

Source	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Residential Energy GHGs	7,947,551	7,694,836	7,684,397	7,673,990	7,663,613	7,653,268	7,642,954	7,632,671	7,622,419	7,612,198	7,602,007
Commercial Energy GHGs	6,159,315	6,171,626	6,159,483	6,147,377	6,135,307	6,123,274	6,111,276	6,099,315	6,087,389	6,075,500	6,063,646
Industrial Energy GHGs	6,788,045	6,371,749	6,359,939	6,348,165	6,336,426	6,324,722	6,313,053	6,301,420	6,289,821	6,278,257	6,266,727
Transportation & Mobile Sources Total GHGs	9,144,592	9,021,755	8,900,730	8,781,492	8,664,014	8,548,270	8,434,234	8,321,881	8,211,186	8,102,125	7,994,674
Process & Fugitive Emissions GHGs	2,055,510	2,055,510	2,055,510	2,055,510	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105
Solid Waste GHGs	1,444,116	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789
Water & Wastewater GHGs	116,072	113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813
HFCs (Refrigerants) GHGs	1,014,495	1,140,996	1,140,997	1,140,998	1,140,999	1,141,000	1,141,001	1,141,002	1,141,003	1,141,004	1,141,005
Agriculture GHGs	296,547	296,547	296,547	296,547	254,470	254,470	254,470	254,470	254,470	254,470	254,470
Total Gross GHG Emissions	34,966,243	34,271,621	34,116,206	33,962,681	33,561,538	33,411,712	33,263,697	33,117,467	32,972,996	32,830,261	32,689,237
Total GHG Removals	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)
Total Net GHG Emissions	33,796,872	33,102,250	32,946,835	32,793,310	32,392,167	32,242,341	32,094,326	31,948,096	31,803,625	31,660,890	31,519,866

2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
7,591,847	7,581,717	7,571,617	7,561,548	7,551,509	7,541,501	7,531,522	7,521,573	7,511,654	7,501,765	7,491,906	7,482,076	7,472,275	7,462,504
6,051,827	6,040,044	6,028,296	6,016,584	6,004,906	5,993,264	5,981,657	5,970,084	5,958,546	5,947,043	5,935,574	5,924,140	5,912,740	5,901,374
6,255,233	6,243,772	6,232,346	6,220,955	6,209,597	6,198,274	6,186,985	6,175,729	6,164,507	6,153,319	6,142,165	6,131,044	6,119,956	6,108,902
7,888,809	7,784,506	7,681,743	7,580,496	7,480,744	7,382,464	7,285,634	7,190,234	7,096,242	7,003,637	6,912,399	6,822,507	6,733,943	6,646,685
1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105
1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789
113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813
1,141,006	1,141,007	1,092,514	1,044,022	995,529	947,036	898,543	850,050	801,558	753,065	704,572	656,079	607,586	559,094
254,470	254,470	254,470	254,470	254,470	254,470	254,470	254,470	254,470	254,470	254,470	254,470	254,470	254,470
32,549,899	32,412,224	32,227,695	32,044,782	31,863,464	31,683,717	31,505,519	31,328,849	31,153,685	30,980,007	30,807,793	30,637,024	30,467,678	30,299,736
(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)
31,380,528	31,242,853	31,058,324	30,875,411	30,694,093	30,514,346	30,336,148	30,159,478	29,984,314	29,810,636	29,638,422	29,467,653	29,298,307	29,130,365

2043	2044	2045	2046	2047	2048	2049	2050
7,452,762	7,443,050	7,433,366	7,423,712	7,414,087	7,404,490	7,394,923	7,385,384
5,890,042	5,878,744	5,867,481	5,856,251	5,845,054	5,833,891	5,822,762	5,811,666
6,097,880	6,086,892	6,075,937	6,065,015	6,054,125	6,043,268	6,032,444	6,021,652
6,560,715	6,476,014	6,392,563	6,310,344	6,229,339	6,149,529	6,070,897	5,993,425
1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105
1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789
113,813	113,813	113,813	113,813	113,813	113,813	113,813	113,813
510,601	462,108	413,615	365,122	316,630	268,137	219,644	171,151
254,470	254,470	254,470	254,470	254,470	254,470	254,470	254,470
30,133,179	29,967,987	29,804,141	29,641,622	29,480,412	29,320,493	29,161,847	29,004,456
(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)
28,963,808	28,798,616	28,634,770	28,472,251	28,311,041	28,151,122	27,992,476	27,835,085

Source	2018	2019	2020	2021
Residential Energy GHGs	7,947,551.08	7,708,398.42	7,469,245.75	7,230,093.09
Commercial Energy GHGs	6,159,314.74	5,794,890.87	5,430,467.00	5,066,043.12
Industrial Energy GHGs	6,788,045.40	6,325,855.47	5,863,665.54	5,401,475.60
Transportation & Mobile Sources Total GHGs	9,144,592	9,047,738.25	8,950,884.50	8,854,030.75
Process & Fugitive Emissions GHGs	2,055,510	2,003,658.75	1,951,807.50	1,899,956.25
Solid Waste GHGs	1,444,116	1,434,284.25	1,424,452.50	1,414,620.75
Water & Wastewater GHGs	116,072	115,507.25	114,942.50	114,377.75
HFCs (Refrigerants) GHGs	1,014,495	1,046,120.25	1,077,745.50	1,109,370.75
Agriculture GHGs	296,547.00	286,027.83	275,508.65	264,989.48
Total Gross GHG Emissions	34,966,243.14	33,762,481.48	32,558,719.81	31,354,958.15
Total GHG Removals	-1,169,371	-1,169,371.00	-1,169,371.00	-1,169,371.00
Total Net GHG Emissions	33,796,872.14	32,593,110.48	31,389,348.81	30,185,587.15
	18,346,689			
	-45.71%			

2022	2023	2024	2025	2026	2027	2028
6,990,940.42	6,982,613.37	6,974,311.31	6,966,034.15	6,957,781.82	6,949,554.25	6,941,351.37
4,701,619.25	4,693,886.78	4,686,177.51	4,678,491.37	4,670,828.28	4,663,188.19	4,655,571.01
4,939,285.67	4,931,773.26	4,924,283.38	4,916,815.98	4,909,370.97	4,901,948.30	4,894,547.90
8,757,177	8,641,015	8,526,568	8,413,810	8,302,716	8,193,262	8,085,423
1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105
1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789
113,813	113,813	113,813	113,813	113,813	113,813	113,813
1,140,996	1,140,996	1,140,996	1,140,996	1,140,996	1,140,996	1,140,996
254,470.30	254,470.30	254,470.30	254,470.30	254,470.30	254,470.30	254,470.30
30,151,196.48	30,011,462.82	29,873,514.35	29,737,325.56	29,602,871.31	29,470,126.81	29,339,067.67
-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371
28,981,825.48	28,842,091.82	28,704,143.35	28,567,954.56	28,433,500.31	28,300,755.81	28,169,696.67

2029	2030	2031	2032	2033	2034	2035
6,933,173.09	6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35
4,647,976.69	4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14
4,887,169.71	4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64
7,979,176	7,874,497	7,771,363	7,669,752	7,569,640	7,471,005	7,373,827
1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105
1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789
113,813	113,813	113,813	113,813	113,813	113,813	113,813
1,140,996	1,140,996	1,092,504	1,044,012	995,519	947,027	898,535
254,470.30	254,470.30	254,470.30	254,470.30	254,470.30	254,470.30	254,470.30
29,209,669.82	29,081,909.56	28,930,283.31	28,780,179.26	28,631,574.93	28,484,448.20	28,338,777.25
-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371
28,040,298.82	27,912,538.56	27,760,912.31	27,610,808.26	27,462,203.93	27,315,077.20	27,169,406.25

2036	2037	2038	2039	2040	2041	2042
6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35
4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14
4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64
7,278,082	7,183,751	7,090,812	6,999,245	6,909,029	6,820,145	6,732,573
1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105
1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789
113,813	113,813	113,813	113,813	113,813	113,813	113,813
850,042	801,550	753,058	704,565	656,073	607,580	559,088
254,470.30	254,470.30	254,470.30	254,470.30	254,470.30	254,470.30	254,470.30
28,194,540.59	28,051,717.07	27,910,285.82	27,770,226.29	27,631,518.24	27,494,141.72	27,358,077.07
-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371
27,025,169.59	26,882,346.07	26,740,914.82	26,600,855.29	26,462,147.24	26,324,770.72	26,188,706.07

2043	2044	2045	2046	2047	2048	2049
6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35	6,925,019.35
4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14	4,640,405.14
4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64	4,879,813.64
6,646,293	6,561,287	6,477,535	6,395,020	6,313,722	6,233,624	6,154,708
1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105	1,848,105
1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789	1,404,789
113,813	113,813	113,813	113,813	113,813	113,813	113,813
510,596	462,103	413,611	365,119	316,626	268,134	219,642
254,470.30	254,470.30	254,470.30	254,470.30	254,470.30	254,470.30	254,470.30
27,223,304.94	27,089,806.25	26,957,562.20	26,826,554.28	26,696,764.23	26,568,174.09	26,440,766.15
-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371
26,053,933.94	25,920,435.25	25,788,191.20	25,657,183.28	25,527,393.23	25,398,803.09	25,271,395.15

2050

6,925,019.35

4,640,405.14

4,879,813.64

6,076,958

1,848,105

1,404,789

113,813

171,149.44

254,470.30

26,314,522.95

-1,169,371

25,145,151.95

Values are in MMTCO₂.

Sector	2018	2030 BAU (2022 baseline)	2030 Projection	2050 BAU (2022 baseline)	2050 Projection
Residential Energy	7.95	6.93	3.87	6.93	2.57
Commercial Energy	6.16	4.64	3.72	4.64	0.50
Industrial Energy	6.79	4.88	1.80	4.88	0.00
Transportation & Mobile Sources	9.14	7.87	7.24	6.08	0.80
Process and Fugitive	2.06	1.85	1.64	1.85	1.00
Solid Waste	1.44	1.40	0.90	1.40	0.00
Water & Wastewater	0.12	0.11	0.01	0.11	0.01
Refrigerants (HFCs)	1.01	1.14	0.11	0.17	0.00
Agriculture	0.30	0.25	0.25	0.25	0.25
Total Emissions Produced	34.97	29.08	19.55	26.31	5.13
Reductions and Sequestrations	-1.17	-1.17	-1.20	-1.17	-2.26
Net Emissions	33.80	27.91	18.35	25.15	2.87

