328,385	425,161	579,277
On-the-Job Training - All sectors - 1 to 4 years (jobs)		589,423	689,612	708,945	695,721	827,749	1,066,650
On-the-Job Training - All sectors - 4 to 10 years (jobs)		169,241	200,282	212,181	214,269	257,137	333,548

Table 80: *E-B+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-the-Job Training - All sectors - None (jobs)		161,856	184,861	189,418	186,460	219,037	280,333
On-the-Job Training - All sectors - Over 10 years (jobs)		29,331	34,763	34,648	32,822	38,443	49,510
On-the-Job Training - All sectors - Up to 1 year (jobs)		1,967,372	2,271,676	2,325,707	2,275,223	2,680,656	3,422,512
On-the-Job Training - Biomass sector - 1 to 4 years (jobs)		9,286	11,590	21,134	31,640	41,117	52,685
On-the-Job Training - Biomass sector - 4 to 10 years (jobs)		2,125	2,696	5,302	8,200	10,872	14,064
On-the-Job Training - Biomass sector - None (jobs)		5,236	6,088	10,105	14,671	18,626	23,562
On-the-Job Training - Biomass sector - Over 10 years (jobs)		600	692	1,143	1,614	2,049	2,648
On-the-Job Training - Biomass sector - Up to 1 year (jobs)		66,889	81,601	132,250	182,098	224,785	283,714
On-the-Job Training - CO2 sector - 1 to 4 years (jobs)		1,805	27,584	23,594	11,121	16,798	31,982
On-the-Job Training - CO2 sector - 4 to 10 years (jobs)		672	10,456	8,805	4,017	6,099	12,021
On-the-Job Training - CO2 sector - None (jobs)		346	5,127	4,521	2,256	3,387	6,100
On-the-Job Training - CO2 sector - Over 10 years (jobs)		73.6	1,117	968	466	705	1,324
On-the-Job Training - CO2 sector - Up to 1 year (jobs)		4,460	66,655	58,216	28,568	42,915	78,399
On-the-Job Training - Coal sector - 1 to 4 years (jobs)		13,959	3,773	1,915	1,664	1,488	1,303
On-the-Job Training - Coal sector - 4 to 10 years (jobs)		4,129	1,040	423	364	321	278
On-the-Job Training - Coal sector - None (jobs)		3,482	920	508	449	409	364
On-the-Job Training - Coal sector - Over 10 years (jobs)		473	131	70.7	63.5	58.8	53.4
On-the-Job Training - Coal sector - Up to 1 year (jobs)		48,368	13,561	8,004	6,974	6,249	5,487
On-the-Job Training - Grid sector - 1 to 4 years (jobs)		117,947	155,605	200,730	227,151	311,345	420,005
On-the-Job Training - Grid sector - 4 to 10 years (jobs)		40,085	52,932	68,343	77,406	106,189	143,370
On-the-Job Training - Grid sector - None (jobs)		25,697	33,828	43,548	49,185	67,293	90,622
On-the-Job Training - Grid sector - Over 10 years (jobs)		4,208	5,558	7,177	8,131	11,159	15,072
On-the-Job Training - Grid sector - Up to 1 year (jobs)		337,124	444,243	572,445	647,124	886,121	1,194,291
On-the-Job Training - Natural gas sector - 1 to 4 years (jobs)		121,834	92,143	69,337	60,467	48,262	36,243
On-the-Job Training - Natural gas sector - 4 to 10 years (jobs)		39,144	29,923	22,892	20,410	16,507	12,526
On-the-Job Training - Natural gas sector - None (jobs)		28,684	21,298	15,625	13,203	10,325	7,627
On-the-Job Training - Natural gas sector - Over 10 years (jobs)		5,223	3,920	2,912	2,479	1,953	1,456
On-the-Job Training - Natural gas sector - Up to 1 year (jobs)		354,836	266,458	197,880	169,143	133,336	99,109
On-the-Job Training - Nuclear sector - 1 to 4 years (jobs)		9,694	9,400	9,445	7,207	6,574	8,575
On-the-Job Training - Nuclear sector - 4 to 10 years (jobs)		2,338	2,267	2,278	1,739	1,586	2,070

Table 80: *E-B+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-the-Job Training - Nuclear sector - None (jobs)		3,363	3,256	3,267	2,489	2,267	2,953
On-the-Job Training - Nuclear sector - Over 10 years (jobs)		521	506	508	388	354	463
On-the-Job Training - Nuclear sector - Up to 1 year (jobs)		34,156	33,071	33,182	25,286	23,033	30,003
On-the-Job Training - Oil sector - 1 to 4 years (jobs)		144,508	129,357	116,100	102,947	87,812	54,740
On-the-Job Training - Oil sector - 4 to 10 years (jobs)		34,136	30,881	28,017	25,127	21,637	13,669
On-the-Job Training - Oil sector - None (jobs)		48,246	42,447	37,430	32,611	27,298	16,745
On-the-Job Training - Oil sector - Over 10 years (jobs)		7,740	6,934	6,229	5,530	4,722	2,949
On-the-Job Training - Oil sector - Up to 1 year (jobs)		558,269	498,517	446,256	394,637	335,590	208,628
On-the-Job Training - Solar PV sector - 1 to 4 years (jobs)		108,601	153,926	147,599	139,966	168,816	264,706
On-the-Job Training - Solar PV sector - 4 to 10 years (jobs)		30,386	42,000	42,390	41,928	49,971	77,550
On-the-Job Training - Solar PV sector - None (jobs)		30,022	42,886	41,648	40,051	48,782	77,239
On-the-Job Training - Solar PV sector - Over 10 years (jobs)		6,771	9,591	8,900	8,163	9,762	15,163
On-the-Job Training - Solar PV sector - Up to 1 year (jobs)		355,575	510,059	483,351	454,325	552,869	874,034
On-the-Job Training - Wind sector - 1 to 4 years (jobs)		61,790	106,235	119,093	113,557	145,537	196,411
On-the-Job Training - Wind sector - 4 to 10 years (jobs)		16,225	28,087	33,731	35,078	43,954	57,999
On-the-Job Training - Wind sector - None (jobs)		16,781	29,012	32,766	31,544	40,650	55,122
On-the-Job Training - Wind sector - Over 10 years (jobs)		3,721	6,314	6,739	5,986	7,681	10,383
On-the-Job Training - Wind sector - Up to 1 year (jobs)		207,695	357,511	394,123	367,069	475,758	648,847
Related work experience - All sectors - 1 to 4 years (jobs)		1,060,057	1,218,725	1,250,089	1,228,283	1,448,962	1,846,594
Related work experience - All sectors - 4 to 10 years (jobs)		675,711	780,852	800,254	786,233	930,754	1,190,427
Related work experience - All sectors - None (jobs)		412,411	480,978	496,642	488,883	578,837	743,989
Related work experience - All sectors - Over 10 years (jobs)		187,857	216,469	218,450	211,126	249,017	317,722
Related work experience - All sectors - Up to 1 year (jobs)		581,186	684,172	705,465	689,969	815,452	1,053,820
Related work experience - Biomass sector - 1 to 4 years (jobs)		25,157	31,622	55,215	80,869	103,220	130,658
Related work experience - Biomass sector - 4 to 10 years (jobs)		13,109	15,926	29,001	44,841	59,014	75,329
Related work experience - Biomass sector - None (jobs)		14,242	17,332	27,557	36,705	44,377	55,834
Related work experience - Biomass sector - Over 10 years (jobs)		3,603	4,264	7,554	11,581	15,231	19,534
Related work experience - Biomass sector - Up to 1 year (jobs)		28,024	33,522	50,606	64,227	75,606	95,317
Related work experience - CO2 sector - 1 to 4 years (jobs)		2,631	39,497	34,328	16,699	25,105	46,239
Related work experience - CO2 sector - 4 to 10 years (jobs)		1,820	27,472	23,749	11,436	17,216	32,042

