

Net-Zero America - texas state report v2

Larson et al. 2020

February 2021

Reading guide

IN DRAFT

List of Tables

1	E- scenario - PILLAR 1: Efficiency/Electrification - Residential	3
2	E- scenario - PILLAR 1: Efficiency/Electrification - Transportation	3
3	E- scenario - PILLAR 6: Land carbon sinks - Agriculture	3
4	E- scenario - PILLAR 6: Land carbon sinks - Forests	3
5	E- scenario - PILLAR 1: Efficiency/Electrification - Overview	4
6	E- scenario - PILLAR 1: Efficiency/Electrification - Commercial	4
7	E- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand	4
8	RE- scenario - PILLAR 1: Efficiency/Electrification - Residential	4
9	RE- scenario - PILLAR 1: Efficiency/Electrification - Transportation	4
10	RE- scenario - PILLAR 2: Clean Electricity - Generating capacity	5
11	RE- scenario - PILLAR 2: Clean Electricity - Generation	5
12	RE- scenario - PILLAR 2: Clean Electricity - Transmission	5
13	RE- scenario - PILLAR 3: Bioenergy and Hydrogen - Bioconversion	5
14	RE- scenario - PILLAR 4: CO2 capture, use, storage - CO2 capture	5
15	RE- scenario - PILLAR 4: CO2 capture, use, storage - CO2 storage	5
16	RE- scenario - PILLAR 4: CO2 capture, use, storage - CO2 transportation	5
17	RE- scenario - IMPACTS - Jobs	6
18	RE- scenario - PILLAR 6: Land carbon sinks - Agriculture	6
19	RE- scenario - PILLAR 6: Land carbon sinks - Forests	6
20	RE- scenario - IMPACTS - Fossil fuel industries	7
21	RE- scenario - PILLAR 1: Efficiency/Electrification - Overview	7
22	RE- scenario - PILLAR 1: Efficiency/Electrification - Commercial	7
23	RE- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand	7

24	REF scenario - PILLAR 1: Efficiency/Electrification - Residential	7
25	REF scenario - PILLAR 1: Efficiency/Electrification - Transportation	7
26	REF scenario - PILLAR 6: Land carbon sinks - Agriculture	8
27	REF scenario - PILLAR 6: Land carbon sinks - Forests	8
28	REF scenario - PILLAR 1: Efficiency/Electrification - Overview	8
29	REF scenario - PILLAR 1: Efficiency/Electrification - Commercial	8
30	REF scenario - PILLAR 1: Efficiency/Electrification - Electricity demand	9
31	E+ scenario - PILLAR 2: Clean Electricity - Generating capacity	9
32	E+ scenario - PILLAR 2: Clean Electricity - Transmission	9
33	E+ scenario - PILLAR 6: Land carbon sinks - Agriculture	9
34	E+ scenario - PILLAR 6: Land carbon sinks - Forests	9
35	RE+ scenario - PILLAR 2: Clean Electricity - Generating capacity	10
36	RE+ scenario - PILLAR 2: Clean Electricity - Generation	10
37	RE+ scenario - PILLAR 3: Bioenergy and Hydrogen - Bioconversion	10
38	RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 capture	10
39	RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 storage	10
40	RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 transportation	10
41	RE+ scenario - PILLAR 6: Land carbon sinks - Agriculture	10
42	RE+ scenario - PILLAR 6: Land carbon sinks - Forests	11
43	B+ scenario - PILLAR 6: Land carbon sinks - Agriculture	11
44	B+ scenario - PILLAR 6: Land carbon sinks - Forests	12

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr	0	21.432	22.103	0	0	0	0
Sale of space heating units by type - Electric Heat Pump	0.118	0.381	0.393	0.413	0.431	0.456	0.493
Sale of space heating units by type - Electric Resistance	0.448	0.375	0.368	0.359	0.346	0.323	0.285
Sale of space heating units by type - Fossil	0.031	0.033	0.034	0.034	0.033	0.033	0.033
Sale of space heating units by type - Gas	0.404	0.211	0.205	0.195	0.19	0.188	0.189
Sales of cooking units - Electric Resistance	0.634	0.634	0.634	0.634	0.634	0.634	0.634
Sales of cooking units - Gas	0.366	0.366	0.366	0.366	0.366	0.366	0.366
Sales of water heating units by type - Electric Heat Pump	0	0	0	0	0	0	0
Sales of water heating units by type - Electric Resistance	0.538	0.651	0.653	0.653	0.652	0.652	0.652
Sales of water heating units by type - Gas Furnace	0.442	0.333	0.331	0.331	0.332	0.332	0.332
Sales of water heating units by type - Other	0.02	0.016	0.016	0.016	0.016	0.016	0.016