- Measures are implemented and milestones are achieved linearly.- Emissions a			Projections											
BAU						30,151,210	29,936,968	29,722,726	29,508,484	29,294,242	29,080,000	28,941,500	28,803,000	
Projections unavailable			2030		2050		2022	2026	2027	2028	2029	2030	2031	2032
Residential Energy			2022 Residential Electricity Value		2,775,682		2030 Residential Electricity Value							
3 C1-1	Community enrollment in renewable energy CCA	100% of residential electricity emissions	100%	100%	100% of residential electricity emissions	100%	0	1/5	2/5	3/5	4/5	1/1	01/20	01/10
3 C4-3	Residential rooftop solar	Average of 49.6 MW put in service / yr			Average of 49.6 MW put in service / yr		0	(555,136)	(1,110,273)	(1,665,409)	(2,220,546)	(2,775,682)	(2,775,682)	(2,775,682)
3 C2-1	intelligent grid management systems (R)	2% electricity sector emissions reductions	2%	9%	electricity sector emissions reductions	9%	0	(11,103)	(22,205)	(33,308)	(44,411)	(55,514)	(65,229)	(74,943)
3 C2-2	Grid-scale power systems modernization (R)	1% electricity sector emissions reductions	1%	4%	electricity sector emissions reductions	4%	0	(5,551)	(11,103)	(16,654)	(22,205)	(27,757)	(31,920)	(36,084)
3 C3-1	Convert lighting to energy efficient light-emittingdiode (LED) light bu	1% electricity sector emissions reductions	1%	2%	electricity sector emissions reductions	2%	0	(5,551)	(11,103)	(16,654)	(22,205)	(27,757)	(29,145)	(30,533)
3 C1-2	Opt-in Public Pricing Program for mercantile customers													
3 C4-7	Hydrogen as an energy carrier													
4 C1-1	Increasing Retrofit Envelope Efficiency	30% of pre-1975 homes retrofitted			Near full saturation of retrofittable stock	0	(9,752)	(17,245)	(24,738)	(32,231)	(39,724)	(44,365)	(49,007)	
4 C1-2	Building System Electrification (Deep Retrofit)	20% of homes electrified			85–100% electrification, 70% Solar Panels	0	(23,000)	(46,000)	(69,000)	(92,000)	(115,000)	(138,000)	(161,000)	
4 C1-3	Incentive programs													
4 C2-1	Implement the latest state adopted building standards & codes (R)						0	(19,872)	(19,872)	(19,872)	(19,872)	(19,872)	(11,592)	(11,592)
4 C2-2	Smart Energy Management Systems							-40,240	(80,481)	(120,721)	(160,962)	(201,202)	(221,917)	(242,632)
4 C3-1	Material Substitution (residential)							(3,750)	(7,500)	(11,250)	(15,000)	(18,750)	(16,172)	(18,281)
4 C3-2	Modular and Prefabricated Construction													
4 C4-1	Automated Smart Controls & Local Flexible Loading													
4 C4-2	Grid-Coordinated Demand Response & Load Shaping (R)						0	0	0	0	0	(4,500)	(5,363)	(6,301)
3 C4-9	District thermal energy system (R)	Per site, 100% reduction NG combustion per site. Assuming	01/03	1 new system added every second year. 23,257,800cumulati	01/03	0	(53,100)	(53,100)	(53,100)	(53,100)	(106,200)	(106,200)	(159,300)	(159,300)
3 C4-1	Utility-scaled solar (in-region) (R)	Average of 10 MW put in service/yr	01/03	Average 20MW put in service/yr	01/03	0	(1,971)	(3,942)	(5,913)	(7,884)	(9,854)	(13,796)	(17,738)	
3 C2-3	Community-serving microgrid and minigrid systems	8,869 MTCO2e avoided accumulatively		1,475,211 MTCO2e avoided accumulatively		0	0	0	0	(2,956)	(5,913)	(11,825)	(17,738)	
3 C2-4	District or utility-scale battery storage - short duration (<4 hrs)	181.8 MTCO2e by 2030		80,003 MTCO2e by 2050		0	0	0	0	0	(182)	(545)	(909)	
3 C4-6	District or utility-scale battery storage - Long duration (>10 hrs)	NA		436,379 cumulative MTCO2e avoided.		0	0	0	0	0	0	0	0	
3 C4-9	Geothermal electricity generation (R)	NA	01/03	795,180 MTCO2e avoided annually		0	0	0	0	0	0	0	0	
3 C4-10	Offshore wind (R)	NA	01/03	331,325 MTCO2e avoided annually by 2050		0	0	0	0	0	0	0	0	
3 C4-8	New Nuclear at Perry	NA		5,980,014 MTCO2e avoided annually		0	0	0	0	0	0	0	0	
Commercial Energy			2022 Commercial Electricity Value		2,577,490		2030 Commercial Electricity Value							
3 C1-3	Physical PPA (Commercial)	20% of commercial electricity from renewableor net-zero sc	20%	100%	of commercial electricity from renewableor net-zero soi	100%	0	(103,100)	(206,199)	(309,299)	(412,398)	(515,498)	(618,598)	(721,697)
3 C4-4	Commercial-scale rooftop & parking lot solar	Average of 16.7 MW put in service/yr			Average of 16.7 MW put in service/yr		0	(9,893)	(19,787)	(29,680)	(39,574)	(49,467)	(59,360)	(69,254)
3 C2-1	intelligent grid management systems (C)	2% electricity sector emissions reductions	2%	9%	electricity sector emissions reductions	9%	0	(10,310)	(20,620)	(30,930)	(41,240)	(51,550)	(60,571)	(69,592)
3 C2-2	Grid-scale power systems modernization (C)	1% electricity sector emissions reductions	1%	4%	electricity sector emissions reductions	4%	0	(5,155)	(10,310)	(15,465)	(20,620)	(25,775)	(29,641)	(33,507)
3 C3-1	Convert lighting to energy efficient light-emittingdiode (LED) light bu	1% electricity sector emissions reductions	1%	2%	electricity sector emissions reductions	2%	0	(5,155)	(10,310)	(15,465)	(20,620)	(25,775)	(27,064)	(28,352)
4 C1-1	Increasing Retrofit Envelope Efficiency													
4 C1-2	Building System Electrification (Deep Retrofit)													
4 C2-1	Implement the latest state adopted building standards & codes (C)							(1,519,618)	(3,039,237)	(4,558,855)	(6,078,474)	(7,598,092)	(8,484,536)	(9,370,981)
4 C3-1	Material Substitution (commercial)							(42,000)	(84,000)	(126,000)	(168,000)	(210,000)	(234,500)	(259,000)
4 C4-2	Grid-Coordinated Demand Response & Load Shaping (C)						0	0	0	0	0	(3,000)	(3,603)	(4,260)
3 C4-9	District thermal energy system (C)	Per site, 100% reduction NG combustion per site. Assuming	0.66666667	1 new system added every second year. 23,257,800cumulati	02/03	0	(106,200)	(106,200)	(106,200)	(106,200)	(212,400)	(212,400)	(318,600)	
3 C4-1	Utility-scaled solar (in-region) (C)	Average of 10 MW put in service/yr	02/03	Average 20MW put in service/yr	02/03	0	(3,942)	(7,884)	(11,825)	(15,767)	(19,709)	(27,592)	(35,476)	
3 C4-2	Repurpose brownfields into clean energy hubs	Average of 7 MW put in service/yr		Average 8 MW/yr put in service/yr		0	(4,139)	(8,278)	(12,417)	(16,555)	(20,694)	(25,424)	(30,155)	
3 C4-9	Geothermal electricity generation (C)	NA	02/03	795,180 MTCO2e avoided annually		0	0	0	0	0	0	0	0	
3 C4-10	Offshore wind (C)	NA	02/03	331,325 MTCO2e avoided annually by 2050		0	0	0	0	0	0	0	0	
Industrial Energy			2022 Industrial Electricity Value		2,504,137		2030 Industrial Electricity Value							
3 C1-3	Physical PPA (Industrial)	20% of industrial electricity from renewableor net-zero sour	20%	100%	of industrial electricity from renewableor net-zero sourc	100%	0	(100,165)	(200,331)	(300,496)	(400,662)	(500,827)	(600,993)	(701,158)
5 C1-4	Energy Efficient Equipment	reduced electricity emissions by 20%	20%	reduces electricity emissions by 40%	40%	0	(100,165)	(200,331)	(300,496)	(400,662)	(500,827)	(525,869)	(550,910)	
5 C1-1	Energy audits	reduced electricity emissions by 20%	20%	reduces electricity emissions by 40%	40%	0	(100,165)	(200,331)	(300,496)	(400,662)	(500,827)	(525,869)	(550,910)	
3 C2-1	intelligent grid management systems (I)	2% electricity sector emissions reductions	2%	9%	electricity sector emissions reductions	9%	0	(10,017)	(20,033)	(30,050)	(40,066)	(50,083)	(58,847)	(67,612)
3 C2-2	Grid-scale power systems modernization (I)	1% electricity sector emissions reductions	1%	4%	electricity sector emissions reductions	4%	0	(5,008)	(10,017)	(15,025)	(20,033)	(25,041)	(28,798)	(32,554)
3 C3-1	Convert lighting to energy efficient light-emittingdiode (LED) light bu	1% electricity sector emissions reductions	1%	2%	electricity sector emissions reductions	2%	0	(5,008)	(10,017)	(15,025)	(20,033)	(25,041)	(26,293)	(27,546)
5 C3-3	Electrify machine drives in synergy with griddecarbonization (Electri	Reduces total industrial emissions by 8%	8%	Reduces total industrial emissions by 8%	8%	0	(40,066)	(80,132)	(120,199)	(160,265)	(200,331)	(200,331)	(200,331)	
5 C1-2	Waste heat recovery and utilization systems (Electricity)	reduce total industrial energy demand by 9%	9%	10% energy demand reduction	10%	0	(45,074)	(90,149)	(135,223)	(180,298)	(225,372)	(226,624)	(227,876)	
5 C1-5	Automation (Electricity)	10% energy savings	10%	10% energy savings	10%	0	(50,083)	(100,165)	(150,248)	(200,331)	(250,414)	(250,414)	(250,414)	
			2022 Industrial Natural Gas & Non-Utility Fuels minus CC		157,674									
5 C3-1	Electrification of industrial process heat in synergywith grid develop	reduces emissions from natural gas and non-utility fuels by	50%	reducess emissions from natural gas and non-utility fuels by	100%	0	(15,767)	(31,535)	(47,302)	(63,070)	(78,837)	(82,779)	(86,721)	
5 C3-3	Electrify machine drives in synergy with griddecarbonization (Non E	Reduces total industrial emissions by 8%	8%	Reduces total industrial emissions by 8%	8%	0	(2,523)	(5,046)	(7,568)	(10,091)	(12,614)	(12,614)	(12,614)	
5 C1-2	Waste heat recovery and utilization systems (Non Electricity)	reduce total industrial energy demand by 9%	9%	10% energy demand reduction	10%	0	(2,838)	(5,676)	(8,514)	(11,353)	(14,191)	(14,269)	(14,348)	
5 C1-5	Automation (Non Electricity)	10% energy savings	10%	10% energy savings	10%	0	(3,153)	(6,307)	(9,460)	(12,614)	(15,767)	(15,767)	(15,767)	
			Cleveland Cliffs Natural Gas and Non Utility		2,276,956									
Replace BF-BOF system at Cleveland Works with a green steel alternative							0.066666667	02/15	01/05	1/0	01/03	02/05	07/15	
5 C3-2	Carbon capture at Cleveland Works w/ geologic sequestration	90% of Cleveland-Cliffs Cleveland Worksannual stationary	90%	Carbon neutral in 2041	100%	0	(136,617)	(273,235)	(409,852)	(546,469)	(683,087)	(819,704)	(956,322)	
5 C2-1	Reduce industrial waste													
5 C2-3	Install leak detection equipment													
5 C4-3	Invest in a regional direct air capture facility													
5 C6-1	In cases where processes cannot electrify - switch to hydrogen													
Transportation & Mobile Sources			2022 Aviation Emission Value		422,032		2022 Water Transportation Emission Value							
6 C1-8	Advance the use of sustainable aviation fuel atregional airports	100% reduction in aviation emissions	100%			0	(16,881)	(33,763)	(50,644)	(67,525)	(84,406)	(101,288)	(118,169)	
6 C1-9	Advance the use of sustainable liquid and gaseousfuels at regional maritime ports	100% reduction in maritime vehicle emissions	100%			0	(8,291)	(16,582)	(24,872)	(33,163)	(41,454)	(49,745)	(58,035)	