Table 80: *E-B+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - CO2 sector - None (jobs)		1,137	17,299	14,848	7,050	10,633	20,081
Related work experience - CO2 sector - Over 10 years (jobs)		448	6,652	5,838	2,892	4,338	7,842
Related work experience - CO2 sector - Up to 1 year (jobs)		1,320	20,019	17,339	8,351	12,612	23,622
Related work experience - Coal sector - 1 to 4 years (jobs)		26,712	7,377	4,177	3,631	3,246	2,843
Related work experience - Coal sector - 4 to 10 years (jobs)		15,695	4,109	2,053	1,810	1,642	1,460
Related work experience - Coal sector - None (jobs)		9,564	2,569	1,358	1,183	1,060	931
Related work experience - Coal sector - Over 10 years (jobs)		3,962	1,074	566	501	457	409
Related work experience - Coal sector - Up to 1 year (jobs)		14,478	4,297	2,767	2,388	2,120	1,844
Related work experience - Grid sector - 1 to 4 years (jobs)		189,865	250,095	322,139	364,012	498,234	671,208
Related work experience - Grid sector - 4 to 10 years (jobs)		124,425	163,776	210,799	238,022	325,544	438,233
Related work experience - Grid sector - None (jobs)		77,987	102,885	132,719	150,185	205,848	277,682
Related work experience - Grid sector - Over 10 years (jobs)		32,251	42,474	54,700	61,799	84,572	113,915
Related work experience - Grid sector - Up to 1 year (jobs)		100,534	132,934	171,886	194,979	267,907	362,321
Related work experience - Natural gas sector - 1 to 4 years (jobs)		202,869	152,582	113,636	97,575	77,128	57,447
Related work experience - Natural gas sector - 4 to 10 years (jobs)		134,972	101,628	75,927	65,604	52,043	38,861
Related work experience - Natural gas sector - None (jobs)		79,594	60,206	45,249	39,353	31,361	23,517
Related work experience - Natural gas sector - Over 10 years (jobs)		36,650	27,418	20,251	17,172	13,470	9,977
Related work experience - Natural gas sector - Up to 1 year (jobs)		95,636	71,908	53,583	45,998	36,381	27,158
Related work experience - Nuclear sector - 1 to 4 years (jobs)		18,689	18,096	18,158	13,837	12,605	16,420
Related work experience - Nuclear sector - 4 to 10 years (jobs)		12,125	11,737	11,775	8,971	8,171	10,642
Related work experience - Nuclear sector - None (jobs)		6,311	6,120	6,149	4,692	4,280	5,583
Related work experience - Nuclear sector - Over 10 years (jobs)		3,732	3,616	3,630	2,767	2,522	3,287
Related work experience - Nuclear sector - Up to 1 year (jobs)		9,215	8,931	8,969	6,841	6,238	8,133
Related work experience - Oil sector - 1 to 4 years (jobs)		302,142	269,872	241,615	213,657	181,735	112,904
Related work experience - Oil sector - 4 to 10 years (jobs)		183,328	163,462	146,092	128,961	109,518	67,918
Related work experience - Oil sector - None (jobs)		106,860	95,809	86,142	76,551	65,362	40,896
Related work experience - Oil sector - Over 10 years (jobs)		52,719	46,922	41,873	36,913	31,344	19,408
Related work experience - Oil sector - Up to 1 year (jobs)		147,849	132,071	118,310	104,771	89,100	55,605
Related work experience - Solar PV sector - 1 to 4 years (jobs)		184,079	263,287	252,193	239,405	291,159	460,181
Related work experience - Solar PV sector - 4 to 10 years (jobs)		118,988	169,691	162,361	153,845	186,516	293,875

Table 80: *E-B+ scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - Solar PV sector - None (jobs)		75,112	107,194	103,020	98,080	119,161	188,200
Related work experience - Solar PV sector - Over 10 years (jobs)		33,887	48,648	45,388	42,000	50,978	80,348
Related work experience - Solar PV sector - Up to 1 year (jobs)		119,290	169,643	160,927	151,104	182,387	286,090
Related work experience - Wind sector - 1 to 4 years (jobs)		107,913	186,297	208,628	198,598	256,530	348,695
Related work experience - Wind sector - 4 to 10 years (jobs)		71,249	123,049	138,497	132,743	171,090	232,069
Related work experience - Wind sector - None (jobs)		41,605	71,565	79,599	75,084	96,755	131,265
Related work experience - Wind sector - Over 10 years (jobs)		20,605	35,402	38,651	35,500	46,104	63,003
Related work experience - Wind sector - Up to 1 year (jobs)		64,840	110,847	121,077	111,310	143,100	193,730
Wage income - Biomass (million $2019)		4,370	5,504	9,694	14,467	18,822	24,312
Wage income - CO2 (million $2019)		460	6,961	6,170	3,083	4,704	8,683
Wage income - Coal (million $2019)		4,260	1,154	608	538	490	438
Wage income - Grid (million $2019)		32,837	43,866	57,324	65,745	91,371	125,035
Wage income - Natural Gas (million $2019)		36,422	27,768	20,930	18,149	14,518	10,952
Wage income - Nuclear (million $2019)		3,579	3,550	3,650	2,852	2,665	3,563
Wage income - Oil (million $2019)		52,195	47,217	42,805	38,319	33,009	20,749
Wage income - Solar (million $2019)		29,439	42,538	41,384	39,918	49,188	78,830
Wage income - Wind (million $2019)		17,785	31,155	35,723	34,987	45,782	63,070

Table 81: *REF scenario - PILLAR 1: Efficiency/Electrification - Commercial*

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr (million $2018)	0	1,033,244	1,071,458	0	0	0	0
Sales of cooking units - Electric Resistance (%)	32.5	34.7	34.8	34.8	34.8	34.9	34.9
Sales of cooking units - Gas (%)	67.5	65.3	65.2	65.2	65.2	65.1	65.1
Sales of space heating units - Electric Heat Pump (%)	2.95	20.2	53	69	71.2	71.5	71.4
Sales of space heating units - Electric Resistance (%)	7.91	9.57	15.3	22	26.9	27.7	27.7
Sales of space heating units - Fossil (%)	3.94	3.64	2.67	1.11	0.16	0.012	0
Sales of space heating units - Gas Furnace (%)	85.2	66.6	29.1	7.95	1.72	0.875	0.814
Sales of water heating units - Electric Heat Pump (%)	0.385	0.401	0.397	0.398	0.398	0.397	0.397
Sales of water heating units - Electric Resistance (%)	3.8	3.86	3.84	3.85	3.86	3.85	3.86
Sales of water heating units - Gas Furnace (%)	94.1	94.1	94	94	94	94	94
Sales of water heating units - Other (%)	1.66	1.69	1.73	1.71	1.73	1.74	1.73

