

# The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels

A new report, The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels, written by EcoShift Consulting on behalf of the Center for Biological Diversity and Friends of the Earth, estimates the volume and potential life-cycle greenhouse (GHG) emissions of non-federal and publicly owned federal fossil fuels. Federal fossil fuels are broken up into leased and unleased resources.

The report is intended to inform policy relating to both climate and future federal fossil fuel leasing. The results indicate that a cessation of new federal fossil fuel leasing could keep up to 450 Gt CO<sub>2</sub>e from the global pool of potential future GHG emissions. This constitutes more than a quarter of the total global emissions that can be released if the world is to limit global warming below 2°C, a level of warming that will result in extreme and dire consequences for human and natural systems around the globe. Its findings, expressed in gigatons (Gt) (one gigaton equals one billion tons) of carbon dioxide equivalent (CO<sub>2</sub>e) include:

- The potential GHG emissions of federal fossil fuels, leased and unleased, are 349 to 492 Gt CO<sub>2</sub>e, representing 46% to 50% of potential emissions from all remaining U.S. fossil fuels. The potential GHG emissions of federal and non-federal fossil fuels are 697-1,070 Gt CO<sub>2</sub>e, depending on the lifecycle and reserve assumptions;
- Unleased federal fossil fuels comprise 91% of the potential GHG emissions of all federal fossil fuels. The potential GHG emissions of unleased federal fossil fuel resources range from 319 to 450 Gt CO<sub>2</sub>e. Leased federal fossil fuels represent from 30 to 43 Gt CO<sub>2</sub>e;
- Unleased federal recoverable coal accounts for 36% to 43% of the potential GHG emissions of all remaining federal fossil fuels, from 115 to 212 Gt CO<sub>2</sub>e. Leased federal recoverable coal represents from 11 to 20 Gt CO<sub>2</sub>e of potential emissions;

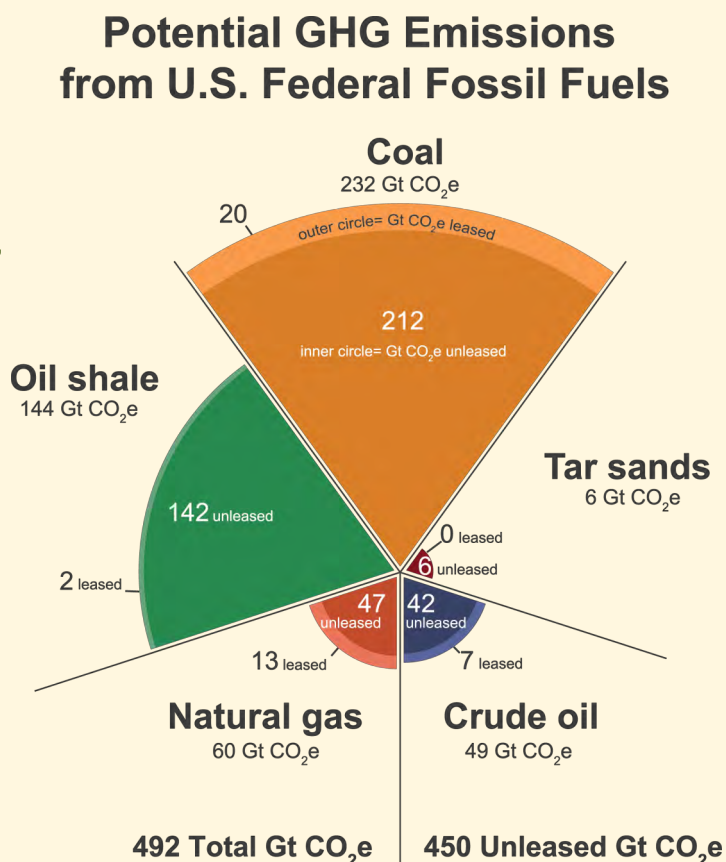
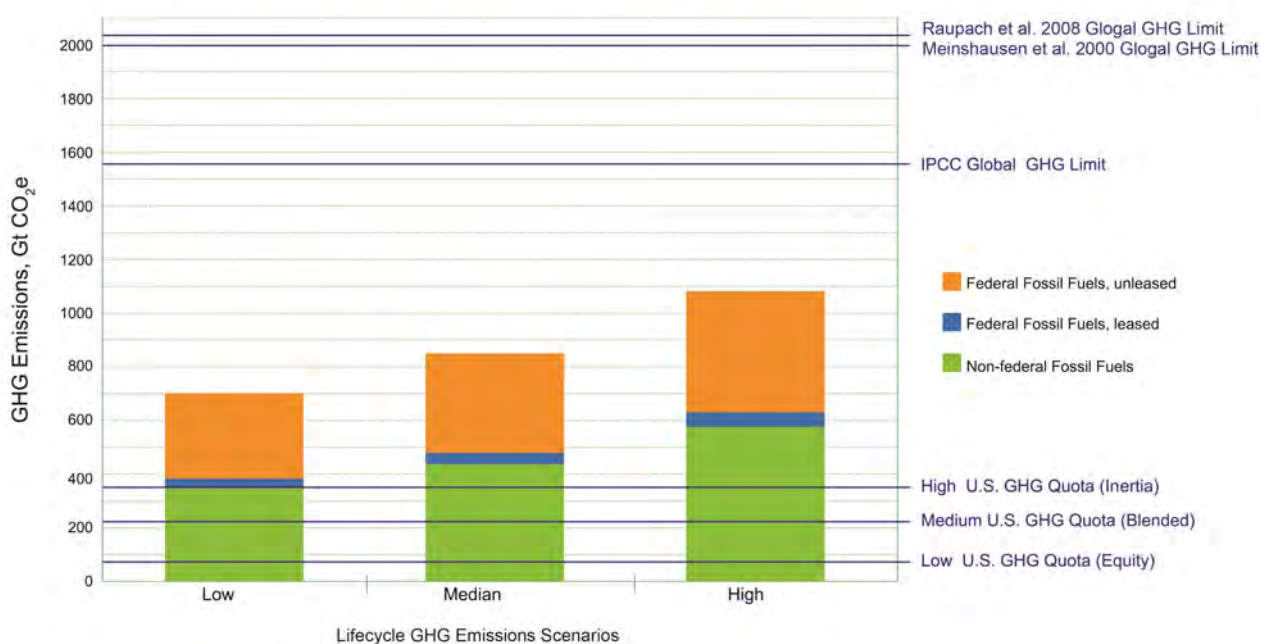