Expand BEV charging and FCEV fueling infrastructure														
BEV adoption in government fleets														
BEV adoption of light-duty passenger vehicles by														
6 C1-1/5/6	households	reduction of 494,123 metric tons annually	across Cleveland	494123	reduction of 3,856,222 metric tons of CO2-equivalent annual	3856222	0	(98,825)	(197,649)	(296,474)	(395,298)	(494,123)	(662,228)	(830,333)
Added	BEV/FCEV adoption of medium and heavy-duty vehicles by fleets.	reduction of 136705 metric tons annually	across Cleveland I	136705	reduction of 1,282,013 metric tons of CO2-equivalent annual	1282013	0	(27,341)	(54,682)	(82,023)	(109,364)	(136,705)	(193,970)	(251,236)
6 C2-2	Expand networks of protected bike lanes, off-street trails, and lane c	Annual: 30 × 365 = 10,950 VMT, CO2 reduction	44,240 kg C	44240			0	(8,848)	(17,696)	(26,544)	(35,392)	(44,240)	(44,240)	(44,240)
6 C2-1 Intercity Passenger Rail and Coordinated Transportation Planning														
6 C2-3	Increase density and mix of uses around transit stations and BRT s	660 MTCO2/yr		660			0	(132)	(264)	(396)	(528)	(660)	(660)	(660)
Process & Fugitive														
5 C2-2	Use lower GWP gases for anesthetics (Electricity)	Reduce overall industrial emissions by 0.2%		0.20%	Reduce overall industrial emissions by 0.2%	0.20%	0	(1,002)	(2,003)	(3,005)	(4,007)	(5,008)	(5,008)	(5,008)
5 C2-2	Use lower GWP gases for anesthetics (Non Electricity)	Reduce overall industrial emissions by 0.2%		0.20%	Reduce overall industrial emissions by 0.2%	0.20%	0	(63)	(126)	(189)	(252)	(315)	(315)	(315)
		Cleveland Cliffs			Process Emissions	666,321								
		90% of Cleveland-Cliffs Cleveland Works												
5 C3-2	Replace BF-BOF system at Cleveland Works with a green steel alternative	annual stationary combustion CO2 emissions												
5 C4-1	Carbon capture at Cleveland Works w/ geologic sequestration	technologies		90%	Carbon neutral in 2041	100%	0	(39,979)	(79,959)	(119,938)	(159,917)	(199,896)	(239,876)	(279,855)
		Carmeuse			Lime Production	197,222								
5 C4-2	Cement making carbon capture	installed point source capture by 2030			reduces process emissions due to cementmaking by 90%	90%	0	0	0	0	0	0	(8,875)	(17,750)
Solid Waste														
		2022 Waste Generation Value		1,370,110										
7 C1-1	Install gas capture systems for landfill gas	35% solid waste gas captured		35%	90% solid waste gas captured	90%	0	(95,908)	(191,815)	(287,723)	(383,631)	(479,539)	(517,217)	(554,895)
		Restaurant and grocery food waste reduction/composting program												
		Add compost bins to public facilities, parks, and sports stadiums to divert organic waste from land fills												
		Support composting and food waste reduction with organic waste												
7 C1-2, C1	diversion from landfills	105,085 MT CO2e avoided by 2030(accumulative)			2,214,801 MT CO2e avoided by 2050(accumulative)		0	(15,179)	(18,098)	(21,017)	(23,936)	(26,855)	(31,675)	(39,998)
Water and Wastewater														
		Water and Wastewater Emission		113,813										
7 C2-1	post incineration scrubbers installed at wastewater treatment facilities	88% reduction of water and wastewater emissions		88%	88% reduction of water and wastewater emissions	88%	0	(20,031)	(40,062)	(60,093)	(80,124)	(100,155)	(100,155)	(100,155)
Refrigerants														
		2022 HFC Emission Value		1,140,996										
7 C3-1	use climate friendly refrigerants	reduction in refrigerant emissions of 80%			reduction in refrigerant emissions of 80%		0	(205,379)	(410,759)	(616,138)	(821,517)	(1,026,896)	(1,026,896)	(1,026,896)
7 C3-2	end of equipment life facilities, dropoff/collection programs to ensure	reduce up to 90% hfc emissions		90%	reduce up to 90% hfc emissions	90%								
Reductions and Sequestrations														
Carbon Capture & Sequestration														
5 C4-3	Regional Direct Air Capture	NA			0.5 MMT by 2045, another 0.5 MMT by 2050		0	0	0	0	0	0	0	0
AFOLU														
8 C1-1	Habitat Restoration	25,000 tons by 2030			100,000 tons by 2050		0	(5,000)	(5,000)	(5,000)	(5,000)	(5,000)	(5,000)	(5,000)
8 C1-2	Expand Wetland Restoration Programs	2000 t CO2/yr		2000	10,000 t CO ₂ yr ⁻¹	10000	0	(400)	(800)	(1,200)	(1,600)	(2,000)	(2,400)	(2,800)
8 C2-1	Reforest agriculture lands no longer in use	26000 MTCO2/yr		26000	78000 MTCO2/yr	78000	0	(5,200)	(10,400)	(15,600)	(20,800)	(26,000)	(28,600)	(31,200)
8 C3-1	Tree carbon-capture	1,400 MTCO2e accumulatively		280	5,600 MTCO2e accumulatively	280	0	(280)	(280)	(280)	(280)	(280)	(280)	(280)
8 C3-3	Expand agriculture practices	250 MTCO2e annually		250	250 MTCO2e annually	250	0	(250)	(250)	(250)	(250)	(250)	(250)	(250)
8 C3-5	Land bank set-asides for carbon storage	100 MTCO2e annually		100	100 MTCO2e annually	100	0	(100)	(100)	(100)	(100)	(100)	(100)	(100)

28,664,500	28,526,000	28,387,500	28,249,000	28,110,500	27,972,000	27,833,500	27,695,000	27,556,500	27,418,000	27,279,500	27,141,000	27,002,500	26,864,000	26,725,500	26,587,000	26,448,500	26,310,000
2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
03/20	01/05	01/04	03/10	07/20	02/05	09/20	01/02	11/20	03/05	13/20	07/10	03/04	04/05	17/20	09/10	19/20	01/01
(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)
(234,863)	(264,221)	(293,578)	(322,936)	(352,294)	(381,652)	(411,010)	(440,368)	(469,725)	(499,083)	(528,441)	(557,799)	(587,157)	(616,514)	(645,872)	(675,230)	(704,588)	(733,946)
(84,658)	(94,373)	(104,088)	(113,803)	(123,518)	(133,233)	(142,948)	(152,663)	(162,377)	(172,092)	(181,807)	(191,522)	(201,237)	(210,952)	(220,667)	(230,382)	(240,096)	(249,811)
(40,247)	(44,411)	(48,574)	(52,738)	(56,901)	(61,065)	(65,229)	(69,392)	(73,556)	(77,719)	(81,883)	(86,046)	(90,210)	(94,373)	(98,537)	(102,700)	(106,864)	(111,027)
(31,920)	(33,308)	(34,696)	(36,084)	(37,472)	(38,860)	(40,247)	(41,635)	(43,023)	(44,411)	(45,799)	(47,187)	(48,574)	(49,962)	(51,350)	(52,738)	(54,126)	(55,514)
(53,649)	(58,291)	(62,932)	(67,574)	(72,216)	(76,857)	(81,499)	(86,141)	(90,783)	(95,424)	(100,066)	(104,708)	(109,349)	(113,991)	(118,633)	(123,275)	(127,916)	(132,558)
(184,000)	(207,000)	(230,000)	(253,000)	(276,000)	(299,000)	(322,000)	(345,000)	(368,000)	(391,000)	(414,000)	(437,000)	(460,000)	(483,000)	(506,000)	(529,000)	(552,000)	(575,000)
(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)	(11,592)
(263,347)	(284,063)	(304,778)	(325,493)	(346,208)	(366,923)	(387,638)	(408,353)	(429,069)	(449,784)	(470,499)	(491,214)	(511,929)	(532,644)	(553,359)	(574,075)	(594,790)	(615,505)
(20,391)	(22,500)	(24,609)	(26,719)	(28,828)	(30,938)	(33,047)	(35,156)	(37,266)	(39,375)	(41,484)	(43,594)	(45,703)	(47,813)	(49,922)	(52,031)	(54,141)	(56,250)
(7,315)	(8,405)	(9,570)	(10,811)	(12,128)	(13,520)	(14,988)	(16,531)	(18,150)	(19,845)	(21,615)	(23,461)	(25,383)	(27,380)	(29,453)	(31,601)	(33,825)	(36,125)
(159,300)	(212,400)	(212,400)	(265,500)	(265,500)	(318,600)	(318,600)	(371,700)	(371,700)	(424,800)	(424,800)	(477,900)	(477,900)	(531,000)	(531,000)	(584,100)	(584,100)	(637,200)
(21,680)	(25,622)	(29,563)	(33,505)	(37,447)	(41,389)	(45,330)	(49,272)	(53,214)	(57,156)	(61,098)	(65,039)	(68,981)	(72,923)	(76,865)	(80,806)	(84,748)	(88,690)
(23,651)	(29,563)	(35,476)	(41,389)	(47,301)	(53,214)	(59,127)	(65,039)	(70,952)	(76,865)	(82,778)	(88,691)	(94,603)	(100,516)	(106,429)	(112,342)	(118,255)	(124,168)
(1,273)	(1,636)	(2,000)	(2,364)	(2,727)	(3,091)	(3,455)	(3,818)	(4,182)	(4,546)	(4,909)	(5,273)	(5,637)	(6,000)	(6,364)	(6,728)	(7,091)	(7,455)
0	0	0	0	0	0	0	0	0	0	0	0	0	(72,730)	(72,730)	(72,730)	(72,730)	(72,730)
0	0	0	0	0	0	0	0	0	0	0	0	0	(265,060)	(265,060)	(265,060)	(265,060)	(265,060)
0	0	(22,088)	(22,088)	(22,088)	(22,088)	(22,088)	(66,265)	(66,265)	(66,265)	(66,265)	(66,265)	(110,442)	(110,442)	(110,442)	(110,442)	(110,442)	(110,442)
0	0	0	0	0	0	0	0	0	0	0	0	0	(2,990,007)	(5,980,014)	(5,980,014)	(5,980,014)	(5,980,014)
(824,797)	(927,896)	(1,030,996)	(1,134,096)	(1,237,195)	(1,340,295)	(1,443,394)	(1,546,494)	(1,649,594)	(1,752,693)	(1,855,793)	(1,958,892)	(2,061,992)	(2,165,092)	(2,268,191)	(2,371,291)	(2,474,390)	(2,577,490)
(79,147)	(89,040)	(98,934)	(108,827)	(118,721)	(128,614)	(138,507)	(148,401)	(158,294)	(168,187)	(178,081)	(187,974)	(197,868)	(207,761)	(217,654)	(227,548)	(237,441)	(247,334)
(78,613)	(87,635)	(96,656)	(105,677)	(114,698)	(123,720)	(132,741)	(141,762)	(150,783)	(159,804)	(168,826)	(177,847)	(186,868)	(195,889)	(204,910)	(213,932)	(222,953)	(231,974)
(37,374)	(41,240)	(45,106)	(48,972)	(52,839)	(56,705)	(60,571)	(64,437)	(68,303)	(72,170)	(76,036)	(79,902)	(83,768)	(87,635)	(91,501)	(95,367)	(99,233)	(103,100)
(29,641)	(30,930)	(32,219)	(33,507)	(34,796)	(36,085)	(37,374)	(38,662)	(39,951)	(41,240)	(42,529)	(43,817)	(45,106)	(46,395)	(47,684)	(48,972)	(50,261)	(51,550)
(10,257,425)	(11,143,869)	(12,030,313)	(12,916,757)	(13,803,201)	(14,689,645)	(15,576,089)	(16,462,533)	(17,348,977)	(18,235,422)	(19,121,866)	(20,008,310)	(20,894,754)	(21,781,198)	(22,667,642)	(23,554,086)	(24,440,530)	(25,326,974)
(283,500)	(308,000)	(332,500)	(357,000)	(381,500)	(406,000)	(430,500)	(455,000)	(479,500)	(504,000)	(528,500)	(553,000)	(577,500)	(602,000)	(626,500)	(651,000)	(675,500)	(56,250)
(4,973)	(5,740)	(6,563)	(7,440)	(8,373)	(9,360)	(10,403)	(11,500)	(12,653)	(13,860)	(15,123)	(16,440)	(17,813)	(19,240)	(20,723)	(22,260)	(23,853)	(25,500)
(318,600)	(424,800)	(424,800)	(531,000)	(531,000)	(637,200)	(637,200)	(743,400)	(743,400)	(849,600)	(849,600)	(955,800)	(955,800)	(1,062,000)	(1,062,000)	(1,168,200)	(1,168,200)	(1,274,400)
(43,360)	(51,243)	(59,127)	(67,010)	(74,894)	(82,777)	(90,661)	(98,545)	(106,428)	(114,312)	(122,195)	(130,079)	(137,962)	(145,846)	(153,729)	(161,613)	(169,497)	(177,380)
(34,885)	(39,615)	(44,345)	(49,075)	(53,805)	(58,535)	(63,266)	(67,996)	(72,726)	(77,456)	(82,186)	(86,916)	(91,646)	(96,377)	(101,107)	(105,837)	(110,567)	(115,297)
0	0	0	0	0	0	0	0	0	0	0	0	0	(530,120)	(530,120)	(530,120)	(530,120)	(530,120)
0	0	(44,177)	(44,177)	(44,177)	(44,177)	(44,177)	(132,530)	(132,530)	(132,530)	(132,530)	(132,530)	(220,883)	(220,883)	(220,883)	(220,883)	(220,883)	(220,883)
(801,324)	(901,489)	(1,001,655)	(1,101,820)	(1,201,986)	(1,302,151)	(1,402,317)	(1,502,482)	(1,602,648)	(1,702,813)	(1,802,979)	(1,903,144)	(2,003,310)	(2,103,475)	(2,203,641)	(2,303,806)	(2,403,972)	(2,504,137)
(575,952)	(600,993)	(626,034)	(651,076)	(676,117)	(701,158)	(726,200)	(751,241)	(776,282)	(801,324)	(826,365)	(851,407)	(876,448)	(901,489)	(926,531)	(951,572)	(976,613)	(1,001,655)
(575,952)	(600,993)	(626,034)	(651,076)	(676,117)	(701,158)	(726,200)	(751,241)	(776,282)	(801,324)	(826,365)	(851,407)	(876,448)	(901,489)	(926,531)	(951,572)	(976,613)	(1,001,655)
(76,376)	(85,141)	(93,905)	(102,670)	(111,434)	(120,199)	(128,963)	(137,728)	(146,492)	(155,256)	(164,021)	(172,785)	(181,550)	(190,314)	(199,079)	(207,843)	(216,608)	(225,372)
(36,310)	(40,066)	(43,822)	(47,579)	(51,335)	(55,091)	(58,847)	(62,603)	(66,360)	(70,116)	(73,872)	(77,628)	(81,384)	(85,141)	(88,897)	(92,653)	(96,409)	(100,165)
(28,798)	(30,050)	(31,302)	(32,554)	(33,806)	(35,058)	(36,310)	(37,562)	(38,814)	(40,066)	(41,318)	(42,570)	(43,822)	(45,074)	(46,327)	(47,579)	(48,831)	(50,083)
(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)	(200,331)
(229,129)	(230,381)	(231,633)	(232,885)	(234,137)	(235,389)	(236,641)	(237,893)	(239,145)	(240,397)	(241,649)	(242,901)	(244,153)	(245,405)	(246,657)	(247,910)	(249,162)	(250,414)
(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)	(250,414)
(90,663)	(94,604)	(98,546)	(102,488)	(106,430)	(110,372)	(114,314)	(118,256)	(122,197)	(126,139)	(130,081)	(134,023)	(137,965)	(141,907)	(145,848)	(149,790)	(153,732)	(157,674)
(12,614)	(12,614)	(12,614)	(12,614)	(12,614)	(12,614)	(12,614)	0	0	0	0	0	0	0	0	0	0	0
(14,427)	(14,506)	(14,585)	(14,664)	(14,743)	(14,821)	(14,900)	0	0	0	0	0	0	0	0	0	0	0
(15,767)	(15,767)	(15,767)	(15,767)	(15,767)	(15,767)	(15,767)	0	0	0	0	0	0	0	0	0	0	0
08/15	03/05	02/03	11/15	04/05	13/15	14/15	01/01										
(1,092,939)	(1,229,556)	(1,366,174)	(1,502,791)	(1,639,408)	(1,776,026)	(1,912,643)	(2,049,260)	(2,276,956)	(2,276,956)	(2,276,956)	(2,276,956)	(2,276,956)	(2,276,956)	(2,276,956)	(2,276,956)	(2,276,956)	(2,276,956)
08/25	09/25	02/05	11/25	12/25	13/25	14/25	03/05	16/25	17/25	18/25	19/25	04/05	21/25	22/25	23/25	24/25	01/01
(135,050)	(151,932)	(168,813)	(185,694)	(202,575)	(219,457)	(236,338)	(253,219)	(270,100)	(286,982)	(303,863)	(320,744)	(337,626)	(354,507)	(371,388)	(388,269)	(405,151)	(422,032)
(66,326)	(74,617)	(82,908)	(91,198)	(99,489)	(107,780)	(116,071)	(124,361)	(132,652)	(140,943)	(149,234)	(157,524)	(165,815)	(174,106)	(182,397)	(190,687)	(198,978)	(207,269)