Table 82: *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)		174	178	262	276	263	274

Table 83: *REF scenario - PILLAR 1: Efficiency/Electrification - Overview*

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	9,013	9,089	9,161	9,159	9,215	9,479	9,955
Final energy use - Industry (PJ)	25,111	26,559	27,315	27,857	28,763	29,709	30,835

Table 83: *REF scenario - PILLAR 1: Efficiency/Electrification - Overview (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Residential (PJ)	11,787	11,149	10,849	10,682	10,653	10,714	10,787
Final energy use - Transportation (PJ)	28,007	26,732	24,918	23,878	24,004	24,746	25,679

Table 84: *REF scenario - PILLAR 1: Efficiency/Electrification - Residential*

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion $2018)	0	244	252	0	0	0	0
Sales of cooking units - Electric Resistance (%)	60.9	60.9	60.9	60.9	60.9	60.9	60.9
Sales of cooking units - Gas (%)	39.1	39.1	39.1	39.1	39.1	39.1	39.1
Sales of space heating units - Electric Heat Pump (%)	13	31.3	32.2	33.6	35.1	36.7	38.4
Sales of space heating units - Electric Resistance (%)	20.8	20.7	20.5	20.1	19.6	18.5	16.6
Sales of space heating units - Fossil (%)	10.1	11.9	8.72	6.7	6.35	6.23	6.31
Sales of space heating units - Gas (%)	56.2	36.1	38.6	39.6	39	38.5	38.6
Sales of water heating units - Electric Heat Pump (%)	0	0	0	0	0	0	0
Sales of water heating units - Electric Resistance (%)	38.4	51.9	52	52.3	52.2	52.3	52.3
Sales of water heating units - Gas Furnace (%)	58	45.4	45.4	45.1	45.2	45.1	45.1
Sales of water heating units - Other (%)	3.58	2.66	2.63	2.62	2.62	2.6	2.59

Table 85: *REF scenario - PILLAR 1: Efficiency/Electrification - Transportation*

Item	2020	2025	2030	2035	2040	2045	2050
Vehicle sales - Heavy-duty - diesel (%)	98.1	98.2	97.9	97	95.6	93.5	91.6
Vehicle sales - Heavy-duty - EV (%)	0	0	0	0	0	0	0
Vehicle sales - Heavy-duty - gasoline (%)	0.229	0.242	0.257	0.274	0.294	0.317	0.343
Vehicle sales - Heavy-duty - hybrid (%)	0.083	0.096	0.112	0.13	0.15	0.174	0.202
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.119	0.138	0.16	0.186	0.216	0.25	0.29
Vehicle sales - Heavy-duty - other (%)	1.51	1.31	1.57	2.37	3.69	5.71	7.57
Vehicle sales - Light-duty - diesel (%)	1.4	1.84	2.16	2.01	1.81	1.68	1.6
Vehicle sales - Light-duty - EV (%)	4.05	6.24	7.05	8.71	10.6	12.1	13.3
Vehicle sales - Light-duty - gasoline (%)	89.4	85.7	83.4	81.3	79.2	77.3	75.7
Vehicle sales - Light-duty - hybrid (%)	4.93	5.75	7	7.55	8.08	8.59	8.95
Vehicle sales - Light-duty - hydrogen FC (%)	0.11	0.371	0.337	0.298	0.293	0.293	0.303
Vehicle sales - Light-duty - other (%)	0.095	0.099	0.095	0.096	0.095	0.094	0.096
Vehicle sales - Medium-duty - diesel (%)	65.2	63.5	61.6	59.6	58	56.5	55.2
Vehicle sales - Medium-duty - EV (%)	0.027	0.105	0.329	0.671	0.895	0.973	0.993
Vehicle sales - Medium-duty - gasoline (%)	34	35.5	37	38.5	39.7	40.8	41.7
Vehicle sales - Medium-duty - hybrid (%)	0.365	0.427	0.496	0.577	0.674	0.793	0.929
Vehicle sales - Medium-duty - hydrogen FC (%)	0.175	0.208	0.242	0.285	0.339	0.409	0.487
Vehicle sales - Medium-duty - other (%)	0.255	0.271	0.298	0.345	0.42	0.528	0.671

Table 86: *REF scenario - PILLAR 2: Clean Electricity - Generating capacity*

Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Biomass power plant (billion $2018)	0	0	0.002	0.002	0.002	0.002	0.014
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	0.187	0.051	0.04	0.043	0.037
Installed - Biomass (MW)	10,004	9,138	7,833	6,120	4,703	3,396	2,509

Table 86: *REF scenario - PILLAR 2: Clean Electricity - Generating capacity (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Installed - Biomass w cc (MW)	0	0	28.2	35.9	41.9	48.4	53.9
Installed - Ccgt & gas steam (MW)	335,091	336,429	372,171	418,875	420,609	411,216	402,211
Installed - Ccgt w cc (MW)	0	0	75.1	123	155	183	198
Installed - Coal (MW)	215,803	136,252	87,021	67,927	65,539	63,529	58,003
Installed - Ct (MW)	147,318	141,836	138,659	133,493	148,035	248,004	303,871
Installed - Geothermal (MW)	2,394	2,396	2,400	2,405	2,409	2,415	2,421
Installed - Grid battery storage (MW)	0	1,001	1,423	2,713	3,240	4,835	5,590
Installed - Hydro (MW)	78,608	78,608	78,608	78,608	78,608	78,608	78,608
Installed - Nuclear (MW)	98,458	95,132	90,001	76,069	68,465	56,021	48,338
Installed - Offshore wind (MW)	29.3	997	2,991	5,028	7,082	9,651	38,635
Installed - Onshore wind (MW)	97,749	99,521	121,386	144,651	220,515	277,590	307,422
Installed - Other (MW)	67,926	57,451	55,131	53,826	51,918	50,896	49,542
Installed - Pumped hydro storage (MW)	0	19,418	19,418	19,418	19,418	19,418	19,418
Installed - Solar (MW)	53,331	74,306	98,959	141,818	186,285	223,714	287,248

Table 87: *REF scenario - PILLAR 2: Clean Electricity - Generation*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass (TWh)	16.8	20.1	14	8.93	3.82	4.42	5.62
Biomass power plant (GWh)	3,585	4,154	1,171	1,248	847	681	301
Biomass w cc (TWh)	0	0	0.088	0.099	0.108	0.12	0.13
Biomass w/ccu allam power plant (GWh)	0	0	0	0	0	0	0
Biomass w/ccu power plant (GWh)	0	0	88.1	99	108	120	130
Coal (TWh)	965	844	534	394	366	342	310
Gas (TWh)	1,547	1,791	2,184	2,446	2,263	2,338	2,245
Gas w cc (TWh)	0	0	0.252	0.351	0.376	0.416	0.441
Geothermal (TWh)	14.6	14.5	14.6	14.6	14.2	14.2	13.9
Hydro (TWh)	300	312	295	296	304	294	295
Nuclear (TWh)	802	775	733	620	558	456	394
Offshore wind (TWh)	0.096	3.67	11.1	23.4	28.7	38.7	173
Onshore wind (TWh)	411	413	510	613	942	1,177	1,300
Solar pv (TWh)	104	139	179	261	356	420	525