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

variable_name	2020	2025	2030	2035	2040	2045	2050
End-use technology sales by technology - HDV - diesel	0.981	0.982	0.979	0.97	0.956	0.935	0.916
End-use technology sales by technology - HDV - EV	0	0	0	0	0	0	0
End-use technology sales by technology - HDV - gasoline	0.002	0.002	0.003	0.003	0.003	0.003	0.003
End-use technology sales by technology - HDV - hybrid	0.001	0.001	0.001	0.001	0.002	0.002	0.002
End-use technology sales by technology - HDV - hydrogen FC	0.001	0.001	0.002	0.002	0.002	0.002	0.003
End-use technology sales by technology - HDV - other	0.015	0.013	0.016	0.024	0.037	0.057	0.076
End-use technology sales by technology - LDV - diesel	0.017	0.021	0.022	0.021	0.019	0.017	0.016
End-use technology sales by technology - LDV - EV	0.032	0.051	0.058	0.071	0.087	0.102	0.113
End-use technology sales by technology - LDV - gasoline	0.909	0.875	0.855	0.838	0.818	0.799	0.782
End-use technology sales by technology - LDV - hybrid	0.04	0.049	0.06	0.066	0.072	0.078	0.084
End-use technology sales by technology - LDV - hydrogen FC	0.001	0.004	0.004	0.003	0.003	0.003	0.003
End-use technology sales by technology - LDV - other	0.001	0.001	0.001	0.001	0.001	0.001	0.001
End-use technology sales by technology - MDV - diesel	0.652	0.635	0.616	0.596	0.58	0.565	0.552
End-use technology sales by technology - MDV - EV	0	0.001	0.003	0.007	0.009	0.01	0.01
End-use technology sales by technology - MDV - gasoline	0.34	0.355	0.37	0.385	0.397	0.408	0.417
End-use technology sales by technology - MDV - hybrid	0.004	0.004	0.005	0.006	0.007	0.008	0.009
End-use technology sales by technology - MDV - hydrogen FC	0.002	0.002	0.002	0.003	0.003	0.004	0.005
End-use technology sales by technology - MDV - other	0.003	0.003	0.003	0.003	0.004	0.005	0.007

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

variable_name	2020	2030	2050
Carbon sink enhancement potential - Accelerate regeneration	0	0	15634
Carbon sink enhancement potential - All (not counting overlap)	0	0	245705.7
Carbon sink enhancement potential - Avoid deforestation	0	0	10635.5
Carbon sink enhancement potential - Extend rotation length	0	0	25443.6
Carbon sink enhancement potential - Improve plantations	0	0	4577.8
Carbon sink enhancement potential - Increase retention of HWP	0	0	21879.4
Carbon sink enhancement potential - Increase trees outside forests	0	0	6837.9
Carbon sink enhancement potential - Reforest cropland	0	0	67558.9
Carbon sink enhancement potential - Reforest pasture	0	0	60767.1
Carbon sink enhancement potential - Restore productivity	0	0	32371.3
Land impacted for carbon sink enhancement - Accelerate regeneration	0	0	6301.061
Land impacted for carbon sink enhancement - All (not counting overlap)	0	0	47344.7
Land impacted for carbon sink enhancement - Avoid deforestation	0	0	2854.926
Land impacted for carbon sink enhancement - Extend rotation length	0	0	14016.3
Land impacted for carbon sink enhancement - Improve plantations	0	0	2544.213
Land impacted for carbon sink enhancement - Increase retention of HWP	0	0	4375.9
Land impacted for carbon sink enhancement - Increase trees outside forests	0	0	1928.886
Land impacted for carbon sink enhancement - Natural uptake	-14.21	-31.522	-25.546
Land impacted for carbon sink enhancement - Reforest cropland	0	0	22493.1
Land impacted for carbon sink enhancement - Reforest pasture	0	0	4594.975
Land impacted for carbon sink enhancement - Restore productivity	0	0	18267.5
Land impacted for carbon sink enhancement - Retained in Hardwood Products	-3.572	-5.957	-6.271
Land impacted for carbon sink enhancement - Total	-17.782	-37.479	-31.817
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	0	0	30032.3

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

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	1461.1
Business-as-usual carbon sink - Avoid deforestation	909.455
Business-as-usual carbon sink - Extend rotation length	7667.9
Business-as-usual carbon sink - Improve plantations	966.17

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

variable_name	2050
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	387.822
Business-as-usual carbon sink - Reforest cropland	2552.4
Business-as-usual carbon sink - Reforest pasture	1122.5
Business-as-usual carbon sink - Restore productivity	6430.7
Business-as-usual carbon sink - Total impacted (over 30 years)	2552.4

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Final energy demand by sector - commercial	0.699	0.714	0.723	0.73	0.744	0.773	0.82
Final energy demand by sector - industry	3.891	4.4	4.708	4.872	5.055	5.192	5.374
Final energy demand by sector - residential	0.833	0.811	0.817	0.837	0.865	0.9	0.933
Final energy demand by sector - transportation	2.703	2.633	2.461	2.363	2.377	2.448	2.536

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr	0	90575064777	95067223520	0	0	0	0
Sales of cooking units - Electric Resistance	0.301	0.323	0.322	0.323	0.323	0.322	0.323
Sales of cooking units - Gas	0.699	0.677	0.677	0.677	0.677	0.678	0.677
Sales of space heating units - Electric Heat Pump	0.064	0.29	0.705	0.79	0.795	0.795	0.795
Sales of space heating units - Electric Resistance	0.052	0.064	0.121	0.159	0.187	0.191	0.191
Sales of space heating units - Fossil	0	0	0	0	0	0	0
Sales of space heating units - Gas Furnace	0.884	0.647	0.174	0.051	0.018	0.014	0.013
Sales of water heating units - Electric Heat Pump	0.002	0.001	0.001	0.001	0.001	0.001	0.001
Sales of water heating units - Electric Resistance	0.043	0.038	0.037	0.037	0.038	0.037	0.037
Sales of water heating units - Gas Furnace	0.934	0.943	0.943	0.943	0.943	0.943	0.943
Sales of water heating units - Other	0.021	0.018	0.018	0.018	0.018	0.018	0.018

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

variable_name	2025	2030	2035	2040	2045	2050
Electricity distribution peak load (capital invested) - Cumulative 5-yr	24.349	25.464	38.453	40.982	32.824	34.08