Figure 1. Potential emissions of leased and unleased federal fossil fuels.

- Unleased federal oil shale accounts for 29% to 35% of potential GHG emissions of all remaining federal fossil fuels, ranging from 123 to 142 Gt CO<sub>2</sub>e. Leased federal oil shale accounts for 0.3% to 0.6% of potential GHG emissions of all remaining federal fossil fuels, representing 2 Gt CO<sub>2</sub>e.
- Unleased federal natural gas accounts for 10% to 11% of potential GHG emissions of all remaining federal fossil fuels, ranging from 38 to 47 Gt CO<sub>2</sub>e, of which 36% are onshore and 64% are offshore. Potential GHG emissions from leased federal gas represent 11 to 13 Gt CO<sub>2</sub>e, 47 % of which are onshore and 53% are offshore.
- Unleased federal crude oil accounts for 9% to 12% of potential GHG emissions of all remaining federal fossil fuels, ranging from 37 to 42 Gt CO<sub>2</sub>e, of which 28% are onshore and 72% are offshore. Potential emissions from leased federal crude oil represent 7 to 13 Gt CO<sub>2</sub>e, of which 33% are onshore and 67% are offshore;
- Unleased federal tar sands account for 1% to 2% of potential GHG emissions of all remaining federal fossil fuels, representing about 6 Gt CO<sub>2</sub>e.

**Potential Emissions from Federal and Non-federal Fossil Fuels Compared to Global Emissions Limits and U.S. Emissions Quotas to Maintain 50% Likelihood of Keeping Warming Below 2°C (3.6°F) \***



\* GHG limits and quotas published in CO<sub>2</sub> are displayed in CO<sub>2</sub>e using the ratio of 1.39 CO<sub>2</sub>e/CO<sub>2</sub> reported in Meinshausen et al. (2009). U.S. GHG quotas from Raupach et al. 2014. Limits and quotas are lower for maintaining higher likelihood of limiting warming to below 2°C and/or keeping warming below a lower temperature, like 1.5°C.

Figure 2. Global carbon limits, U.S. emissions quotas and potential emissions from federal and non-federal fossil fuels.

These findings are best understood in the context of global and national emissions limits, representing the maximum amount of greenhouse gases humanity can emit while limiting average global temperature rise to 2°C by 2100. The potential emissions from unleased federal fossil fuels are incompatible with any U.S. share of global carbon limits that would keep emissions below scientifically advised levels.

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