Table 88: *REF scenario - PILLAR 3: Clean fuels - Bioenergy*

Item	2020	2025	2030	2035	2040	2045	2050
Biomass input - BECCS-H2 (1000 tonnes)	0	0	0	0	0	0	0
Biomass input - Bio-FT w/ CC (1000 tonnes)	0	0	0	0	0	0	0
Biomass input - Bio-SNG w/ CC (1000 tonnes)	0	0	5.9	6.22	5.52	5.33	5.34
Biomass input - Biopower (1000 tonnes)	7,104	16,068	14,149	12,723	6,554	8,191	11,637
Biomass input - Biopower w/ cc (1000 tonnes)	0	0	53.2	59.8	65.2	72.5	78.2
Biomass input - Ethanol (1000 tonnes)	129,536	129,536	129,529	129,529	129,536	129,536	129,536
Biomass input - FT diesel (1000 tonnes)	0	0	0	0	0	0	0
Biomass input - Pyrolysis liquids (1000 tonnes)	0	0	0	0	0	0	0
Biomass input - Pyrolysis liquids w/ cc (1000 tonnes)	0	0	0	0	0	0	0
Biomass input - SNG (1000 tonnes)	0	0	0	0	0	0	0

Table 89: *REF scenario - PILLAR 4: CCUS - CO2 storage*

Item	2020	2025	2030	2035	2040	2045	2050
CO2 storage (MMT)	0	0	0.18	0.23	0.25	0.28	0.29

Table 90: *REF scenario - PILLAR 6: Land sinks - Forests*

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y)							-48,900
Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y)							-1,535,900
Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y)							-84,000
Carbon sink potential - High - Extend rotation length (1000 tCO2e/y)							-302,000
Carbon sink potential - High - Improve plantations (1000 tCO2e/y)							-57,000
Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y)							-300,000
Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y)							-60,000
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)							-242,000
Carbon sink potential - High - Reforest pasture (1000 tCO2e/y)							-264,000
Carbon sink potential - High - Restore productivity (1000 tCO2e/y)							-178,000
Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)							-24,500
Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)							-505,500
Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)							-14,000
Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)							-116,000
Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)							-29,000
Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y)							-100,000
Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)							-21,000
Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)							-121,000
Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y)							-20,000
Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)							-60,000
Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)							-36,700
Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)							-1,020,200
Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)							-49,000
Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)							-209,000
Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)							-42,500
Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)							-200,000
Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)							-40,500
Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)							-181,500
Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)							-142,000
Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)							-119,000

Table 90: *REF scenario - PILLAR 6: Land sinks - Forests (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)							8,000
Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)							11,373
Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)							154,000
Land impacted for carbon sink potential - High - Improve plantations (1000 hectares)							21,000
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)							5,700
Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares)							16,000
Land impacted for carbon sink potential - High - Reforest pasture (1000 hectares)							7,500
Land impacted for carbon sink potential - High - Restore productivity (1000 hectares)							59,000
Land impacted for carbon sink potential - High - Total impacted (over 30 years) (1000 hectares)							282,573
Land impacted for carbon sink potential - Low - Accelerate regeneration (1000 hectares)							4,000
Land impacted for carbon sink potential - Low - Avoid deforestation (over 30 years) (1000 hectares)							10,677
Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares)							59,000
Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares)							10,500
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)							3,000
Land impacted for carbon sink potential - Low - Reforest cropland (1000 hectares)							8,000
Land impacted for carbon sink potential - Low - Reforest pasture (1000 hectares)							1,300
Land impacted for carbon sink potential - Low - Restore productivity (1000 hectares)							35,700
Land impacted for carbon sink potential - Low - Total impacted (over 30 years) (1000 hectares)							132,177
Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000 hectares)							6,000

Table 90: *REF 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)							11,025
Land impacted for carbon sink potential - Mid - Extend rotation length (1000 hectares)							106,500
Land impacted for carbon sink potential - Mid - Improve plantations (1000 hectares)							15,800
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)							4,350
Land impacted for carbon sink potential - Mid - Reforest cropland (1000 hectares)							12,000
Land impacted for carbon sink potential - Mid - Reforest pasture (1000 hectares)							9,400
Land impacted for carbon sink potential - Mid - Restore productivity (1000 hectares)							71,900
Land impacted for carbon sink potential - Mid - Total impacted (over 30 years) (1000 hectares)							236,975

Table 91: *REF scenario - PILLAR 6: Land sinks - Forests - REF only*

Item	2020	2025	2030	2035	2040	2045	2050
Business-as-usual carbon sink - Natural uptake (Mt CO2e/y)	-575		-367				-325
Business-as-usual carbon sink - Retained in Hardwood Products (Mt CO2e/y)	-81.6		-139				-146
Business-as-usual carbon sink - Total (Mt CO2e/y)	-657		-507				-472

Table 92: *REF scenario - PILLAR 6: Land sinks - Total assumed land sink*

Item	2020	2025	2030	2035	2040	2045	2050
Total assumed land sink (Gt CO2e/y)	-0.7	-0.73	-0.75	-0.78	-0.8	-0.83	-0.85

Table 93: *REF scenario - IMPACTS - Fossil fuel industries*

Item	2020	2025	2030	2035	2040	2045	2050
Natural gas consumption - Annual (tcf)		23,809	26,243	27,450	25,560	25,988	25,610
Natural gas consumption - Cumulative (tcf)		0	0	0	0	0	792,006
Natural gas production - Annual (tcf)		36,910	41,028	42,444	40,854	41,386	41,138
Natural gas production - Cumulative (tcf)		0	0	0	0	0	1,236,087
Oil consumption - Annual (million bbls)		6,043	5,699	5,491	5,512	5,642	5,820
Oil consumption - Cumulative (million bbls)		0	0	0	0	0	178,024
Oil production - Annual (million bbls)		5,198	5,216	5,209	5,074	4,957	4,365
Oil production - Cumulative (million bbls)		0	0	0	0	0	155,778

Table 94: *REF scenario - IMPACTS - Health*

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019$)		71,041	43,563	34,738	31,383	29,937	28,118
Monetary damages from air pollution - Natural Gas (million 2019$)		11,837	11,639	13,941	13,774	13,915	13,437

Table 94: *REF scenario - IMPACTS - Health (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Transportation (million 2019$)		104,043	108,301	112,532	117,351	122,191	127,101
Premature deaths from air pollution - Coal (deaths)		8,024	4,920	3,923	3,545	3,381	3,176
Premature deaths from air pollution - Natural Gas (deaths)		1,336	1,314	1,574	1,555	1,571	1,517
Premature deaths from air pollution - Transportation (deaths)		11,702	12,181	12,657	13,199	13,743	14,295