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr	0	22.219	28.664	0	0	0	0
Sale of space heating units by type - Electric Heat Pump	0.143	0.291	0.746	0.847	0.852	0.85	0.85
Sale of space heating units by type - Electric Resistance	0.434	0.426	0.179	0.123	0.121	0.124	0.124
Sale of space heating units by type - Fossil	0.031	0.047	0.024	0.019	0.018	0.018	0.018
Sale of space heating units by type - Gas	0.393	0.237	0.052	0.01	0.008	0.008	0.008
Sales of cooking units - Electric Resistance	0.638	0.715	0.951	0.998	1	1	1
Sales of cooking units - Gas	0.362	0.285	0.049	0.002	0	0	0
Sales of water heating units by type - Electric Heat Pump	0	0.119	0.631	0.746	0.751	0.751	0.751
Sales of water heating units by type - Electric Resistance	0.538	0.585	0.301	0.236	0.233	0.234	0.234
Sales of water heating units by type - Gas Furnace	0.442	0.28	0.052	0.002	0	0	0
Sales of water heating units by type - Other	0.02	0.016	0.016	0.016	0.016	0.016	0.016

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

variable_name	2020	2025	2030	2035	2040	2045	2050
End-use technology sales by technology - HDV - diesel	0.972	0.921	0.67	0.233	0.042	0.006	0
End-use technology sales by technology - HDV - EV	0.006	0.038	0.19	0.456	0.574	0.596	0.6
End-use technology sales by technology - HDV - gasoline	0.002	0.002	0.002	0.001	0	0	0
End-use technology sales by technology - HDV - hybrid	0.001	0.001	0.001	0	0	0	0
End-use technology sales by technology - HDV - hydrogen FC	0.004	0.025	0.127	0.304	0.382	0.397	0.4
End-use technology sales by technology - HDV - other	0.015	0.012	0.011	0.006	0.002	0	0
End-use technology sales by technology - LDV - diesel	0.017	0.019	0.013	0.004	0.001	0	0
End-use technology sales by technology - LDV - EV	0.035	0.139	0.446	0.81	0.962	0.993	1
End-use technology sales by technology - LDV - gasoline	0.906	0.794	0.508	0.173	0.034	0.006	0
End-use technology sales by technology - LDV - hybrid	0.04	0.043	0.031	0.012	0.003	0.001	0
End-use technology sales by technology - LDV - hydrogen FC	0.001	0.003	0.002	0.001	0	0	0
End-use technology sales by technology - LDV - other	0.001	0.001	0.001	0	0	0	0
End-use technology sales by technology - MDV - diesel	0.647	0.597	0.423	0.144	0.026	0.004	0
End-use technology sales by technology - MDV - EV	0.008	0.051	0.253	0.608	0.765	0.795	0.8
End-use technology sales by technology - MDV - gasoline	0.337	0.333	0.255	0.093	0.018	0.003	0
End-use technology sales by technology - MDV - hybrid	0.004	0.004	0.003	0.001	0	0	0
End-use technology sales by technology - MDV - hydrogen FC	0.002	0.013	0.063	0.152	0.191	0.199	0.2
End-use technology sales by technology - MDV - other	0.003	0.003	0.002	0.001	0	0	0
Light-duty vehicle capital costs - Cumulative 5-yr	0	4242223728	10921182614	17619712401	26721274642	29048971156	27714746367
Number of public EV charging plugs - DC Fast Charging	675	0	7025.9	0	30297	0	48893
Number of public EV charging plugs - L2 Charging	3142	0	168933.3	0	728469.6	0	1175599

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Power generation capital investment - biomass power plant	0	0.002	0.136	0	0.009	0	0
Power generation capital investment - biomass w/ccu allam power plant	0	0	0	0.027	0.002	0.015	0.031
Power generation capital investment - biomass w/ccu power plant	0	0	6.406	0	0	0.016	0.258
Power generation capital investment - Offshore Wind - Base	0	0.216	0.126	0.189	0	0.05	10.872
Power generation capital investment - Solar PV - Base	0	22.87	24.128	28.371	28.59	26.942	31.825
Power generation capital investment - Solar PV - Constrained	0	51.093	28.555	29.561	27.33	30.07	37.546
Power generation capital investment - Wind - Base	0	16.792	30.214	28.496	42.11	28.224	20.291
Power generation capital investment - Wind - Constrained	0	28.977	40.523	35.526	43.987	29.733	19.089

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Power generation by technology - biomass power plant	0	4.221	270.763	270.763	289.676	289.676	289.676
Power generation by technology - biomass w/ccu allam power plant	0	0	0	26.787	28.504	43.728	74.804
Power generation by technology - biomass w/ccu power plant	0	0	7189.3	7189.3	7189.3	7207	7496.3

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

variable_name	2020	2025	2030	2035	2040	2045	2050
HV transmission for wind and solar - base all	0	18644.1	34192.1	53772	82899.3	107797.6	150323.8
HV transmission for wind and solar - base other intra-state	0	8643.7	17236	27395.4	40843.7	51980.4	77614.8
HV transmission for wind and solar - base spur intra-state	0	8361.5	15155.5	23895.8	36511.7	46023	59498.2
HV transmission for wind and solar - constrained all	0	22941	43136.2	65529.8	90376.5	111130.1	147356.7
HV transmission for wind and solar - constrained other intra-state	0	8841.7	16948.6	26611.3	36375.2	42142.8	60587.1
HV transmission for wind and solar - constrained spur intra-state	0	9314.6	17851.6	26681.4	37150.2	46757.6	61224.5

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Biomass purchases	0	0.001	0.28	0.623	0.939	1.314	1.338
Capital investment	0	0	5.682	0	12.074	0	7.383
Number of facilities - allam power w ccu	0	0	0	1	3	5	5
Number of facilities - beccs hydrogen	0	0	0	6	13	25	25
Number of facilities - diesel	0	0	0	1	1	1	1
Number of facilities - diesel ccu	0	0	0	1	3	5	5
Number of facilities - power	0	1	1	1	1	1	1
Number of facilities - power ccu	0	0	5	6	6	7	8
Number of facilities - pyrolysis	0	0	0	1	1	1	1
Number of facilities - pyrolysis ccu	0	0	0	1	3	5	5
Number of facilities - sng	0	1	1	1	1	1	1
Number of facilities - sng ccu	0	0	1	1	1	2	2