[illegible]

- BAU data from Updated Cleveland-Elyria MSA BAU Scenario (1).xlsx- Value in MTCO2

	2018	2022	diff:
Residential Energy	7947551	6990940	-956611
Commercial Energy	6159315	4701619	-1457695
Industrial Energy	6788045	4939286	-1848760
Transportation & Mobile Sources	9144592	8757177	-387415
Process and Fugitive	2055510	1848105	-207405
Solid Waste	1444116	1404789	-39327
Water & Wastewater	116072	113813	-2259
HFC (Refrigerants)	296547	254470	-42077
Agriculture	1014495	1140996	126501
Reductions and Sequestrations	-1169371	-1169371	0

Actual Numbers

Summary Table	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Residential Energy	0	-318870.22	-318870.22	-318870.22	0	0	0	0	(685,036)	(1,294,843)	(1,904,648)
Commercial Energy	0	-485898.4967	-485898.4967	-485898.4967	0	0	0	0	(247,894)	(389,588)	(531,281)
Industrial Energy	0	-616253.2433	-616253.2433	-616253.2433	0	0	0	0	(616,649)	(1,233,305)	(1,849,954)
Transportation & Mobile Sources	0	-129138.3333	-129138.3333	-129138.3333	0	0	0	0	(126,811)	(253,623)	(380,433)
Process and Fugitive	0	-69135	-69135	-69135	0	0	0	0	(41,044)	(82,088)	(123,132)
Solid Waste	0	-13109	-13109	-13109	0	0	0	0	(111,087)	(209,913)	(308,740)
Water & Wastewater	0	-753	-753	-753	0	0	0	0	(20,031)	(40,062)	(60,093)
HFC (Refrigerants)	0	42167	42167	42167	0	0	0	0	(205,379)	(410,759)	(616,138)
Agriculture		-14025.56667	-14025.56667	-14025.56667							
Reductions and Sequestrations	0	0	0	0	0	0	0	0	(1,180,601)	(1,186,201)	(1,191,801)
Remaining Emissions	34,966,243	32,157,466	30,953,704	29,749,942	30,151,196	30,011,463	29,873,514	29,737,326	26,368,339	24,369,745	22,372,848

	2,026	2,027	2,028
Residential Electricity			
Community enrollment in renewable energy CCA	(555,136)	(1,110,273)	(1,665,409)
Intelligent grid management systems (Residential)	(11,103)	(22,205)	(33,308)
Grid-scale power systems modernization (R)	(5,551)	(11,103)	(16,654)
Convert lighting to energy efficient light-emitting diode (LED) light bulbs (R)	(5,551)	(11,103)	(16,654)
Implement the latest state adopted building standards & codes (R)	(19,872)	(19,872)	(19,872)
Grid-Coordinated Demand Response & Load Shaping (R)	0	0	0
Residential Non Electricity			
Energy Efficiency Retrofits	(9,752)	(17,245)	(24,738)
Building System Electrification	(23,000)	(46,000)	(69,000)
District thermal energy system (R)	(53,100)	(53,100)	(53,100)
Utility-scaled solar (in-region) (R)	(1,971)	(3,942)	(5,913)
Community-serving microgrid and minigrid systems	0	0	0
District or utility-scale battery storage - short duration (<4 hrs)	0	0	0
District or utility-scale battery storage - Long duration (>10 hrs)	0	0	0
Geothermal electricity generation (R)	0	0	0
Offshore wind (R)	0	0	0
New Nuclear at Perry	0	0	0
Commercial Electricity			
Physical PPA (Commercial)	(103,100)	(206,199)	(309,299)
Commercial-scale rooftop & parking lot solar	(9,893)	(19,787)	(29,680)
intelligent grid management systems (C)	(10,310)	(20,620)	(30,930)
Grid-scale power systems modernization (C)	(5,155)	(10,310)	(15,465)
Convert lighting to energy efficient light-emittingdiode (LED) light bulbs (C)	(5,155)	(10,310)	(15,465)
Grid-Coordinated Demand Response & Load Shaping (C)	0	0	0

Commercial Non Electricity
District thermal energy system (C)
Utility-scaled solar (in-region) (C)
Repurpose brownfields into clean energy hubs
Geothermal electricity generation (C)
Offshore wind (C)
Industrial Electricity
Physical PPA (Industrial)
Energy Efficient Equipment
Energy audits
Automation (Electricity)
Waste heat recovery and utilization systems (Electricity)
Electrify machine drives in synergy with griddecarbonization (Electricity)
intelligent grid management systems (I)
Grid-scale power systems modernization (I)
Convert lighting to energy efficient light-emittingdiode (LED) light bulbs (I)
Industrial Non Electricity
Electrification of industrial process heat in synergy with grid development
Automation (Non Electricity)
Waste heat recovery and utilization systems (Non Electricity)
Electrify machine drives in synergy with griddecarbonization (Non Electricity)
Industrial - Cleveland Cliffs
Carbon Capture, Sequestration, and Green Steel at Cleveland Cliffs
Transportation & Mobile Sources
BEV/FCEV adoption of medium and heavy-duty vehicles by fleets.
- Expand BEV charging and FCEV fueling infrastructure- BEV/FCEV adoption in government fleets- BEV adoption of light-duty passenger vehicles by households
Advance the use of sustainable aviation fuel at regional airports
Advance the use of sustainable liquid & gaseous fuels at regional maritime ports
Expand networks of protected bike lanes, off-street trails, and lane conversions
Increase density and mix of uses around transit stations and BRT stops
Solid Waste
Install gas capture systems for landfill gas
- Restaurant and grocery food waste reduction/composting program- Add compost bins to public facilities, parks, and sports stadiums- Support composting and food waste reduction with organic waste div
Water & Wastewater
Post incineration scrubbers installed at wastewater treatment facilities withfluidized bed incinerators
HFCs (Refrigerants)
- use climate friendly refrigerants- end of equipment life facilities, dropoff/collection programs
Process & Fugitive
Use lower GWP gases for anesthetics (Electricity)
Use lower GWP gases for anesthetics (Non Electricity)
Process & Fugitive - Cleveland Cliffs
Carbon Capture, Sequestration, and Green Steel at Cleveland Cliffs
Process & Fugitive - Carmuese
Cement making carbon capture
Agriculture
Current Reductions and Sequestrations
Carbon Capture & Sequestration
Regional Direct Air Capture
AFOLU
Habitat Restoration
Expand Wetland Restoration Programs
Reforest agriculture lands no longer in use
Tree carbon-capture
Expand agriculture practices

(106,200)	(106,200)	(106,200)
(3,942)	(7,884)	(11,825)
(4,139)	(8,278)	(12,417)
0	0	0
0	0	0
(100,165)	(200,331)	(300,496)
(100,165)	(200,331)	(300,496)
(100,165)	(200,331)	(300,496)
(50,083)	(100,165)	(150,248)
(45,074)	(90,149)	(135,223)
(40,066)	(80,132)	(120,199)
(10,017)	(20,033)	(30,050)
(5,008)	(10,017)	(15,025)
(5,008)	(10,017)	(15,025)
(15,767)	(31,535)	(47,302)
(3,153)	(6,307)	(9,460)
(2,838)	(5,676)	(8,514)
(2,523)	(5,046)	(7,568)
(136,617)	(273,235)	(409,852)
(27,341)	(54,682)	(82,023)
(65,318)	(130,636)	(195,954)
(16,881)	(33,763)	(50,644)
(8,291)	(16,582)	(24,872)
(8,848)	(17,696)	(26,544)
(132)	(264)	(396)
(95,908)	(191,815)	(287,723)
(15,179)	(18,098)	(21,017)
(20,031)	(40,062)	(60,093)
(205,379)	(410,759)	(616,138)
(1,002)	(2,003)	(3,005)
(63)	(126)	(189)
(39,979)	(79,959)	(119,938)
0	0	0
(1,169,371)	(1,169,371)	(1,169,371)
0	0	0
(5,000)	(5,000)	(5,000)
(400)	(800)	(1,200)
(5,200)	(10,400)	(15,600)
(280)	(280)	(280)
(250)	(250)	(250)