Table 95: *REF scenario - IMPACTS - Jobs*

Item	2020	2025	2030	2035	2040	2045	2050
By economic sector - Agriculture (jobs)		31,901	31,368	31,313	30,472	30,467	30,778
By economic sector - Construction (jobs)		442,887	446,175	501,228	540,788	564,183	654,706
By economic sector - Manufacturing (jobs)		331,815	365,578	421,785	429,120	380,807	428,603
By economic sector - Mining (jobs)		481,485	400,603	333,553	269,133	224,097	177,285
By economic sector - Other (jobs)		34,546	35,104	44,813	53,531	60,257	95,104
By economic sector - Pipeline (jobs)		46,537	48,395	49,114	46,834	47,106	45,678
By economic sector - Professional (jobs)		271,996	263,680	280,141	302,074	314,668	358,272
By economic sector - Trade (jobs)		277,149	253,538	251,171	253,853	255,559	283,423
By economic sector - Utilities (jobs)		424,258	422,267	473,464	510,552	530,968	547,052
By education level - All sectors - Associates degree or some college (jobs)		691,975	675,530	721,855	745,571	741,637	816,287
By education level - All sectors - Bachelors degree (jobs)		532,142	507,651	521,097	522,808	511,244	544,237
By education level - All sectors - Doctoral degree (jobs)		18,196	17,228	17,499	17,734	17,716	19,186
By education level - All sectors - High school diploma or less (jobs)		972,467	944,804	1,001,726	1,024,854	1,013,719	1,108,871
By education level - All sectors - Masters or professional degree (jobs)		127,793	121,496	124,406	125,391	123,794	132,320
By education level - Biomass sector - Associates degree or some college (jobs)		15,721	15,116	14,471	13,823	13,632	13,402
By education level - Biomass sector - Bachelors degree (jobs)		14,337	13,667	12,869	12,186	12,012	11,712
By education level - Biomass sector - Doctoral degree (jobs)		698	670	631	598	598	587
By education level - Biomass sector - High school diploma or less (jobs)		47,731	46,172	44,960	43,255	42,721	42,422
By education level - Biomass sector - Masters or professional degree (jobs)		3,946	3,803	3,617	3,454	3,441	3,386
By education level - CO2 sector - Associates degree or some college (jobs)		0	0.287	0.366	0.393	0.435	0.463
By education level - CO2 sector - Bachelors degree (jobs)		0	0.287	0.365	0.393	0.435	0.464
By education level - CO2 sector - Doctoral degree (jobs)		0	0.012	0.015	0.016	0.018	0.019
By education level - CO2 sector - High school diploma or less (jobs)		0	0.368	0.468	0.503	0.555	0.591
By education level - CO2 sector - Masters or professional degree (jobs)		0	0.074	0.094	0.101	0.112	0.119
By education level - Coal sector - Associates degree or some college (jobs)		34,993	21,604	15,196	12,828	11,588	10,214
By education level - Coal sector - Bachelors degree (jobs)		22,698	14,077	9,948	8,484	7,744	6,882
By education level - Coal sector - Doctoral degree (jobs)		760	478	338	289	268	242
By education level - Coal sector - High school diploma or less (jobs)		53,521	32,643	22,951	19,159	16,860	14,468

Table 95: *REF scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - Coal sector - Masters or professional degree (jobs)		5,292	3,300	2,326	1,983	1,825	1,635
By education level - Grid sector - Associates degree or some college (jobs)		143,570	150,908	186,088	208,415	220,469	243,651
By education level - Grid sector - Bachelors degree (jobs)		82,274	85,914	105,262	117,146	123,149	135,264
By education level - Grid sector - Doctoral degree (jobs)		2,372	2,435	2,933	3,210	3,317	3,582
By education level - Grid sector - High school diploma or less (jobs)		183,588	193,946	240,360	270,545	287,619	319,440
By education level - Grid sector - Masters or professional degree (jobs)		20,702	21,551	26,323	29,206	30,611	33,523
By education level - Natural gas sector - Associates degree or some college (jobs)		183,106	181,431	182,804	180,503	179,358	167,676
By education level - Natural gas sector - Bachelors degree (jobs)		127,562	123,827	121,511	116,438	113,191	103,983
By education level - Natural gas sector - Doctoral degree (jobs)		4,238	4,055	3,927	3,724	3,570	3,234
By education level - Natural gas sector - High school diploma or less (jobs)		224,113	223,226	224,560	219,540	217,980	204,472
By education level - Natural gas sector - Masters or professional degree (jobs)		31,242	30,086	29,351	28,067	27,139	24,764
By education level - Nuclear sector - Associates degree or some college (jobs)		13,714	13,235	12,589	10,073	9,844	6,917
By education level - Nuclear sector - Bachelors degree (jobs)		14,824	14,272	13,544	10,811	10,542	7,390
By education level - Nuclear sector - Doctoral degree (jobs)		650	622	586	465	451	314
By education level - Nuclear sector - High school diploma or less (jobs)		17,023	16,472	15,710	12,602	12,347	8,697
By education level - Nuclear sector - Masters or professional degree (jobs)		4,013	3,856	3,653	2,911	2,834	1,984
By education level - Oil sector - Associates degree or some college (jobs)		206,894	186,432	169,741	154,947	143,556	125,658
By education level - Oil sector - Bachelors degree (jobs)		213,345	189,156	169,188	151,377	137,271	117,201
By education level - Oil sector - Doctoral degree (jobs)		6,891	6,141	5,520	4,959	4,515	3,865
By education level - Oil sector - High school diploma or less (jobs)		319,890	290,042	265,879	244,649	228,550	202,090
By education level - Oil sector - Masters or professional degree (jobs)		48,374	42,677	37,962	33,746	30,392	25,735
By education level - Solar PV sector - Associates degree or some college (jobs)		65,241	62,569	83,946	88,241	92,303	168,703
By education level - Solar PV sector - Bachelors degree (jobs)		36,864	35,965	49,119	52,126	55,152	102,163
By education level - Solar PV sector - Doctoral degree (jobs)		1,480	1,436	1,912	2,138	2,339	4,314
By education level - Solar PV sector - High school diploma or less (jobs)		91,471	86,780	115,285	119,640	123,522	223,347
By education level - Solar PV sector - Masters or professional degree (jobs)		8,682	8,500	11,555	12,603	13,605	25,287
By education level - Wind sector - Associates degree or some college (jobs)		28,737	44,236	57,021	76,741	70,886	80,065
By education level - Wind sector - Bachelors degree (jobs)		20,238	30,772	39,656	54,239	52,183	59,640
By education level - Wind sector - Doctoral degree (jobs)		1,107	1,391	1,651	2,352	2,658	3,048
By education level - Wind sector - High school diploma or less (jobs)		35,130	55,523	72,021	95,464	84,120	93,934