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

variable_name	2025	2030	2035	2040	2045	2050
Annual - All	0	10.58	27.51	42.63	56.2	64.64
Annual - BECCS	0	7.12	15.63	23.24	32.6	33.2
Annual - Cement	0	3.24	3.35	6.64	6.84	14.14
Annual - NGCC	0	0.22	8.53	12.75	16.76	17.3
Cumulative - All	0	10.58	38.09	80.72	136.92	201.56
Cumulative - BECCS	0	7.12	22.75	45.99	78.59	111.79
Cumulative - Cement	0	3.24	6.59	13.23	20.07	34.21
Cumulative - NGCC	0	0.22	8.75	21.5	38.26	55.56

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

variable_name	2025	2030	2035	2040	2045	2050
Annual	0	28.53	93.36	168.93	270.26	363.44
Injection wells	0	24	97	174	290	362
Resource characterization, appraisal and permitting costs cumulative	156.68	2677	4202.3	4202.3	4202.3	4202.3
Wells and facilities construction costs cumulative	0	751.16	2927.5	5216.9	8723.2	10830

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

variable_name	2025	2030	2035	2040	2045	2050
CO2 pipelines - All	3706707.577	9872418.2	10935043.9	12055160.2	13219767.6	13777397.9
CO2 pipelines - Spur	0	430562.821	1493189	2613305.3	3777911.7	4335543
CO2 pipelines - Trunk	3706707.577	9441854.9	9441854.9	9441854.9	9441854.9	9441854.9

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Jobs by economic sector - agriculture	786.285	804.786	1170.3	2053.4	2137.3	2071.8	1700.8
Jobs by economic sector - construction	80468.7	107942.5	117927.8	130598.1	138595.3	135803.6	145956.7
Jobs by economic sector - manufacturing	110205.2	163271.6	180478.9	212582.1	194246.7	156862.9	174857
Jobs by economic sector - mining	207601.3	181192.3	144016.6	111631.5	73298.9	47779	26497.8
Jobs by economic sector - other	4011.9	7621.6	9713.2	12617.5	15740.4	17518.8	22655.3
Jobs by economic sector - pipeline	11155.8	12107	11629.2	10239.3	8241.8	6545.3	4758.8
Jobs by economic sector - professional	64583.8	75787.8	78332.7	84285.3	86860	85367.7	89185.9
Jobs by economic sector - trade	81349.3	83703.5	79606.5	77533.9	70472.3	64162.4	62495.2
Jobs by economic sector - utilities	56834.9	72051.4	75759.8	87133.2	100671.4	101760.8	114476.5
Jobs by resource sector - Biomass	2106.8	2155.8	2906.3	5447.5	6198.6	7587.3	7372.1
Jobs by resource sector - CO2	0	3800.4	7363.4	3774.8	4355.1	6080.9	7012.6
Jobs by resource sector - Coal	9406.3	3730.6	443.06	64.522	54.297	47.495	41.4
Jobs by resource sector - Grid	58786.4	82875.6	100180.2	136223.7	165283	173845.9	206971.8
Jobs by resource sector - Natural Gas	171361.7	164883.3	131138.4	100627.1	78324	52575.9	31905.7
Jobs by resource sector - Nuclear	2636.1	2593.6	1999.8	700.061	0.008	0.018	0.032
Jobs by resource sector - Oil	318033.8	307880.7	278453.5	250309.3	183956.3	139185.2	88861.1
Jobs by resource sector - Solar	24907.3	66025	81149.4	110182.3	122305.7	119491.8	162552.4
Jobs by resource sector - Wind	29758.9	70537.4	95001.3	121345.1	129787	119057.8	137866.9
Median wages - All	64389.1	63651.7	63502.3	63086.5	62901.3	63275.8	62820.1
Required Level of Education - Associates degree or some college	174883.5	204885.3	205870.2	218043.8	210831.2	190858.3	202337.5
Required Level of Education - Bachelors degree	155528.7	169699.4	163481.1	165003.9	151219.5	132957.1	133927.9
Required Level of Education - Doctoral degree	5295.5	5661.2	5416.8	5379.1	5016.9	4571.3	4533.7
Required Level of Education - High school diploma or less	244338.6	284453.8	285798.5	302111.6	287886.5	257915	269990.7
Required Level of Education - Masters or professional degree	36951.1	39782.5	38068.6	38135.8	35310	31570.8	31794.2
Wage income - All	39729068832	44843286992	44367080817	45972099008	43421519942	39099674410	40371241385

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

variable_name	2050
Carbon sink enhancement potential - Accelerate regeneration	15634
Carbon sink enhancement potential - All (not counting overlap)	245705.7
Carbon sink enhancement potential - Avoid deforestation	10635.5
Carbon sink enhancement potential - corn-ethanol to energy grasses	-644.876
Carbon sink enhancement potential - cropland measures	-20687.696
Carbon sink enhancement potential - Extend rotation length	25443.6
Carbon sink enhancement potential - Improve plantations	4577.8
Carbon sink enhancement potential - Increase retention of HWP	21879.4
Carbon sink enhancement potential - Increase trees outside forests	6837.9
Carbon sink enhancement potential - permanent conservation cover	-922.483
Carbon sink enhancement potential - Reforest cropland	67558.9
Carbon sink enhancement potential - Reforest pasture	60767.1
Carbon sink enhancement potential - Restore productivity	32371.3
Carbon sink enhancement potential - total	-22255.054
Land impacted for carbon sink enhancement - Accelerate regeneration	6301.061
Land impacted for carbon sink enhancement - All (not counting overlap)	47344.7
Land impacted for carbon sink enhancement - Avoid deforestation	2854.926
Land impacted for carbon sink enhancement - corn-ethanol to energy grasses	415.854
Land impacted for carbon sink enhancement - cropland measures	16275.6
Land impacted for carbon sink enhancement - Extend rotation length	14016.3
Land impacted for carbon sink enhancement - Improve plantations	2544.213
Land impacted for carbon sink enhancement - Increase retention of HWP	4375.9
Land impacted for carbon sink enhancement - Increase trees outside forests	1928.886
Land impacted for carbon sink enhancement - permanent conservation cover	1498.152
Land impacted for carbon sink enhancement - Reforest cropland	22493.1
Land impacted for carbon sink enhancement - Reforest pasture	4594.975
Land impacted for carbon sink enhancement - Restore productivity	18267.5
Land impacted for carbon sink enhancement - total	18189.6
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	30032.3