Land bank set-asides for carbon storage	(100)	(100)	(100)
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2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
(2,517,411)	(3,052,373)	(3,089,868)	(3,180,465)	(3,217,962)	(3,308,558)	(3,346,053)	(3,436,650)	(3,474,146)	(3,564,742)	(3,602,238)	(3,692,834)	(3,730,331)	(3,820,927)	(3,861,380)	(3,954,932)
(672,974)	(923,868)	(1,064,253)	(1,310,893)	(1,451,390)	(1,698,139)	(1,838,746)	(2,085,604)	(2,226,321)	(2,473,291)	(2,614,117)	(2,861,197)	(3,002,132)	(3,249,322)	(3,390,369)	(3,637,667)
(2,466,609)	(3,083,259)	(3,389,171)	(3,589,909)	(3,730,547)	(3,871,184)	(4,011,823)	(4,152,461)	(4,293,099)	(4,433,737)	(4,574,375)	(4,715,013)	(4,879,814)	(4,879,814)	(4,879,814)	(4,879,814)
(507,244)	(634,055)	(866,119)	(1,098,183)	(1,330,246)	(1,562,311)	(1,794,375)	(2,026,437)	(2,258,501)	(2,490,566)	(2,722,630)	(2,954,693)	(3,186,756)	(3,418,821)	(3,650,885)	(3,882,948)
(164,176)	(205,220)	(254,075)	(302,929)	(351,783)	(400,637)	(449,492)	(498,346)	(547,200)	(596,054)	(644,909)	(693,763)	(769,270)	(778,145)	(787,020)	(795,895)
(407,567)	(506,394)	(548,892)	(594,893)	(640,893)	(686,894)	(732,894)	(778,895)	(824,896)	(870,896)	(916,897)	(962,898)	(1,008,898)	(1,054,899)	(1,100,900)	(1,146,900)
(80,124)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)
(821,517)	(1,026,896)	(1,026,896)	(1,026,896)	(995,519)	(947,027)	(898,535)	(850,042)	(801,550)	(753,058)	(704,565)	(656,073)	(607,580)	(559,088)	(510,596)	(462,103)
(1,197,401)	(1,203,001)	(1,206,001)	(1,209,001)	(1,212,001)	(1,215,001)	(1,218,001)	(1,221,001)	(1,224,001)	(1,227,001)	(1,230,001)	(1,233,001)	(1,236,001)	(1,239,001)	(1,242,001)	(1,245,001)
20,374,646	18,346,689	17,384,852	16,366,856	15,601,080	14,694,543	13,948,704	13,044,950	12,301,848	11,400,786	10,660,341	9,761,892	8,973,205	8,257,906	7,700,186	6,984,392
2,029	2,030	2,031	2,032	2,033	2,034	2,035	2,036	2,037	2,038	2,039	2,040	2,041	2,042	2,043	2,044
(2,220,546)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)
(44,411)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(22,205)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(22,205)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(19,872)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(32,231)	(39,724)	(44,365)	(49,007)	(53,649)	(58,291)	(62,932)	(67,574)	(72,216)	(76,857)	(81,499)	(86,141)	(90,783)	(95,424)	(100,066)	(104,708)
(92,000)	(115,000)	(138,000)	(161,000)	(184,000)	(207,000)	(230,000)	(253,000)	(276,000)	(299,000)	(322,000)	(345,000)	(368,000)	(391,000)	(414,000)	(437,000)
(53,100)	(106,200)	(106,200)	(159,300)	(159,300)	(212,400)	(212,400)	(265,500)	(265,500)	(318,600)	(318,600)	(371,700)	(371,700)	(424,800)	(424,800)	(477,900)
(7,884)	(9,854)	(13,796)	(17,738)	(21,680)	(25,622)	(29,563)	(33,505)	(37,447)	(41,389)	(45,330)	(49,272)	(53,214)	(57,156)	(61,098)	(65,039)
(2,956)	(5,913)	(11,825)	(17,738)	(23,651)	(29,563)	(35,476)	(41,389)	(47,301)	(53,214)	(59,127)	(65,039)	(70,952)	(76,865)	(85,734)	(94,603)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(412,398)	(515,498)	(618,598)	(721,697)	(824,797)	(927,896)	(1,030,996)	(1,134,096)	(1,237,195)	(1,340,295)	(1,443,394)	(1,546,494)	(1,649,594)	(1,752,693)	(1,855,793)	(1,958,892)
(39,574)	(49,467)	(59,360)	(69,254)	(79,147)	(89,040)	(98,934)	(108,827)	(118,721)	(128,614)	(138,507)	(148,401)	(158,294)	(168,187)	(178,081)	(187,974)
(41,240)	(51,550)	(60,571)	(69,592)	(78,613)	(87,635)	(96,656)	(105,677)	(114,698)	(123,720)	(132,741)	(141,762)	(150,783)	(159,804)	(168,826)	(177,847)
(20,620)	(25,775)	(29,641)	(33,507)	(37,374)	(41,240)	(45,106)	(48,972)	(52,839)	(56,705)	(60,571)	(64,437)	(68,303)	(72,170)	(76,036)	(79,902)
(20,620)	(25,775)	(27,064)	(28,352)	(29,641)	(30,930)	(32,219)	(33,507)	(34,796)	(36,085)	(37,374)	(38,662)	(39,951)	(41,240)	(42,529)	(43,817)
0	(3,000)	(3,603)	(4,260)	(4,973)	(5,740)	(6,563)	(7,440)	(8,373)	(9,360)	(10,403)	(11,500)	(12,653)	(13,860)	(15,123)	(16,440)

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[illegible]

2045	2046	2047	2048	2049	2050
(3,995,384)	(4,088,937)	(4,129,390)	(4,222,942)	(4,263,394)	(4,356,947)
(3,762,898)	(3,881,713)	(3,894,326)	(4,013,140)	(4,025,754)	(4,144,567)
(4,879,814)	(4,879,814)	(4,879,814)	(4,879,814)	(4,879,814)	(4,879,814)
(4,115,012)	(4,347,076)	(4,579,140)	(4,811,202)	(5,043,268)	(5,275,331)
(804,770)	(813,645)	(822,520)	(831,395)	(840,270)	(849,145)
(1,192,901)	(1,238,902)	(1,284,902)	(1,330,903)	(1,376,904)	(1,404,789)
(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)
(413,611)	(365,119)	(316,626)	(268,134)	(219,642)	(171,149)
(1,748,001)	(1,751,001)	(1,754,001)	(1,757,001)	(1,760,001)	(2,263,001)
5,945,017	5,360,193	4,935,892	4,353,489	3,931,566	2,869,625

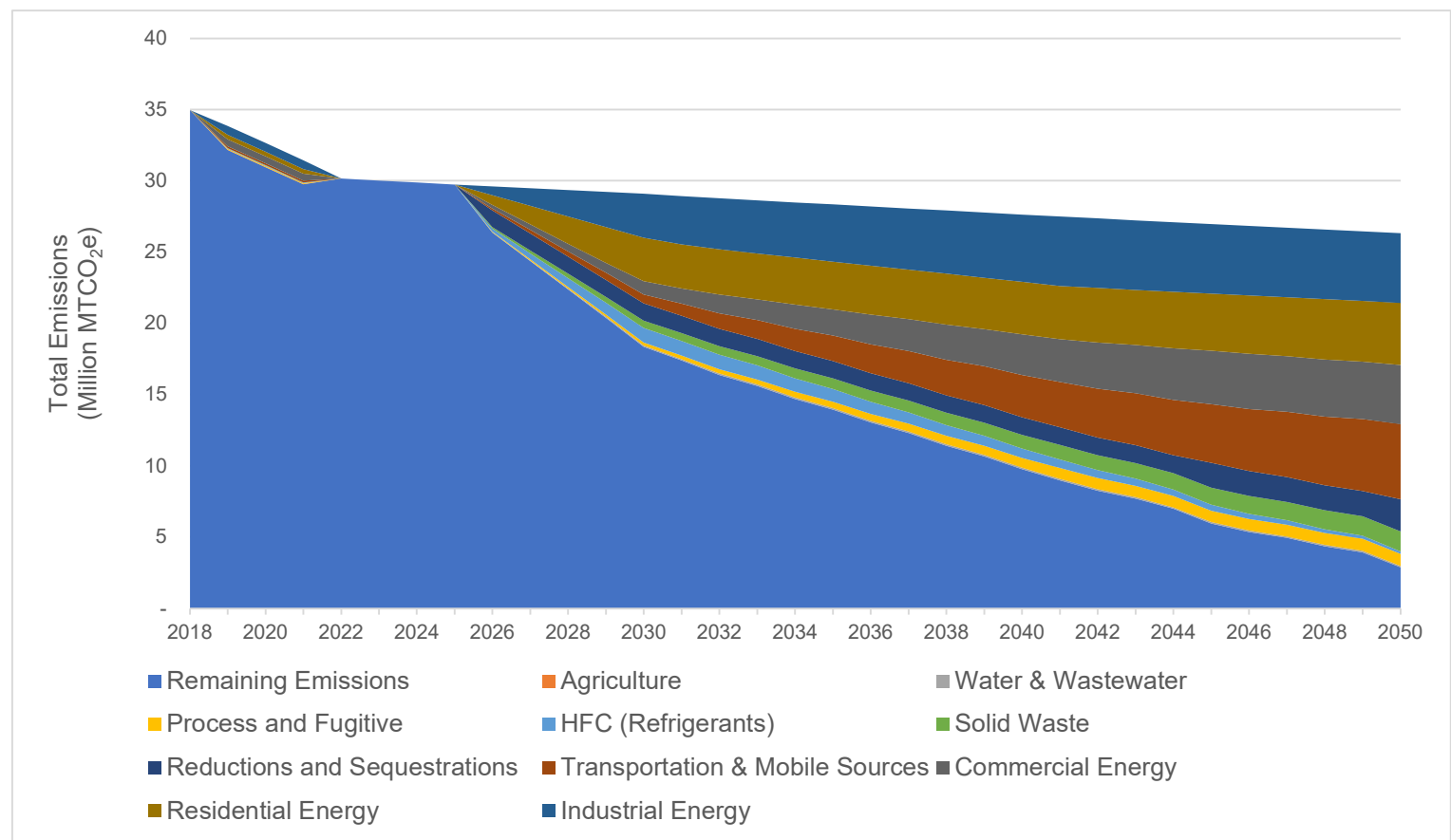
2,045	2,046	2,047	2,048	2,049	2,050
(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)	(2,775,682)
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
(109,349)	(113,991)	(118,633)	(123,275)	(127,916)	(132,558)
(460,000)	(483,000)	(506,000)	(529,000)	(552,000)	(575,000)
(477,900)	(531,000)	(531,000)	(584,100)	(584,100)	(637,200)
(68,981)	(72,923)	(76,865)	(80,806)	(84,748)	(88,690)
(103,472)	(112,341)	(121,210)	(130,079)	(138,948)	(147,817)
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
(2,061,992)	(2,165,092)	(2,268,191)	(2,371,291)	(2,474,390)	(2,577,490)
(197,868)	(207,761)	(217,654)	(206,199)	(103,100)	0
(186,868)	(195,889)	(91,645)	0	0	0
(83,768)	(8,748)	0	0	0	0
(45,106)	0	0	0	0	0
(1,888)	0	0	0	0	0