Table 95: *REF scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
By education level - Wind sector - Masters or professional degree (jobs)		5,543	7,722	9,618	13,420	13,946	16,005
By resource sector - Biomass (jobs)		82,434	79,427	76,547	73,317	72,403	71,509
By resource sector - CO2 (jobs)		0	1.03	1.31	1.41	1.55	1.66
By resource sector - Coal (jobs)		117,264	72,102	50,758	42,743	38,286	33,441
By resource sector - Grid (jobs)		432,506	454,755	560,966	628,522	665,166	735,461
By resource sector - Natural Gas (jobs)		570,260	562,626	562,154	548,271	541,238	504,129
By resource sector - Nuclear (jobs)		50,224	48,457	46,083	36,862	36,018	25,302
By resource sector - Oil (jobs)		795,394	714,448	648,289	589,677	544,285	474,550
By resource sector - Solar (jobs)		203,737	195,250	261,817	274,748	286,921	523,815
By resource sector - Wind (jobs)		90,755	139,643	179,967	242,216	223,793	252,692
Median wages - Annual - Biomass ($2019 per job)		51,794	52,681	53,506	54,475	55,717	56,907
Median wages - Annual - CO2 ($2019 per job)		0	72,624	74,331	76,115	77,980	79,929
Median wages - Annual - Coal ($2019 per job)		59,050	59,933	60,616	61,537	62,818	64,176
Median wages - Annual - Grid ($2019 per job)		62,539	63,375	64,248	65,159	66,110	67,102
Median wages - Annual - Natural Gas ($2019 per job)		66,256	67,137	67,918	68,605	69,423	70,327
Median wages - Annual - Nuclear ($2019 per job)		71,486	73,188	74,974	76,846	78,808	80,864
Median wages - Annual - Oil ($2019 per job)		65,822	66,660	67,465	68,209	68,927	69,545
Median wages - Annual - Solar ($2019 per job)		56,157	56,905	57,622	58,717	59,823	60,806
Median wages - Annual - Wind ($2019 per job)		61,364	60,320	60,451	61,739	64,572	65,751
On-Site or In-Plant Training - Biomass sector - 1 to 4 years (jobs)		8,314	8,010	7,705	7,367	7,270	7,168
On-Site or In-Plant Training - Biomass sector - 4 to 10 years (jobs)		2,584	2,495	2,393	2,293	2,266	2,228
On-Site or In-Plant Training - Biomass sector - None (jobs)		13,295	12,752	12,228	11,645	11,488	11,329
On-Site or In-Plant Training - Biomass sector - Over 10 years (jobs)		576	564	550	536	533	529
On-Site or In-Plant Training - Biomass sector - Up to 1 year (jobs)		57,665	55,606	53,672	51,476	50,846	50,255
On-Site or In-Plant Training - CO2 sector - 1 to 4 years (jobs)		0	0.154	0.196	0.211	0.233	0.249
On-Site or In-Plant Training - CO2 sector - 4 to 10 years (jobs)		0	0.057	0.073	0.078	0.086	0.092
On-Site or In-Plant Training - CO2 sector - None (jobs)		0	0.171	0.217	0.234	0.259	0.276
On-Site or In-Plant Training - CO2 sector - Over 10 years (jobs)		0	0.006	0.008	0.009	0.009	0.01
On-Site or In-Plant Training - CO2 sector - Up to 1 year (jobs)		0	0.639	0.813	0.875	0.966	1.03
On-Site or In-Plant Training - Coal sector - 1 to 4 years (jobs)		17,859	11,003	7,730	6,504	5,849	5,134
On-Site or In-Plant Training - Coal sector - 4 to 10 years (jobs)		6,442	3,981	2,774	2,336	2,131	1,898
On-Site or In-Plant Training - Coal sector - None (jobs)		16,850	10,437	7,376	6,265	5,686	5,029
On-Site or In-Plant Training - Coal sector - Over 10 years (jobs)		761	475	333	283	262	236
On-Site or In-Plant Training - Coal sector - Up to 1 year (jobs)		75,351	46,205	32,545	27,355	24,357	21,143
On-Site or In-Plant Training - Grid sector - 1 to 4 years (jobs)		74,702	78,645	97,132	108,958	115,441	127,781

Table 95: *REF scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Grid sector - 4 to 10 years (jobs)		32,808	34,532	42,639	47,819	50,652	56,051
On-Site or In-Plant Training - Grid sector - None (jobs)		65,863	69,096	85,047	95,083	100,413	110,792
On-Site or In-Plant Training - Grid sector - Over 10 years (jobs)		4,253	4,474	5,521	6,187	6,550	7,243
On-Site or In-Plant Training - Grid sector - Up to 1 year (jobs)		254,880	268,008	330,627	370,475	392,110	433,592
On-Site or In-Plant Training - Natural gas sector - 1 to 4 years (jobs)		96,099	95,281	95,809	94,122	93,397	87,337
On-Site or In-Plant Training - Natural gas sector - 4 to 10 years (jobs)		42,664	42,609	43,259	42,963	42,940	40,366
On-Site or In-Plant Training - Natural gas sector - None (jobs)		90,790	89,018	88,485	86,038	84,592	78,439
On-Site or In-Plant Training - Natural gas sector - Over 10 years (jobs)		5,060	5,079	5,198	5,218	5,244	4,946
On-Site or In-Plant Training - Natural gas sector - Up to 1 year (jobs)		335,648	330,639	329,404	319,930	315,066	293,042
On-Site or In-Plant Training - Nuclear sector - 1 to 4 years (jobs)		7,411	7,159	6,816	5,459	5,340	3,755
On-Site or In-Plant Training - Nuclear sector - 4 to 10 years (jobs)		2,682	2,590	2,466	1,974	1,931	1,358
On-Site or In-Plant Training - Nuclear sector - None (jobs)		8,990	8,665	8,233	6,579	6,422	4,508
On-Site or In-Plant Training - Nuclear sector - Over 10 years (jobs)		252	243	231	184	180	127
On-Site or In-Plant Training - Nuclear sector - Up to 1 year (jobs)		30,889	29,800	28,338	22,666	22,145	15,555
On-Site or In-Plant Training - Oil sector - 1 to 4 years (jobs)		117,197	105,658	96,224	87,832	81,356	71,167
On-Site or In-Plant Training - Oil sector - 4 to 10 years (jobs)		41,330	37,551	34,480	31,757	29,692	26,252
On-Site or In-Plant Training - Oil sector - None (jobs)		128,070	114,160	102,780	92,748	84,932	73,475
On-Site or In-Plant Training - Oil sector - Over 10 years (jobs)		4,577	4,235	3,956	3,702	3,512	3,145
On-Site or In-Plant Training - Oil sector - Up to 1 year (jobs)		504,220	452,845	410,849	373,639	344,793	300,510
On-Site or In-Plant Training - Solar PV sector - 1 to 4 years (jobs)		33,478	31,858	42,362	44,381	46,194	83,815
On-Site or In-Plant Training - Solar PV sector - 4 to 10 years (jobs)		13,994	13,066	16,835	17,985	18,877	33,697
On-Site or In-Plant Training - Solar PV sector - None (jobs)		34,753	33,394	44,893	47,221	49,433	90,445
On-Site or In-Plant Training - Solar PV sector - Over 10 years (jobs)		1,711	1,625	2,152	2,265	2,365	4,285
On-Site or In-Plant Training - Solar PV sector - Up to 1 year (jobs)		119,801	115,306	155,575	162,897	170,053	311,573
On-Site or In-Plant Training - Total jobs - 1 to 4 years (jobs)		369,708	359,698	381,970	392,484	389,968	425,641
On-Site or In-Plant Training - Total jobs - 4 to 10 years (jobs)		149,227	145,474	155,110	161,149	163,029	178,083
On-Site or In-Plant Training - Total jobs - None (jobs)		374,482	361,893	380,448	387,964	382,406	418,639
On-Site or In-Plant Training - Total jobs - Over 10 years (jobs)		17,983	17,849	19,396	20,342	20,520	22,619
On-Site or In-Plant Training - Total jobs - Up to 1 year (jobs)		1,431,174	1,381,795	1,449,660	1,474,419	1,452,188	1,575,918
On-Site or In-Plant Training - Wind sector - 1 to 4 years (jobs)		14,647	22,083	28,192	37,862	35,120	39,483