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

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	1461.1
Business-as-usual carbon sink - Avoid deforestation	909.455
Business-as-usual carbon sink - Extend rotation length	7667.9
Business-as-usual carbon sink - Improve plantations	966.17
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	387.822
Business-as-usual carbon sink - Reforest cropland	2552.4

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

variable_name	2050
Business-as-usual carbon sink - Reforest pasture	1122.5
Business-as-usual carbon sink - Restore productivity	6430.7
Business-as-usual carbon sink - Total impacted (over 30 years)	2552.4

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Natural gas consumption	3380722	3430930	2892080	2319568	1746136	1098610	761967.2
Oil consumption	969180.4	953000.4	866396.1	728791.8	596687.8	492091.2	401331

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Final energy demand by sector - commercial	0.7	0.703	0.68	0.646	0.618	0.611	0.621
Final energy demand by sector - industry	3.891	4.374	4.672	4.814	4.969	5.063	5.241
Final energy demand by sector - residential	0.833	0.805	0.759	0.696	0.642	0.616	0.611
Final energy demand by sector - transportation	2.702	2.603	2.334	2.008	1.714	1.533	1.453

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr	0	92591338550	107907046121	0	0	0	0
Sales of cooking units - Electric Resistance	0.301	0.444	0.792	0.861	0.865	0.865	0.865
Sales of cooking units - Gas	0.699	0.556	0.208	0.139	0.135	0.136	0.135
Sales of space heating units - Electric Heat Pump	0.064	0.263	0.769	0.911	0.922	0.922	0.922
Sales of space heating units - Electric Resistance	0.052	0.045	0.048	0.061	0.064	0.064	0.064
Sales of space heating units - Fossil	0	0	0	0	0	0	0
Sales of space heating units - Gas Furnace	0.884	0.692	0.183	0.028	0.014	0.013	0.013
Sales of water heating units - Electric Heat Pump	0.002	0.107	0.563	0.665	0.669	0.669	0.669
Sales of water heating units - Electric Resistance	0.043	0.081	0.269	0.311	0.313	0.313	0.313
Sales of water heating units - Gas Furnace	0.934	0.793	0.15	0.006	0	0	0
Sales of water heating units - Other	0.021	0.018	0.018	0.018	0.018	0.018	0.018

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

variable_name	2025	2030	2035	2040	2045	2050
Electricity distribution peak load (capital invested) - Cumulative 5-yr	22.701	23.618	38.452	41.026	31.279	32.387

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr	0	21.938	27.07	0	0	0	0
Sale of space heating units by type - Electric Heat Pump	0.143	0.203	0.255	0.405	0.633	0.781	0.833
Sale of space heating units by type - Electric Resistance	0.434	0.474	0.443	0.361	0.238	0.16	0.132
Sale of space heating units by type - Fossil	0.031	0.051	0.049	0.041	0.029	0.022	0.019
Sale of space heating units by type - Gas	0.393	0.272	0.252	0.193	0.099	0.037	0.016
Sales of cooking units - Electric Resistance	0.637	0.646	0.68	0.767	0.889	0.964	0.99
Sales of cooking units - Gas	0.363	0.354	0.32	0.233	0.111	0.036	0.01
Sales of water heating units by type - Electric Heat Pump	0	0.02	0.079	0.246	0.504	0.672	0.73
Sales of water heating units by type - Electric Resistance	0.538	0.639	0.609	0.516	0.372	0.278	0.245
Sales of water heating units by type - Gas Furnace	0.442	0.324	0.296	0.222	0.109	0.034	0.009
Sales of water heating units by type - Other	0.02	0.016	0.016	0.016	0.016	0.016	0.016