(955,800)	(1,062,000)	(1,062,000)	(1,168,200)	(1,168,200)	(1,274,400)
(137,962)	(145,846)	(153,729)	(161,613)	(169,497)	(177,380)
(91,646)	(96,377)	(101,107)	(105,837)	(110,567)	(115,297)
0	0	0	0	0	0
0	0	0	0	0	0
(2,003,310)	(2,103,475)	(2,203,641)	(2,303,806)	(2,403,972)	(2,504,137)
(500,827)	(400,662)	(300,496)	(200,331)	(100,165)	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
(98,721)	(98,721)	(98,721)	(98,721)	(98,721)	(98,721)
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
(2,276,956)	(2,276,956)	(2,276,956)	(2,276,956)	(2,276,956)	(2,276,956)
(995,686)	(1,052,951)	(1,110,217)	(1,167,482)	(1,224,748)	(1,282,013)
(2,570,985)	(2,720,612)	(2,870,238)	(3,019,864)	(3,169,491)	(3,319,117)
(337,626)	(354,507)	(371,388)	(388,269)	(405,151)	(422,032)
(165,815)	(174,106)	(182,397)	(190,687)	(198,978)	(207,269)
(44,240)	(44,240)	(44,240)	(44,240)	(44,240)	(44,240)
(660)	(660)	(660)	(660)	(660)	(660)
(1,044,709)	(1,082,387)	(1,120,065)	(1,157,743)	(1,195,421)	(1,233,099)
(148,192)	(156,515)	(164,837)	(173,160)	(181,483)	(171,690)
(100,155)	(100,155)	(100,155)	(100,155)	(100,155)	(100,155)
(413,611)	(365,119)	(316,626)	(268,134)	(219,642)	(171,149)
(5,008)	(5,008)	(5,008)	(5,008)	(5,008)	(5,008)
(315)	(315)	(315)	(315)	(315)	(315)
(666,321)	(666,321)	(666,321)	(666,321)	(666,321)	(666,321)
(133,125)	(142,000)	(150,875)	(159,750)	(168,625)	(177,500)
(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)	(1,169,371)
(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(1,000,000)
(5,000)	(5,000)	(5,000)	(5,000)	(5,000)	(5,000)
(8,000)	(8,400)	(8,800)	(9,200)	(9,600)	(10,000)
(65,000)	(67,600)	(70,200)	(72,800)	(75,400)	(78,000)
(280)	(280)	(280)	(280)	(280)	(280)
(250)	(250)	(250)	(250)	(250)	(250)

(100) (100) (100) (100) (100) (100)

Summary Table	2018	2019	2020	2021	2022	2023	2024	2025	2026
Residential Energy	0	318,870	318,870	318,870	0	0	0	0	685,036
Commercial Energy	-	485,898	485,898	485,898	-	-	-	-	247,894
Industrial Energy	-	616,253	616,253	616,253	-	-	-	-	616,649
Transportation & Mobile Sources	-	129,138	129,138	129,138	-	-	-	-	126,811
Process and Fugitive Emissions	-	69,135	69,135	69,135	-	-	-	-	41,044
Solid Waste	-	13,109	13,109	13,109	-	-	-	-	111,087
Water & Wastewater	-	753	753	753	-	-	-	-	20,031
HFC (Refrigerants)	-	42,167	42,167	42,167	-	-	-	-	205,379
Agriculture	-	14,026	14,026	14,026	-	-	-	-	-
Reductions and Sequestrations	-	-	-	-	-	-	-	-	1,180,601
Remaining Emissions	34,966,243	32,157,466	30,953,704	29,749,942	30,151,196	30,011,463	29,873,514	29,737,326	26,368,339

Sum of Value	Column Labels								
Row Labels	Remaining Emissions	Agriculture	Water & Wastewater	Process and Fugitive	HFC (Refrigerants)	Solid Waste	Reductions and Sequestrations	Transportation & Mobile Sources	Commercial Energy
2018	34,966,243	-	-	-	-	-	-	-	-
2019	32,157,466	14,026	753	69,135	42,167	13,109	-	129,138	485,898
2020	30,953,704	14,026	753	69,135	42,167	13,109	-	129,138	485,898
2021	29,749,942	14,026	753	69,135	42,167	13,109	-	129,138	485,898
2022	30,151,196	-	-	-	-	-	-	-	-
2023	30,011,463	-	-	-	-	-	-	-	-
2024	29,873,514	-	-	-	-	-	-	-	-
2025	29,737,326	-	-	-	-	-	-	-	-
2026	26,368,339	-	20,031	41,044	205,379	111,087	1,180,601	126,811	247,894
2027	24,369,745	-	40,062	82,088	410,759	209,913	1,186,201	253,623	389,588
2028	22,372,848	-	60,093	123,132	616,138	308,740	1,191,801	380,433	531,281
2029	20,374,646	-	80,124	164,176	821,517	407,567	1,197,401	507,244	672,974
2030	18,346,689	-	100,155	205,220	1,026,896	506,394	1,203,001	634,055	923,868
2031	17,384,852	-	100,155	254,075	1,026,896	548,892	1,206,001	866,119	1,064,253
2032	16,366,856	-	100,155	302,929	1,026,896	594,893	1,209,001	1,098,183	1,310,893
2033	15,601,080	-	100,155	351,783	995,519	640,893	1,212,001	1,330,246	1,451,390
2034	14,694,543	-	100,155	400,637	947,027	686,894	1,215,001	1,562,311	1,698,139
2035	13,948,704	-	100,155	449,492	898,535	732,894	1,218,001	1,794,375	1,838,746
2036	13,044,950	-	100,155	498,346	850,042	778,895	1,221,001	2,026,437	2,085,604
2037	12,301,848	-	100,155	547,200	801,550	824,896	1,224,001	2,258,501	2,226,321
2038	11,400,786	-	100,155	596,054	753,058	870,896	1,227,001	2,490,566	2,473,291
2039	10,660,341	-	100,155	644,909	704,565	916,897	1,230,001	2,722,630	2,614,117
2040	9,761,892	-	100,155	693,763	656,073	962,898	1,233,001	2,954,693	2,861,197
2041	8,973,205	-	100,155	769,270	607,580	1,008,898	1,236,001	3,186,756	3,002,132
2042	8,257,906	-	100,155	778,145	559,088	1,054,899	1,239,001	3,418,821	3,249,322
2043	7,700,186	-	100,155	787,020	510,596	1,100,900	1,242,001	3,650,885	3,390,369
2044	6,984,392	-	100,155	795,895	462,103	1,146,900	1,245,001	3,882,948	3,637,667
2045	5,945,017	-	100,155	804,770	413,611	1,192,901	1,748,001	4,115,012	3,762,898
2046	5,360,193	-	100,155	813,645	365,119	1,238,902	1,751,001	4,347,076	3,881,713
2047	4,935,892	-	100,155	822,520	316,626	1,284,902	1,754,001	4,579,140	3,894,326
2048	4,353,489	-	100,155	831,395	268,134	1,330,903	1,757,001	4,811,202	4,013,140
2049	3,931,566	-	100,155	840,270	219,642	1,376,904	1,760,001	5,043,268	4,025,754
2050	2,869,625	-	100,155	849,145	171,149	1,404,789	2,263,001	5,275,331	4,144,567
Grand Total	553,910,440	42,077	2,305,824	13,654,320	15,761,000	21,282,874	34,149,025	63,704,081	60,849,139



2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
1,294,843	1,904,648	2,517,411	3,052,373	3,089,868	3,180,465	3,217,962	3,308,558	3,346,053	3,436,650	3,474,146	3,564,742	3,602,238	3,692,834	3,730,331
389,588	531,281	672,974	923,868	1,064,253	1,310,893	1,451,390	1,698,139	1,838,746	2,085,604	2,226,321	2,473,291	2,614,117	2,861,197	3,002,132
1,233,305	1,849,954	2,466,609	3,083,259	3,389,171	3,589,909	3,730,547	3,871,184	4,011,823	4,152,461	4,293,099	4,433,737	4,574,375	4,715,013	4,879,814
253,623	380,433	507,244	634,055	866,119	1,098,183	1,330,246	1,562,311	1,794,375	2,026,437	2,258,501	2,490,566	2,722,630	2,954,693	3,186,756
82,088	123,132	164,176	205,220	254,075	302,929	351,783	400,637	449,492	498,346	547,200	596,054	644,909	693,763	769,270
209,913	308,740	407,567	506,394	548,892	594,893	640,893	686,894	732,894	778,895	824,896	870,896	916,897	962,898	1,008,898
40,062	60,093	80,124	100,155	100,155	100,155	100,155	100,155	100,155	100,155	100,155	100,155	100,155	100,155	100,155
410,759	616,138	821,517	1,026,896	1,026,896	1,026,896	995,519	947,027	898,535	850,042	801,550	753,058	704,565	656,073	607,580
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,186,201	1,191,801	1,197,401	1,203,001	1,206,001	1,209,001	1,212,001	1,215,001	1,218,001	1,221,001	1,224,001	1,227,001	1,230,001	1,233,001	1,236,001
24,369,745	22,372,848	20,374,646	18,346,689	17,384,852	16,366,856	15,601,080	14,694,543	13,948,704	13,044,950	12,301,848	11,400,786	10,660,341	9,761,892	8,973,205

Residential Energy	Industrial Energy	Grand Total
-	-	34,966,243
318,870	616,253	33,846,815
318,870	616,253	32,643,054
318,870	616,253	31,439,292
-	-	30,151,196
-	-	30,011,463
-	-	29,873,514
-	-	29,737,326
685,036	616,649	29,602,871
1,294,843	1,233,305	29,470,127
1,904,648	1,849,954	29,339,068
2,517,411	2,466,609	29,209,670
3,052,373	3,083,259	29,081,910
3,089,868	3,389,171	28,930,283
3,180,465	3,589,909	28,780,179
3,217,962	3,730,547	28,631,575
3,308,558	3,871,184	28,484,448
3,346,053	4,011,823	28,338,777
3,436,650	4,152,461	28,194,541
3,474,146	4,293,099	28,051,717
3,564,742	4,433,737	27,910,286
3,602,238	4,574,375	27,770,226
3,692,834	4,715,013	27,631,518
3,730,331	4,879,814	27,494,142
3,820,927	4,879,814	27,358,077
3,861,380	4,879,814	27,223,305
3,954,932	4,879,814	27,089,806
3,995,384	4,879,814	26,957,562
4,088,937	4,879,814	26,826,554
4,129,390	4,879,814	26,696,764
4,222,942	4,879,814	26,568,174
4,263,394	4,879,814	26,440,766
4,356,947	4,879,814	26,314,523
84,749,001	100,657,992	951,065,774

2042	2043	2044	2045	2046	2047	2048	2049	2050
3,820,927	3,861,380	3,954,932	3,995,384	4,088,937	4,129,390	4,222,942	4,263,394	4,356,947
3,249,322	3,390,369	3,637,667	3,762,898	3,881,713	3,894,326	4,013,140	4,025,754	4,144,567
4,879,814	4,879,814	4,879,814	4,879,814	4,879,814	4,879,814	4,879,814	4,879,814	4,879,814
3,418,821	3,650,885	3,882,948	4,115,012	4,347,076	4,579,140	4,811,202	5,043,268	5,275,331
778,145	787,020	795,895	804,770	813,645	822,520	831,395	840,270	849,145
1,054,899	1,100,900	1,146,900	1,192,901	1,238,902	1,284,902	1,330,903	1,376,904	1,404,789
100,155	100,155	100,155	100,155	100,155	100,155	100,155	100,155	100,155
559,088	510,596	462,103	413,611	365,119	316,626	268,134	219,642	171,149
-	-	-	-	-	-	-	-	-
1,239,001	1,242,001	1,245,001	1,748,001	1,751,001	1,754,001	1,757,001	1,760,001	2,263,001
8,257,906	7,700,186	6,984,392	5,945,017	5,360,193	4,935,892	4,353,489	3,931,566	2,869,625

Actual Numbers

Summary Table	2018	2019
Clean Electricity		
BEV / FCEV - Light Duty		
Building Efficiency and Electrification		
Green Steel Production		
Solid Waste		
BEV/ FCEV - Medium and Heavy Duty		
Natural Capture & Sequestration		
Direct Air Capture		
Sustainable Aviation and Maritime Fuel		
Carbon Capture in Cement Making		
HFC (Refrigerants)		
Water & Wastewater		
Other Measures		
Remaining Emissions	34,966,243	33,762,481