Table 95: *REF scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Wind sector - 4 to 10 years (jobs)		6,722	8,649	10,264	14,021	14,541	16,232
On-Site or In-Plant Training - Wind sector - None (jobs)		15,871	24,370	31,406	42,385	39,440	44,622
On-Site or In-Plant Training - Wind sector - Over 10 years (jobs)		793	1,155	1,455	1,965	1,874	2,109
On-Site or In-Plant Training - Wind sector - Up to 1 year (jobs)		52,721	83,385	108,650	145,982	132,818	150,247
On-the-Job Training - All sectors - 1 to 4 years (jobs)		471,733	459,268	488,315	502,574	500,124	546,086
On-the-Job Training - All sectors - 4 to 10 years (jobs)		139,425	136,348	146,668	153,603	156,299	172,344
On-the-Job Training - All sectors - None (jobs)		130,848	125,108	129,874	131,332	129,182	141,119
On-the-Job Training - All sectors - Over 10 years (jobs)		21,989	21,517	22,834	23,230	22,657	24,956
On-the-Job Training - All sectors - Up to 1 year (jobs)		1,578,579	1,524,468	1,598,893	1,625,620	1,599,850	1,736,396
On-the-Job Training - Biomass sector - 1 to 4 years (jobs)		9,082	8,752	8,404	8,030	7,931	7,814
On-the-Job Training - Biomass sector - 4 to 10 years (jobs)		2,078	2,011	1,934	1,853	1,834	1,809
On-the-Job Training - Biomass sector - None (jobs)		5,115	4,898	4,671	4,461	4,387	4,302
On-the-Job Training - Biomass sector - Over 10 years (jobs)		590	578	562	548	545	540
On-the-Job Training - Biomass sector - Up to 1 year (jobs)		65,569	63,189	60,975	58,425	57,706	57,044
On-the-Job Training - CO2 sector - 1 to 4 years (jobs)		0	0.199	0.253	0.273	0.301	0.321
On-the-Job Training - CO2 sector - 4 to 10 years (jobs)		0	0.048	0.061	0.066	0.073	0.078
On-the-Job Training - CO2 sector - None (jobs)		0	0.062	0.078	0.084	0.093	0.1
On-the-Job Training - CO2 sector - Over 10 years (jobs)		0	0.01	0.012	0.013	0.015	0.016
On-the-Job Training - CO2 sector - Up to 1 year (jobs)		0	0.709	0.902	0.97	1.07	1.14
On-the-Job Training - Coal sector - 1 to 4 years (jobs)		22,287	13,762	9,662	8,139	7,352	6,483
On-the-Job Training - Coal sector - 4 to 10 years (jobs)		6,269	3,873	2,694	2,263	2,063	1,837
On-the-Job Training - Coal sector - None (jobs)		5,855	3,604	2,545	2,156	1,940	1,701
On-the-Job Training - Coal sector - Over 10 years (jobs)		759	476	340	292	268	239
On-the-Job Training - Coal sector - Up to 1 year (jobs)		82,094	50,386	35,517	29,893	26,663	23,181
On-the-Job Training - Grid sector - 1 to 4 years (jobs)		97,156	102,233	126,202	141,496	149,841	165,774
On-the-Job Training - Grid sector - 4 to 10 years (jobs)		33,019	34,776	42,968	48,218	51,105	56,588
On-the-Job Training - Grid sector - None (jobs)		21,167	22,225	27,379	30,638	32,386	35,768
On-the-Job Training - Grid sector - Over 10 years (jobs)		3,466	3,651	4,512	5,065	5,370	5,949
On-the-Job Training - Grid sector - Up to 1 year (jobs)		277,698	291,869	359,904	403,104	426,463	471,382
On-the-Job Training - Natural gas sector - 1 to 4 years (jobs)		126,385	125,235	125,961	123,905	122,978	114,961

Table 95: *REF scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
On-the-Job Training - Natural gas sector - 4 to 10 years (jobs)		40,605	40,624	41,408	41,379	41,485	39,059
On-the-Job Training - Natural gas sector - None (jobs)		29,757	28,985	28,529	27,393	26,723	24,643
On-the-Job Training - Natural gas sector - Over 10 years (jobs)		5,419	5,354	5,332	5,154	5,079	4,737
On-the-Job Training - Natural gas sector - Up to 1 year (jobs)		368,095	362,428	360,924	350,441	344,973	320,729
On-the-Job Training - Nuclear sector - 1 to 4 years (jobs)		9,723	9,391	8,941	7,159	7,002	4,924
On-the-Job Training - Nuclear sector - 4 to 10 years (jobs)		2,345	2,265	2,157	1,727	1,690	1,188
On-the-Job Training - Nuclear sector - None (jobs)		3,373	3,253	3,093	2,473	2,415	1,696
On-the-Job Training - Nuclear sector - Over 10 years (jobs)		523	505	481	386	378	266
On-the-Job Training - Nuclear sector - Up to 1 year (jobs)		34,260	33,042	31,412	25,117	24,533	17,228
On-the-Job Training - Oil sector - 1 to 4 years (jobs)		144,954	130,489	118,668	108,164	100,062	87,426
On-the-Job Training - Oil sector - 4 to 10 years (jobs)		34,246	31,166	28,675	26,483	24,839	22,064
On-the-Job Training - Oil sector - None (jobs)		48,401	42,836	38,296	34,340	31,258	26,919
On-the-Job Training - Oil sector - Over 10 years (jobs)		7,764	6,995	6,369	5,814	5,389	4,722
On-the-Job Training - Oil sector - Up to 1 year (jobs)		560,028	502,962	456,281	414,875	382,737	333,419
On-the-Job Training - Solar PV sector - 1 to 4 years (jobs)		42,913	40,790	54,138	56,781	59,127	107,173
On-the-Job Training - Solar PV sector - 4 to 10 years (jobs)		14,173	13,199	16,932	18,142	19,068	33,968
On-the-Job Training - Solar PV sector - None (jobs)		11,945	11,477	15,374	16,348	17,253	31,593
On-the-Job Training - Solar PV sector - Over 10 years (jobs)		2,491	2,357	3,135	3,200	3,257	5,860
On-the-Job Training - Solar PV sector - Up to 1 year (jobs)		132,215	127,427	172,238	180,278	188,216	345,221
On-the-Job Training - Wind sector - 1 to 4 years (jobs)		19,232	28,614	36,338	48,900	45,831	51,530
On-the-Job Training - Wind sector - 4 to 10 years (jobs)		6,689	8,435	9,900	13,537	14,215	15,833
On-the-Job Training - Wind sector - None (jobs)		5,236	7,830	9,986	13,522	12,819	14,498
On-the-Job Training - Wind sector - Over 10 years (jobs)		976	1,601	2,103	2,772	2,371	2,642
On-the-Job Training - Wind sector - Up to 1 year (jobs)		58,622	93,163	121,640	163,485	148,558	168,190
Related work experience - All sectors - 1 to 4 years (jobs)		861,171	830,675	870,754	886,691	876,022	948,768
Related work experience - All sectors - 4 to 10 years (jobs)		544,572	527,263	554,940	567,124	561,354	608,672
Related work experience - All sectors - None (jobs)		331,642	322,363	341,441	350,311	348,001	380,402
Related work experience - All sectors - Over 10 years (jobs)		148,813	144,302	151,477	153,599	150,486	162,318
Related work experience - All sectors - Up to 1 year (jobs)		456,377	442,106	467,972	478,632	472,248	520,741
Related work experience - Biomass sector - 1 to 4 years (jobs)		24,570	23,497	22,459	21,305	20,969	20,627