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

variable_name	2020	2025	2030	2035	2040	2045	2050
End-use technology sales by technology - HDV - diesel	0.974	0.96	0.913	0.798	0.582	0.321	0.137
End-use technology sales by technology - HDV - EV	0.005	0.015	0.041	0.108	0.236	0.394	0.51
End-use technology sales by technology - HDV - gasoline	0.002	0.002	0.002	0.002	0.002	0.001	0.001
End-use technology sales by technology - HDV - hybrid	0.001	0.001	0.001	0.001	0.001	0.001	0
End-use technology sales by technology - HDV - hydrogen FC	0.003	0.01	0.027	0.072	0.157	0.263	0.34
End-use technology sales by technology - HDV - other	0.015	0.013	0.015	0.019	0.022	0.02	0.011
End-use technology sales by technology - LDV - diesel	0.017	0.021	0.021	0.017	0.011	0.006	0.002
End-use technology sales by technology - LDV - EV	0.017	0.044	0.112	0.248	0.472	0.713	0.873
End-use technology sales by technology - LDV - gasoline	0.922	0.881	0.806	0.68	0.475	0.257	0.113
End-use technology sales by technology - LDV - hybrid	0.042	0.05	0.056	0.052	0.04	0.024	0.012
End-use technology sales by technology - LDV - hydrogen FC	0.001	0.004	0.003	0.003	0.002	0.001	0
End-use technology sales by technology - LDV - other	0.001	0.001	0.001	0.001	0.001	0	0
End-use technology sales by technology - MDV - diesel	0.648	0.622	0.577	0.494	0.356	0.196	0.084
End-use technology sales by technology - MDV - EV	0.007	0.019	0.055	0.143	0.314	0.526	0.68
End-use technology sales by technology - MDV - gasoline	0.338	0.347	0.347	0.319	0.244	0.142	0.063
End-use technology sales by technology - MDV - hybrid	0.004	0.004	0.005	0.005	0.004	0.003	0.001
End-use technology sales by technology - MDV - hydrogen FC	0.002	0.005	0.014	0.036	0.079	0.132	0.17
End-use technology sales by technology - MDV - other	0.003	0.003	0.003	0.003	0.003	0.002	0.001
Light-duty vehicle capital costs - Cumulative 5-yr	0	0	694614352	1441000031	4884112765	15313124358	22328964313
Number of public EV charging plugs - DC Fast Charging	675	0	2244.9	0	11292.4	0	31316
Number of public EV charging plugs - L2 Charging	3142	0	53978	0	271517.6	0	752970.4

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

variable_name	2050
Carbon sink enhancement potential - Accelerate regeneration	15634
Carbon sink enhancement potential - All (not counting overlap)	245705.7
Carbon sink enhancement potential - Avoid deforestation	10635.5
Carbon sink enhancement potential - corn-ethanol to energy grasses	-644.876
Carbon sink enhancement potential - cropland measures	-20687.696
Carbon sink enhancement potential - Extend rotation length	25443.6
Carbon sink enhancement potential - Improve plantations	4577.8
Carbon sink enhancement potential - Increase retention of HWP	21879.4
Carbon sink enhancement potential - Increase trees outside forests	6837.9
Carbon sink enhancement potential - permanent conservation cover	-922.483
Carbon sink enhancement potential - Reforest cropland	67558.9
Carbon sink enhancement potential - Reforest pasture	60767.1
Carbon sink enhancement potential - Restore productivity	32371.3
Carbon sink enhancement potential - total	-22255.054
Land impacted for carbon sink enhancement - Accelerate regeneration	6301.061
Land impacted for carbon sink enhancement - All (not counting overlap)	47344.7
Land impacted for carbon sink enhancement - Avoid deforestation	2854.926
Land impacted for carbon sink enhancement - corn-ethanol to energy grasses	415.854
Land impacted for carbon sink enhancement - cropland measures	16275.6
Land impacted for carbon sink enhancement - Extend rotation length	14016.3
Land impacted for carbon sink enhancement - Improve plantations	2544.213
Land impacted for carbon sink enhancement - Increase retention of HWP	4375.9
Land impacted for carbon sink enhancement - Increase trees outside forests	1928.886
Land impacted for carbon sink enhancement - permanent conservation cover	1498.152
Land impacted for carbon sink enhancement - Reforest cropland	22493.1
Land impacted for carbon sink enhancement - Reforest pasture	4594.975
Land impacted for carbon sink enhancement - Restore productivity	18267.5
Land impacted for carbon sink enhancement - total	18189.6
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	30032.3

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

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	1461.1
Business-as-usual carbon sink - Avoid deforestation	909.455
Business-as-usual carbon sink - Extend rotation length	7667.9
Business-as-usual carbon sink - Improve plantations	966.17
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	387.822
Business-as-usual carbon sink - Reforest cropland	2552.4
Business-as-usual carbon sink - Reforest pasture	1122.5
Business-as-usual carbon sink - Restore productivity	6430.7
Business-as-usual carbon sink - Total impacted (over 30 years)	2552.4

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Final energy demand by sector - commercial	0.7	0.704	0.7	0.693	0.678	0.663	0.655
Final energy demand by sector - industry	3.891	4.375	4.678	4.836	5.002	5.094	5.266
Final energy demand by sector - residential	0.833	0.808	0.795	0.778	0.738	0.694	0.66
Final energy demand by sector - transportation	2.704	2.621	2.42	2.258	2.136	1.994	1.823

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr	0	92534812741	107526355452	0	0	0	0
Sales of cooking units - Electric Resistance	0.301	0.342	0.39	0.52	0.701	0.811	0.85
Sales of cooking units - Gas	0.699	0.658	0.61	0.48	0.299	0.188	0.15
Sales of space heating units - Electric Heat Pump	0.064	0.167	0.226	0.392	0.652	0.831	0.898
Sales of space heating units - Electric Resistance	0.052	0.045	0.045	0.047	0.051	0.058	0.062
Sales of space heating units - Fossil	0	0	0	0	0	0	0
Sales of space heating units - Gas Furnace	0.884	0.788	0.729	0.561	0.297	0.111	0.04
Sales of water heating units - Electric Heat Pump	0.002	0.02	0.071	0.221	0.449	0.599	0.651
Sales of water heating units - Electric Resistance	0.043	0.045	0.066	0.128	0.222	0.284	0.305
Sales of water heating units - Gas Furnace	0.934	0.917	0.844	0.633	0.31	0.099	0.026
Sales of water heating units - Other	0.021	0.018	0.018	0.018	0.018	0.018	0.018

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

variable_name	2025	2030	2035	2040	2045	2050
Electricity distribution peak load (capital invested) - Cumulative 5-yr	19.141	19.636	24.103	25.07	33.882	35.783

