Methodology for projecting the effect of future U.S. emissions on global temperatures.

1. Use EIA data for projections of U.S. emissions to 2050. Out to that year, these projections closely match the SSP2-4.5 scenario, which is the "middle of the road" scenario among the emissions scenarios that the IPCC uses in their various models. The EIA data has the additional benefit of breaking down U.S. emissions by source type and by fuel.

U.S. CO2 Emissions (MMT CO2)	2030	2040	2050
U.S. Coal Electricity	344	297	244
U.S. Electricity	782	707	683
U.S. Total Emissions	4011	3877	3949

2. Download the MAGICC7 model and emissions profiles or use the online version (need to create an account). This reduced-form modeling tool is frequently used in IPCC-referenced papers, is open source, and is very fast, making it ideal for this work.
3. Subtract the projected U.S. emissions from the SSP2-4.5 scenario, beginning in the year 2030 (maintain the same emissions for 2020 on back). Subtract 50% of U.S. emissions in 2030, 75% in 2040, and 100% in 2050. For 2060 and beyond, scale the emissions reduction by the same ratio in 2050, a conservative assumption that U.S. emissions will remain the same proportion of the global total after 2050. Below is an example for all U.S. emissions.

CO2 Emissions (MMT CO2)	2030	2040	2050	2060	2070	2080	2090	2100
SSP2-4.5	40595	42089	42961	41736	37447	30236	20642	14483
Subtracted U.S. Emissions	1003	2908	3949	3836	3442	2779	1897	1331
New Global Emissions	39592	39181	39012	37900	34005	27456	18744	13152

4. Run the MAGICC7 model with the new emissions profile. NOTE: The program automatically interpolates between the 10-year data points to produce a new emissions profile, so it will create a straight line from the 2020 number to the 2030 number, which is an obvious approximation to what would happen in reality.
5. Read out the results for year 2030 to 2100 global CO_2 concentration and global temperature relative to preindustrial values. Here are some examples of year 2100 values if the U.S. eliminates CO2 emissions by 2050.

Net-zero CO2 by 2050	CO_2 Concentration (ppm)	Difference	Temperature	Difference
SSP2-4.5	578.3		2.715 °C	
No U.S. Coal Electricity	577.3	0.18%	2.710 °C	0.005 °C
No U.S. Electricity	575.5	0.49%	2.701 °C	0.014 °C
No U.S. Emissions	562.2	2.80%	2.634 °C	0.082 °C