Clean Electricity		
Community enrollment in renewable energy CCA		
Intelligent grid management systems (Residential)		
Grid-scale power systems modernization (R)		
(R)		
Implement the latest state adopted building standards & codes (R)		
Grid-Coordinated Demand Response & Load Shaping (R)		
District or utility-scale battery storage - short duration (<4 hrs)		
District or utility-scale battery storage - Long duration (>10 hrs)		
Geothermal electricity generation (R)		
Offshore wind (R)		
New Nuclear at Perry		
Physical PPA (Commercial)		
Commercial-scale rooftop & parking lot solar		
intelligent grid management systems (C)		
Grid-scale power systems modernization (C)		
diode (LED) light bulbs (C)		
Grid-Coordinated Demand Response & Load Shaping (C)		
Utility-scaled solar (in-region) (C)		
Geothermal electricity generation (C)		
Offshore wind (C)		
Physical PPA (Industrial)		
Energy Efficient Equipment		
Energy audits		
Automation (Electricity)		
Waste heat recovery and utilization systems (Electricity)		

decarbonization (Electricity)
intelligent grid management systems (I)
Grid-scale power systems modernization (I)
diode (LED) light bulbs (I)
Electrification of industrial process heat in synergy with grid development
decarbonization (Non Electricity)
Electricity Total
Building Efficiency and Electrification
Energy Efficiency Retrofits
Building System Electrification
District thermal energy system (R)
Utility-scaled solar (in-region) (R)
Community-serving microgrid and minigrid systems
District thermal energy system (C)
Repurpose brownfields into clean energy hubs
Building Efficiency and Electrification Total
Green Steel Production
Carbon Capture, Sequestration, and Green Steel at Cleveland Cliffs
Carbon Capture, Sequestration, and Green Steel at Cleveland Cliffs
Green Steel Production Total
BEV / FCEV - Light Duty
- Expand BEV charging and FCEV fueling infrastructure
BEV/FCEV adoption in government fleets
BEV/ FCEV - Medium and Heavy Duty
BEV/FCEV adoption of medium and heavy-duty vehicles by fleets.
Direct Air Capture
Regional Direct Air Capture
Sustainable Aviation and Maritime Fuel
Advance the use of sustainable aviation fuel at regional airports
ports
Sustainable Aviation and Maritime Fuel Total
Solid Waste
Install gas capture systems for landfill gas
- Restaurant and grocery food waste reduction/composting program
Add compost bins to public facilities, parks, and sports stadiums
Solid Waste Total
Water & Wastewater
fluidized bed incinerators

HFC
- use climate friendly refrigerants
- end of equipment life facilities, dropoff/collection programs
Natural Capture & Sequestration
Current Reductions and Sequestrations
Habitat Restoration
Expand Wetland Restoration Programs
Reforest agriculture lands no longer in use
Tree carbon-capture
Expand agriculture practices
Land bank set-asides for carbon storage
Natural Capture & Sequestration Total
Carbon Capture in Cement Making
Cement making carbon capture
Other Measures
Automation (Non Electricity)
Waste heat recovery and utilization systems (Non Electricity)
conversions
Increase density and mix of uses around transit stations and BRT stops
Use lower GWP gases for anesthetics (Electricity)
Use lower GWP gases for anesthetics (Non Electricity)
Other Measures Total



2020	2021	2022	2023	2024	2025	2026
						-1,208,809
						-65,318
						-198,162
						-176,596
						-111,087
						-27,341
						-1,180,601
						0
						-25,172
						0
						-205,379
						-20,031
						-16,036
32,558,720	31,354,958	30,151,196	30,011,463	29,873,514	29,737,326	26,368,339

						-555,136
						-11,103
						-5,551
						-5,551
						-19,872
						0
						0
						0
						0
						0
						0
						-103,100
						-9,893
						-10,310
						-5,155
						-5,155
						0
						-3,942
						0
						0
						-100,165
						-100,165
						-100,165
						-50,083
						-45,074

-40,066
-10,017
-5,008
-5,008
-15,767
-2,523
-1,208,809
-9,752
-23,000
-53,100
-1,971
0
-106,200
-4,139
-198,162
-136,617
-39,979
-176,596
-65,318
-27,341
0
-16,881
-8,291
-25,172
-95,908
-15,179
-111,087
-20,031

-205,379
-1,169,371
-5,000
-400
-5,200
-280
-250
-100
-1,180,601
0
-3,153
-2,838
-8,848
-132
-1,002
-63
-16,036

2027	2028	2029	2030	2031	2032
-2,397,753	-3,586,689	-4,775,632	-5,836,670	-6,141,542	-6,341,292
-130,636	-195,954	-261,272	-326,590	-476,216	-625,843
-234,765	-271,368	-310,927	-509,785	-552,011	-753,538
-353,194	-529,790	-706,386	-882,983	-1,059,580	-1,236,177
-209,913	-308,740	-407,567	-506,394	-548,892	-594,893
-54,682	-82,023	-109,364	-136,705	-193,970	-251,236
-1,186,201	-1,191,801	-1,197,401	-1,203,001	-1,206,001	-1,209,001
0	0	0	0	0	0
-50,345	-75,516	-100,688	-125,860	-151,033	-176,204
0	0	0	0	-8,875	-17,750
-410,759	-616,138	-821,517	-1,026,896	-1,026,896	-1,026,896
-40,062	-60,093	-80,124	-100,155	-100,155	-100,155
-32,072	-48,108	-64,146	-80,182	-80,260	-80,339
24,369,745	22,372,848	20,374,646	18,346,689	17,384,852	16,366,855

-1,110,273	-1,665,409	-2,220,546	-2,775,682	-2,775,682	-2,775,682
-22,205	-33,308	-44,411	0	0	0
-11,103	-16,654	-22,205	0	0	0
-11,103	-16,654	-22,205	0	0	0
-19,872	-19,872	-19,872	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
-206,199	-309,299	-412,398	-515,498	-618,598	-721,697
-19,787	-29,680	-39,574	-49,467	-59,360	-69,254
-20,620	-30,930	-41,240	-51,550	-60,571	-69,592
-10,310	-15,465	-20,620	-25,775	-29,641	-33,507
-10,310	-15,465	-20,620	-25,775	-27,064	-28,352
0	0	0	-3,000	-3,603	-4,260
-7,884	-11,825	-15,767	-19,709	-27,592	-35,476
0	0	0	0	0	0
0	0	0	0	0	0
-200,331	-300,496	-400,662	-500,827	-600,993	-701,158
-200,331	-300,496	-400,662	-500,827	-525,869	-550,910
-200,331	-300,496	-400,662	-500,827	-525,869	-550,910
-100,165	-150,248	-200,331	-250,414	-250,414	-250,414
-90,149	-135,223	-180,298	-225,372	-226,624	-227,876

-80,132	-120,199	-160,265	-200,331	-200,331	-200,331
-20,033	-30,050	-40,066	-50,083	-58,847	-22,538
-10,017	-15,025	-20,033	-25,041	-28,798	0
-10,017	-15,025	-20,033	-25,041	-26,293	0
-31,535	-47,302	-63,070	-78,837	-82,779	-86,721
-5,046	-7,568	-10,091	-12,614	-12,614	-12,614
-2,397,753	-3,586,689	-4,775,632	-5,836,670	-6,141,542	-6,341,292
-17,245	-24,738	-32,231	-39,724	-44,365	-49,007
-46,000	-69,000	-92,000	-115,000	-138,000	-161,000
-53,100	-53,100	-53,100	-106,200	-106,200	-159,300
-3,942	-5,913	-7,884	-9,854	-13,796	-17,738
0	0	-2,956	-5,913	-11,825	-17,738
-106,200	-106,200	-106,200	-212,400	-212,400	-318,600
-8,278	-12,417	-16,555	-20,694	-25,424	-30,155
-234,765	-271,368	-310,927	-509,785	-552,011	-753,538
-273,235	-409,852	-546,469	-683,087	-819,704	-956,322
-79,959	-119,938	-159,917	-199,896	-239,876	-279,855
-353,194	-529,790	-706,386	-882,983	-1,059,580	-1,236,177
-130,636	-195,954	-261,272	-326,590	-476,216	-625,843
-54,682	-82,023	-109,364	-136,705	-193,970	-251,236
0	0	0	0	0	0
-33,763	-50,644	-67,525	-84,406	-101,288	-118,169
-16,582	-24,872	-33,163	-41,454	-49,745	-58,035
-50,345	-75,516	-100,688	-125,860	-151,033	-176,204
-191,815	-287,723	-383,631	-479,539	-517,217	-554,895
-18,098	-21,017	-23,936	-26,855	-31,675	-39,998
-209,913	-308,740	-407,567	-506,394	-548,892	-594,893
-40,062	-60,093	-80,124	-100,155	-100,155	-100,155

-410,759	-616,138	-821,517	-1,026,896	-1,026,896	-1,026,896
-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371
-5,000	-5,000	-5,000	-5,000	-5,000	-5,000
-800	-1,200	-1,600	-2,000	-2,400	-2,800
-10,400	-15,600	-20,800	-26,000	-28,600	-31,200
-280	-280	-280	-280	-280	-280
-250	-250	-250	-250	-250	-250
-100	-100	-100	-100	-100	-100
-1,186,201	-1,191,801	-1,197,401	-1,203,001	-1,206,001	-1,209,001
0	0	0	0	-8,875	-17,750
-6,307	-9,460	-12,614	-15,767	-15,767	-15,767
-5,676	-8,514	-11,353	-14,191	-14,269	-14,348
-17,696	-26,544	-35,392	-44,240	-44,240	-44,240
-264	-396	-528	-660	-660	-660
-2,003	-3,005	-4,007	-5,008	-5,008	-5,008
-126	-189	-252	-315	-315	-315
-32,072	-48,108	-64,146	-80,182	-80,260	-80,339

2033	2034	2035	2036	2037	2038
-6,481,001	-6,620,761	-6,760,580	-6,900,450	-7,040,379	-7,180,361
-775,469	-925,095	-1,074,722	-1,224,348	-1,373,974	-1,523,601
-795,764	-997,291	-1,039,516	-1,241,043	-1,283,270	-1,484,795
-1,412,773	-1,589,369	-1,765,967	-1,942,563	-2,119,159	-2,295,756
-640,893	-686,894	-732,894	-778,895	-824,896	-870,896
-308,501	-365,767	-423,032	-480,297	-537,563	-594,828
-1,212,001	-1,215,001	-1,218,001	-1,221,001	-1,224,001	-1,227,001
0	0	0	0	0	0
-201,376	-226,549	-251,721	-276,892	-302,064	-327,237
-26,625	-35,500	-44,375	-53,250	-62,125	-71,000
-995,519	-947,027	-898,535	-850,042	-801,550	-753,058
-100,155	-100,155	-100,155	-100,155	-100,155	-100,155
-80,418	-80,497	-80,576	-80,655	-80,734	-80,812
15,601,080	14,694,542	13,948,703	13,044,950	12,301,847	11,400,786

-2,775,682	-2,775,682	-2,775,682	-2,775,682	-2,775,682	-2,775,682
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
-824,797	-927,896	-1,030,996	-1,134,096	-1,237,195	-1,340,295
-79,147	-89,040	-98,934	-108,827	-118,721	-128,614
-78,613	-87,635	-96,656	-105,677	-114,698	-123,720
-37,374	-41,240	-45,106	-48,972	-52,839	-56,705
-29,641	-30,930	-32,219	-33,507	-34,796	-36,085
-4,973	-5,740	-6,563	-7,440	-8,373	-9,360
-43,360	-51,243	-59,127	-67,010	-74,894	-82,777
0	0	0	0	0	0
0	0	0	0	0	0
-801,324	-901,489	-1,001,655	-1,101,820	-1,201,986	-1,302,151
-575,952	-600,993	-626,034	-651,076	-676,117	-701,158
-575,952	-600,993	-626,034	-651,076	-626,034	-500,828
-250,414	-250,414	-250,414	-100,165	0	0
-229,129	-150,248	0	0	0	0