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

variable_name	2025	2030	2035	2040	2045	2050
Power generation capital investment - Offshore Wind - Base	0.216	0.126	0.189	0.189	0.118	17.732
Power generation capital investment - Solar PV - Base	30.578	23.852	42.587	49.084	80.133	76.116
Power generation capital investment - Wind - Base	25.225	32.674	52.558	81.195	76.784	87.783

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

variable_name	2020	2025	2030	2035	2040	2045	2050
HV transmission for wind and solar - base all	0	21039.2	37503.2	73426.7	122751.6	191888.6	300797.9
HV transmission for wind and solar - base other intra-state	0	8958.9	17319.7	34571.2	52414	79679.8	130488.3
HV transmission for wind and solar - base spur intra-state	0	10130.4	18045.7	34515.2	58499.9	84894	125290.3

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

variable_name	2050
Carbon sink enhancement potential - Accelerate regeneration	15634
Carbon sink enhancement potential - All (not counting overlap)	245705.7
Carbon sink enhancement potential - Avoid deforestation	10635.5
Carbon sink enhancement potential - corn-ethanol to energy grasses	-644.876
Carbon sink enhancement potential - cropland measures	-20687.696
Carbon sink enhancement potential - Extend rotation length	25443.6
Carbon sink enhancement potential - Improve plantations	4577.8
Carbon sink enhancement potential - Increase retention of HWP	21879.4
Carbon sink enhancement potential - Increase trees outside forests	6837.9
Carbon sink enhancement potential - permanent conservation cover	-922.483
Carbon sink enhancement potential - Reforest cropland	67558.9
Carbon sink enhancement potential - Reforest pasture	60767.1
Carbon sink enhancement potential - Restore productivity	32371.3
Carbon sink enhancement potential - total	-22255.054
Land impacted for carbon sink enhancement - Accelerate regeneration	6301.061
Land impacted for carbon sink enhancement - All (not counting overlap)	47344.7
Land impacted for carbon sink enhancement - Avoid deforestation	2854.926
Land impacted for carbon sink enhancement - corn-ethanol to energy grasses	415.854
Land impacted for carbon sink enhancement - cropland measures	16275.6
Land impacted for carbon sink enhancement - Extend rotation length	14016.3
Land impacted for carbon sink enhancement - Improve plantations	2544.213
Land impacted for carbon sink enhancement - Increase retention of HWP	4375.9
Land impacted for carbon sink enhancement - Increase trees outside forests	1928.886
Land impacted for carbon sink enhancement - permanent conservation cover	1498.152
Land impacted for carbon sink enhancement - Reforest cropland	22493.1
Land impacted for carbon sink enhancement - Reforest pasture	4594.975
Land impacted for carbon sink enhancement - Restore productivity	18267.5
Land impacted for carbon sink enhancement - total	18189.6
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	30032.3

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

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	1461.1
Business-as-usual carbon sink - Avoid deforestation	909.455
Business-as-usual carbon sink - Extend rotation length	7667.9
Business-as-usual carbon sink - Improve plantations	966.17
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	387.822
Business-as-usual carbon sink - Reforest cropland	2552.4
Business-as-usual carbon sink - Reforest pasture	1122.5
Business-as-usual carbon sink - Restore productivity	6430.7
Business-as-usual carbon sink - Total impacted (over 30 years)	2552.4

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Power generation capital investment - biomass power plant	0	0.003	0.009	0	0.014	0	0
Power generation capital investment - biomass w/ccu allam power plant	0	0	0	0.038	0.015	0.013	0.05
Power generation capital investment - biomass w/ccu power plant	0	0	15.062	11.594	27.209	1.004	9.413

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Power generation by technology - biomass power plant	0	5.003	22.542	22.542	51.798	51.798	51.798
Power generation by technology - biomass w/ccu allam power plant	0	0	0	38.191	53.356	66.777	116.388
Power generation by technology - biomass w/ccu power plant	0	0	16905	29917.6	60455.9	61582.3	72147.1

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

variable_name	2020	2025	2030	2035	2040	2045	2050
Biomass purchases	0	0.003	1.022	5.035	7.305	8.564	9.564
Capital investment	0	0	13.031	0	74.644	0	26.543
Number of facilities - allam power w ccu	0	0	0	1	3	4	5
Number of facilities - beccs hydrogen	0	0	0	44	50	65	70
Number of facilities - diesel	0	0	0	1	2	2	2
Number of facilities - diesel ccu	0	0	0	1	3	4	4
Number of facilities - power	0	1	1	1	2	2	2
Number of facilities - power ccu	0	0	14	24	48	49	58
Number of facilities - pyrolysis	0	0	0	1	2	2	2
Number of facilities - pyrolysis ccu	0	0	0	0	1	2	3
Number of facilities - sng	0	1	1	1	1	1	1
Number of facilities - sng ccu	0	0	1	1	1	1	1

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

variable_name	2025	2030	2035	2040	2045	2050
Annual - All	0	19.99	82.31	122.51	144.77	171.15
Annual - BECCS	0	16.74	78.81	115.76	135	150.77
Annual - Cement	0	3.24	3.35	6.64	6.84	14.14
Annual - NGCC	0	0.01	0.15	0.12	2.93	6.25
Cumulative - All	0	19.99	102.3	224.81	369.58	540.73
Cumulative - BECCS	0	16.74	95.55	211.31	346.31	497.08
Cumulative - Cement	0	3.24	6.59	13.23	20.07	34.21
Cumulative - NGCC	0	0.01	0.16	0.28	3.21	9.46

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

variable_name	2025	2030	2035	2040	2045	2050
Annual	0	39.71	178.73	356.45	492.4	519.15
Injection wells	0	38	148	264	442	549
Resource characterization, appraisal and permitting costs cumulative	156.68	4112.1	6533.7	6533.7	6533.7	6533.7
Wells and facilities construction costs cumulative	0	1143.5	4456.4	7941.6	13279.1	16486.3