Table 95: *REF scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - Biomass sector - 4 to 10 years (jobs)		12,773	12,232	11,633	11,065	10,904	10,683
Related work experience - Biomass sector - None (jobs)		13,981	13,454	12,993	12,440	12,256	12,113
Related work experience - Biomass sector - Over 10 years (jobs)		3,517	3,394	3,249	3,117	3,085	3,032
Related work experience - Biomass sector - Up to 1 year (jobs)		27,594	26,850	26,215	25,390	25,189	25,054
Related work experience - CO2 sector - 1 to 4 years (jobs)		0	0.391	0.497	0.535	0.591	0.629
Related work experience - CO2 sector - 4 to 10 years (jobs)		0	0.248	0.315	0.339	0.375	0.4
Related work experience - CO2 sector - None (jobs)		0	0.136	0.173	0.186	0.205	0.218
Related work experience - CO2 sector - Over 10 years (jobs)		0	0.076	0.097	0.105	0.116	0.123
Related work experience - CO2 sector - Up to 1 year (jobs)		0	0.177	0.225	0.242	0.268	0.285
Related work experience - Coal sector - 1 to 4 years (jobs)		44,669	27,422	19,283	16,215	14,491	12,628
Related work experience - Coal sector - 4 to 10 years (jobs)		25,249	15,610	10,989	9,304	8,436	7,458
Related work experience - Coal sector - None (jobs)		15,674	9,651	6,784	5,718	5,147	4,519
Related work experience - Coal sector - Over 10 years (jobs)		6,389	3,965	2,805	2,382	2,162	1,914
Related work experience - Coal sector - Up to 1 year (jobs)		25,283	15,455	10,897	9,125	8,050	6,923
Related work experience - Grid sector - 1 to 4 years (jobs)		156,396	164,314	202,533	226,749	239,785	264,923
Related work experience - Grid sector - 4 to 10 years (jobs)		102,492	107,602	132,532	148,268	156,675	172,969
Related work experience - Grid sector - None (jobs)		64,240	67,596	83,442	93,553	99,068	109,600
Related work experience - Grid sector - Over 10 years (jobs)		26,566	27,906	34,391	38,496	40,702	44,962
Related work experience - Grid sector - Up to 1 year (jobs)		82,812	87,338	108,067	121,456	128,936	143,007
Related work experience - Natural gas sector - 1 to 4 years (jobs)		210,446	207,459	207,046	201,646	198,838	185,049
Related work experience - Natural gas sector - 4 to 10 years (jobs)		140,009	138,076	138,085	135,005	133,351	124,173
Related work experience - Natural gas sector - None (jobs)		82,567	81,821	82,254	80,821	80,174	74,939
Related work experience - Natural gas sector - Over 10 years (jobs)		38,021	37,332	37,008	35,713	35,028	32,487
Related work experience - Natural gas sector - Up to 1 year (jobs)		99,217	97,937	97,761	95,087	93,846	87,481
Related work experience - Nuclear sector - 1 to 4 years (jobs)		18,746	18,080	17,189	13,745	13,426	9,428
Related work experience - Nuclear sector - 4 to 10 years (jobs)		12,161	11,727	11,147	8,912	8,703	6,111
Related work experience - Nuclear sector - None (jobs)		6,331	6,114	5,821	4,661	4,559	3,206
Related work experience - Nuclear sector - Over 10 years (jobs)		3,744	3,613	3,436	2,749	2,686	1,887
Related work experience - Nuclear sector - Up to 1 year (jobs)		9,242	8,923	8,491	6,796	6,644	4,670
Related work experience - Oil sector - 1 to 4 years (jobs)		303,081	272,244	246,965	224,455	206,940	180,054

Table 95: *REF scenario - IMPACTS - Jobs (continued)*

Item	2020	2025	2030	2035	2040	2045	2050
Related work experience - Oil sector - 4 to 10 years (jobs)		183,894	164,890	149,308	135,444	124,649	108,255
Related work experience - Oil sector - None (jobs)		107,206	96,690	88,143	80,619	74,855	65,744
Related work experience - Oil sector - Over 10 years (jobs)		52,877	47,319	42,767	38,712	35,557	30,796
Related work experience - Oil sector - Up to 1 year (jobs)		148,335	133,305	121,106	110,446	102,284	89,701
Related work experience - Solar PV sector - 1 to 4 years (jobs)		70,756	68,003	91,408	96,299	100,947	184,802
Related work experience - Solar PV sector - 4 to 10 years (jobs)		46,005	44,050	58,972	61,963	64,746	118,093
Related work experience - Solar PV sector - None (jobs)		29,264	28,056	37,586	39,654	41,591	76,034
Related work experience - Solar PV sector - Over 10 years (jobs)		12,117	11,674	15,833	16,370	16,929	31,009
Related work experience - Solar PV sector - Up to 1 year (jobs)		45,596	43,466	58,018	60,462	62,708	113,878
Related work experience - Wind sector - 1 to 4 years (jobs)		32,506	49,656	63,870	86,278	80,625	91,257
Related work experience - Wind sector - 4 to 10 years (jobs)		21,989	33,076	42,274	57,163	53,891	60,930
Related work experience - Wind sector - None (jobs)		12,381	18,980	24,418	32,844	30,350	34,247
Related work experience - Wind sector - Over 10 years (jobs)		5,582	9,099	11,988	16,060	14,336	16,231
Related work experience - Wind sector - Up to 1 year (jobs)		18,297	28,832	37,417	49,870	44,591	50,028
Wage income - Biomass (million $2019)		4,270	4,184	4,096	3,994	4,034	4,069
Wage income - CO2 (million $2019)		0	0.075	0.097	0.107	0.121	0.132
Wage income - Coal (million $2019)		6,924	4,321	3,077	2,630	2,405	2,146
Wage income - Grid (million $2019)		27,049	28,820	36,041	40,954	43,974	49,351
Wage income - Natural Gas (million $2019)		37,783	37,773	38,180	37,614	37,575	35,454
Wage income - Nuclear (million $2019)		3,590	3,546	3,455	2,833	2,838	2,046
Wage income - Oil (million $2019)		52,354	47,625	43,737	40,221	37,516	33,003
Wage income - Solar (million $2019)		11,441	11,111	15,087	16,132	17,164	31,851
Wage income - Wind (million $2019)		5,569	8,423	10,879	14,954	14,451	16,615