-71,366	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
-90,663	-94,604	-98,546	-102,488	-106,430	-110,372
-12,614	-12,614	-12,614	-12,614	-12,614	-12,614
-6,481,001	-6,620,761	-6,760,580	-6,900,450	-7,040,379	-7,180,361
-53,649	-58,291	-62,932	-67,574	-72,216	-76,857
-184,000	-207,000	-230,000	-253,000	-276,000	-299,000
-159,300	-212,400	-212,400	-265,500	-265,500	-318,600
-21,680	-25,622	-29,563	-33,505	-37,447	-41,389
-23,651	-29,563	-35,476	-41,389	-47,301	-53,214
-318,600	-424,800	-424,800	-531,000	-531,000	-637,200
-34,885	-39,615	-44,345	-49,075	-53,805	-58,535
-795,764	-997,291	-1,039,516	-1,241,043	-1,283,270	-1,484,795
-1,092,939	-1,229,556	-1,366,174	-1,502,791	-1,639,408	-1,776,026
-319,834	-359,813	-399,793	-439,772	-479,751	-519,730
-1,412,773	-1,589,369	-1,765,967	-1,942,563	-2,119,159	-2,295,756
-775,469	-925,095	-1,074,722	-1,224,348	-1,373,974	-1,523,601
-308,501	-365,767	-423,032	-480,297	-537,563	-594,828
0	0	0	0	0	0
-135,050	-151,932	-168,813	-185,694	-202,575	-219,457
-66,326	-74,617	-82,908	-91,198	-99,489	-107,780
-201,376	-226,549	-251,721	-276,892	-302,064	-327,237
-592,573	-630,251	-667,929	-705,607	-743,285	-780,963
-48,320	-56,643	-64,965	-73,288	-81,611	-89,933
-640,893	-686,894	-732,894	-778,895	-824,896	-870,896
-100,155	-100,155	-100,155	-100,155	-100,155	-100,155

-995,519	-947,027	-898,535	-850,042	-801,550	-753,058
-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371
-5,000	-5,000	-5,000	-5,000	-5,000	-5,000
-3,200	-3,600	-4,000	-4,400	-4,800	-5,200
-33,800	-36,400	-39,000	-41,600	-44,200	-46,800
-280	-280	-280	-280	-280	-280
-250	-250	-250	-250	-250	-250
-100	-100	-100	-100	-100	-100
-1,212,001	-1,215,001	-1,218,001	-1,221,001	-1,224,001	-1,227,001
-26,625	-35,500	-44,375	-53,250	-62,125	-71,000
-15,767	-15,767	-15,767	-15,767	-15,767	-15,767
-14,427	-14,506	-14,585	-14,664	-14,743	-14,821
-44,240	-44,240	-44,240	-44,240	-44,240	-44,240
-660	-660	-660	-660	-660	-660
-5,008	-5,008	-5,008	-5,008	-5,008	-5,008
-315	-315	-315	-315	-315	-315
-80,418	-80,497	-80,576	-80,655	-80,734	-80,812

2039	2040	2041	2042	2043	2044
-7,320,398	-7,460,490	-7,564,546	-7,700,806	-7,837,123	-7,973,491
-1,673,227	-1,822,854	-1,972,480	-2,122,106	-2,271,733	-2,421,359
-1,527,021	-1,728,548	-1,770,775	-1,972,301	-2,017,484	-2,221,966
-2,472,353	-2,648,949	-2,943,277	-2,943,277	-2,943,277	-2,943,277
-916,897	-962,898	-1,008,898	-1,054,899	-1,100,900	-1,146,900
-652,094	-709,359	-766,624	-823,890	-881,155	-938,421
-1,230,001	-1,233,001	-1,236,001	-1,239,001	-1,242,001	-1,245,001
0	0	0	0	0	0
-352,409	-377,580	-402,752	-427,925	-453,097	-478,268
-79,875	-88,750	-97,625	-106,500	-115,375	-124,250
-704,565	-656,073	-607,580	-559,088	-510,596	-462,103
-100,155	-100,155	-100,155	-100,155	-100,155	-100,155
-80,891	-80,970	-50,224	-50,224	-50,224	-50,224
10,660,340	9,761,891	8,973,205	8,257,905	7,700,185	6,984,391

-2,775,682	-2,775,682	-2,775,682	-2,775,682	-2,775,682	-2,775,682
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
-1,443,394	-1,546,494	-1,649,594	-1,752,693	-1,855,793	-1,958,892
-138,507	-148,401	-158,294	-168,187	-178,081	-187,974
-132,741	-141,762	-150,783	-159,804	-168,826	-177,847
-60,571	-64,437	-68,303	-72,170	-76,036	-79,902
-37,374	-38,662	-39,951	-41,240	-42,529	-43,817
-10,403	-11,500	-12,653	-13,860	-15,123	-16,440
-90,661	-98,545	-106,428	-114,312	-122,195	-130,079
0	0	0	0	0	0
0	0	0	0	0	0
-1,402,317	-1,502,482	-1,602,648	-1,702,813	-1,802,979	-1,903,144
-726,200	-751,241	-776,282	-801,324	-701,158	-600,993
-375,620	-250,414	-125,207	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
-114,314	-118,256	-98,721	-98,721	-98,721	-98,721
-12,614	-12,614	0	0	0	0
-7,320,398	-7,460,490	-7,564,546	-7,700,806	-7,837,123	-7,973,491
-81,499	-86,141	-90,783	-95,424	-100,066	-104,708
-322,000	-345,000	-368,000	-391,000	-414,000	-437,000
-318,600	-371,700	-371,700	-424,800	-424,800	-477,900
-45,330	-49,272	-53,214	-57,156	-61,098	-65,039
-59,127	-65,039	-70,952	-76,865	-85,734	-94,603
-637,200	-743,400	-743,400	-849,600	-849,600	-955,800
-63,266	-67,996	-72,726	-77,456	-82,186	-86,916
-1,527,021	-1,728,548	-1,770,775	-1,972,301	-2,017,484	-2,221,966
-1,912,643	-2,049,260	-2,276,956	-2,276,956	-2,276,956	-2,276,956
-559,710	-599,689	-666,321	-666,321	-666,321	-666,321
-2,472,353	-2,648,949	-2,943,277	-2,943,277	-2,943,277	-2,943,277
-1,673,227	-1,822,854	-1,972,480	-2,122,106	-2,271,733	-2,421,359
-652,094	-709,359	-766,624	-823,890	-881,155	-938,421
0	0	0	0	0	0
-236,338	-253,219	-270,100	-286,982	-303,863	-320,744
-116,071	-124,361	-132,652	-140,943	-149,234	-157,524
-352,409	-377,580	-402,752	-427,925	-453,097	-478,268
-818,641	-856,319	-893,997	-931,675	-969,353	-1,007,031
-98,256	-106,579	-114,901	-123,224	-131,547	-139,869
-916,897	-962,898	-1,008,898	-1,054,899	-1,100,900	-1,146,900
-100,155	-100,155	-100,155	-100,155	-100,155	-100,155

-704,565	-656,073	-607,580	-559,088	-510,596	-462,103
-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371
-5,000	-5,000	-5,000	-5,000	-5,000	-5,000
-5,600	-6,000	-6,400	-6,800	-7,200	-7,600
-49,400	-52,000	-54,600	-57,200	-59,800	-62,400
-280	-280	-280	-280	-280	-280
-250	-250	-250	-250	-250	-250
-100	-100	-100	-100	-100	-100
-1,230,001	-1,233,001	-1,236,001	-1,239,001	-1,242,001	-1,245,001
-79,875	-88,750	-97,625	-106,500	-115,375	-124,250
-15,767	-15,767	0	0	0	0
-14,900	-14,979	0	0	0	0
-44,240	-44,240	-44,240	-44,240	-44,240	-44,240
-660	-660	-660	-660	-660	-660
-5,008	-5,008	-5,008	-5,008	-5,008	-5,008
-315	-315	-315	-315	-315	-315
-80,891	-80,970	-50,224	-50,224	-50,224	-50,224

2045	2046	2047	2048	2049	2050
-8,093,992	-8,101,876	-8,109,759	-8,117,643	-8,125,527	-8,133,410
-2,570,985	-2,720,612	-2,870,238	-3,019,864	-3,169,491	-3,319,117
-2,267,148	-2,471,631	-2,516,814	-2,721,297	-2,766,479	-2,970,962
-2,943,277	-2,943,277	-2,943,277	-2,943,277	-2,943,277	-2,943,277
-1,192,901	-1,238,902	-1,284,902	-1,330,903	-1,376,904	-1,404,789
-995,686	-1,052,951	-1,110,217	-1,167,482	-1,224,748	-1,282,013
-1,248,001	-1,251,001	-1,254,001	-1,257,001	-1,260,001	-1,263,001
-500,000	-500,000	-500,000	-500,000	-500,000	-1,000,000
-503,441	-528,613	-553,785	-578,956	-604,129	-629,301
-133,125	-142,000	-150,875	-159,750	-168,625	-177,500
-413,611	-365,119	-316,626	-268,134	-219,642	-171,149
-100,155	-100,155	-100,155	-100,155	-100,155	-100,155
-50,224	-50,224	-50,224	-50,224	-50,224	-50,224
5,945,016	5,360,193	4,935,891	4,353,488	3,931,564	2,869,625

-2,775,682	-2,775,682	-2,775,682	-2,775,682	-2,775,682	-2,775,682
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
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0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
-2,061,992	-2,165,092	-2,268,191	-2,371,291	-2,474,390	-2,577,490
-197,868	-207,761	-217,654	-206,199	-103,100	0
-186,868	-195,889	-91,645	0	0	0
-83,768	-8,748	0	0	0	0
-45,106	0	0	0	0	0
-1,888	0	0	0	0	0
-137,962	-145,846	-153,729	-161,613	-169,497	-177,380
0	0	0	0	0	0
0	0	0	0	0	0
-2,003,310	-2,103,475	-2,203,641	-2,303,806	-2,403,972	-2,504,137
-500,827	-400,662	-300,496	-200,331	-100,165	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
-98,721	-98,721	-98,721	-98,721	-98,721	-98,721
0	0	0	0	0	0
-8,093,992	-8,101,876	-8,109,759	-8,117,643	-8,125,527	-8,133,410
-109,349	-113,991	-118,633	-123,275	-127,916	-132,558
-460,000	-483,000	-506,000	-529,000	-552,000	-575,000
-477,900	-531,000	-531,000	-584,100	-584,100	-637,200
-68,981	-72,923	-76,865	-80,806	-84,748	-88,690
-103,472	-112,341	-121,210	-130,079	-138,948	-147,817
-955,800	-1,062,000	-1,062,000	-1,168,200	-1,168,200	-1,274,400
-91,646	-96,377	-101,107	-105,837	-110,567	-115,297
-2,267,148	-2,471,631	-2,516,814	-2,721,297	-2,766,479	-2,970,962
-2,276,956	-2,276,956	-2,276,956	-2,276,956	-2,276,956	-2,276,956
-666,321	-666,321	-666,321	-666,321	-666,321	-666,321
-2,943,277	-2,943,277	-2,943,277	-2,943,277	-2,943,277	-2,943,277
-2,570,985	-2,720,612	-2,870,238	-3,019,864	-3,169,491	-3,319,117
-995,686	-1,052,951	-1,110,217	-1,167,482	-1,224,748	-1,282,013
-500,000	-500,000	-500,000	-500,000	-500,000	-1,000,000
-337,626	-354,507	-371,388	-388,269	-405,151	-422,032
-165,815	-174,106	-182,397	-190,687	-198,978	-207,269
-503,441	-528,613	-553,785	-578,956	-604,129	-629,301
-1,044,709	-1,082,387	-1,120,065	-1,157,743	-1,195,421	-1,233,099
-148,192	-156,515	-164,837	-173,160	-181,483	-171,690
-1,192,901	-1,238,902	-1,284,902	-1,330,903	-1,376,904	-1,404,789
-100,155	-100,155	-100,155	-100,155	-100,155	-100,155

-413,611	-365,119	-316,626	-268,134	-219,642	-171,149
-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371	-1,169,371
-5,000	-5,000	-5,000	-5,000	-5,000	-5,000
-8,000	-8,400	-8,800	-9,200	-9,600	-10,000
-65,000	-67,600	-70,200	-72,800	-75,400	-78,000
-280	-280	-280	-280	-280	-280
-250	-250	-250	-250	-250	-250
-100	-100	-100	-100	-100	-100
-1,248,001	-1,251,001	-1,254,001	-1,257,001	-1,260,001	-1,263,001
-133,125	-142,000	-150,875	-159,750	-168,625	-177,500
0	0	0	0	0	0
0	0	0	0	0	0
-44,240	-44,240	-44,240	-44,240	-44,240	-44,240
-660	-660	-660	-660	-660	-660
-5,008	-5,008	-5,008	-5,008	-5,008	-5,008
-315	-315	-315	-315	-315	-315
-50,224	-50,224	-50,224	-50,224	-50,224	-50,224