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

variable_name	2025	2030	2035	2040	2045	2050
CO2 pipelines - All	3706707.577	10473444.1	16426512.4	20551209.1	22354809.9	24029799.1
CO2 pipelines - Spur	0	774192.097	3347771.3	5349308.9	7152910.7	8827899.9
CO2 pipelines - Trunk	3706707.577	9699251.9	13078741.1	15201899.2	15201899.2	15201899.2

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

variable_name	2050
Carbon sink enhancement potential - Accelerate regeneration	15634
Carbon sink enhancement potential - All (not counting overlap)	245705.7
Carbon sink enhancement potential - Avoid deforestation	10635.5
Carbon sink enhancement potential - corn-ethanol to energy grasses	-3944.844
Carbon sink enhancement potential - cropland measures	-19088.878
Carbon sink enhancement potential - Cropland to woody energy crops	0
Carbon sink enhancement potential - Extend rotation length	25443.6
Carbon sink enhancement potential - Improve plantations	4577.8
Carbon sink enhancement potential - Increase retention of HWP	21879.4
Carbon sink enhancement potential - Increase trees outside forests	6837.9
Carbon sink enhancement potential - pasture to energy crops	0
Carbon sink enhancement potential - permanent conservation cover	-814.387
Carbon sink enhancement potential - Reforest cropland	67558.9
Carbon sink enhancement potential - Reforest pasture	60767.1
Carbon sink enhancement potential - Restore productivity	32371.3

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

variable_name	2050
Carbon sink enhancement potential - total	-23848.11
Land impacted for carbon sink enhancement - Accelerate regeneration	6301.061
Land impacted for carbon sink enhancement - All (not counting overlap)	47344.7
Land impacted for carbon sink enhancement - Avoid deforestation	2854.926
Land impacted for carbon sink enhancement - corn-ethanol to energy grasses	2530.8
Land impacted for carbon sink enhancement - cropland measures	28890.2
Land impacted for carbon sink enhancement - Cropland to woody energy crops	405.1
Land impacted for carbon sink enhancement - Extend rotation length	14016.3
Land impacted for carbon sink enhancement - Improve plantations	2544.213
Land impacted for carbon sink enhancement - Increase retention of HWP	4375.9
Land impacted for carbon sink enhancement - Increase trees outside forests	1928.886
Land impacted for carbon sink enhancement - pasture to energy crops	10949.4
Land impacted for carbon sink enhancement - permanent conservation cover	1326.775
Land impacted for carbon sink enhancement - Reforest cropland	22493.1
Land impacted for carbon sink enhancement - Reforest pasture	4594.975
Land impacted for carbon sink enhancement - Restore productivity	18267.5
Land impacted for carbon sink enhancement - total	44102.3
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	30032.3

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

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	1461.1
Business-as-usual carbon sink - Avoid deforestation	909.455
Business-as-usual carbon sink - Extend rotation length	7667.9
Business-as-usual carbon sink - Improve plantations	966.17
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	387.822
Business-as-usual carbon sink - Reforest cropland	2552.4
Business-as-usual carbon sink - Reforest pasture	1122.5
Business-as-usual carbon sink - Restore productivity	6430.7
Business-as-usual carbon sink - Total impacted (over 30 years)	2552.4

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

variable_name	2050
Carbon sink enhancement potential - Accelerate regeneration	15634
Carbon sink enhancement potential - All (not counting overlap)	245705.7
Carbon sink enhancement potential - Avoid deforestation	10635.5
Carbon sink enhancement potential - corn-ethanol to energy grasses	-644.876
Carbon sink enhancement potential - cropland measures	-20687.696
Carbon sink enhancement potential - Extend rotation length	25443.6
Carbon sink enhancement potential - Improve plantations	4577.8
Carbon sink enhancement potential - Increase retention of HWP	21879.4
Carbon sink enhancement potential - Increase trees outside forests	6837.9
Carbon sink enhancement potential - permanent conservation cover	-922.483
Carbon sink enhancement potential - Reforest cropland	67558.9
Carbon sink enhancement potential - Reforest pasture	60767.1
Carbon sink enhancement potential - Restore productivity	32371.3
Carbon sink enhancement potential - total	-22255.054
Land impacted for carbon sink enhancement - Accelerate regeneration	6301.061
Land impacted for carbon sink enhancement - All (not counting overlap)	47344.7
Land impacted for carbon sink enhancement - Avoid deforestation	2854.926
Land impacted for carbon sink enhancement - corn-ethanol to energy grasses	415.854
Land impacted for carbon sink enhancement - cropland measures	16275.6
Land impacted for carbon sink enhancement - Extend rotation length	14016.3
Land impacted for carbon sink enhancement - Improve plantations	2544.213
Land impacted for carbon sink enhancement - Increase retention of HWP	4375.9
Land impacted for carbon sink enhancement - Increase trees outside forests	1928.886
Land impacted for carbon sink enhancement - permanent conservation cover	1498.152

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

variable_name	2050
Land impacted for carbon sink enhancement - Reforest cropland	22493.1
Land impacted for carbon sink enhancement - Reforest pasture	4594.975
Land impacted for carbon sink enhancement - Restore productivity	18267.5
Land impacted for carbon sink enhancement - total	18189.6
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	30032.3

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

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	1461.1
Business-as-usual carbon sink - Avoid deforestation	909.455
Business-as-usual carbon sink - Extend rotation length	7667.9
Business-as-usual carbon sink - Improve plantations	966.17
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	387.822
Business-as-usual carbon sink - Reforest cropland	2552.4
Business-as-usual carbon sink - Reforest pasture	1122.5
Business-as-usual carbon sink - Restore productivity	6430.7
Business-as-usual carbon sink - Total Impacted (over 30 years)	2552.4