Just before leaving office, the Trump Administration approved a huge lithium mine in Thacker Pass, Nevada. The mine could help supply the U.S. battery industry for decades. It might also impact habitat of the endangered grouse sage, deplete groundwater levels, and threaten the survival of an endangered trout. Local residents have sued to block the mine.

Knowing the Trump Administration, it's quite possible that its approval of the mine is legally questionable. This dispute is emblematic of a larger issue, however: the conflict between the need for a rapid energy transition and protecting local environments. Another example is presented by Trump's effort to lighten requirements for environmental impact statements — uniformly opposed by environmentalists, but supported by the renewable energy industry. One reason that Texas has become the national leader in wind energy is that it was able to build major transmission lines quickly, something that's a lot harder in a state like California.

Those of us who champion the energy transition but also care about other aspects of the environment are left in a very uncomfortable position. Although there's no way of eliminating the need for painful choices, there are some ways of softening the conflict.

First, we should prioritize energy conservation. Energy conservation can take a lot of different forms, starting with retrofitting existing structures with insulation and more efficient heating and cooling. Commercial buildings could benefit from new technologies using artificial intelligence to control their heating and cooling systems. We also need to continue to work on reducing vehicle miles traveled even with electric vehicles. We know some of the ways of doing that, such as investing in public transit and encouraging transit-related housing development. There is going to be a tendency to deemphasize these efforts as fossil fuels are phased out, but they're going to remain important.

Second, some forms of renewable energy reduce environmental conflicts, but they do so at a price. Rooftop solar combined with storage avoids the need to site wind farms, solar farms, and the associated transmission lines. The downside is that rooftop solar may be less cost effective. Anything we can do to make rooftop solar and storage cheaper and easier to integrate with the grid will be worthwhile.

Third, we need to invest in research in technologies that might reduce environmental conflicts. For instance, some alternatives to lithium batteries might involve more readily available ingredients whose production would pose lower environmental costs. Better utility-scale storage would also make it easier to take full advantage of existing resources. An example is being able to take fuller advantage of peak periods of wind energy, which are generally at night when power demand is low.

Fourth, we really need to work on permitting processes. Long delays in obtaining permits raise the costs of clean energy projects, discouraging investments. Equally importantly, delays in expanding clean energy leave fossil fuel-based energy in place, adding more carbon to the atmosphere during the extended time before a project can go forward. Unlike the Trump Administration, we shouldn't just toss aside environmental safeguards. We surely should be able to get to final decisions, whether in favor of projects or against them, faster than we do today.

Fifth, we need better ways of thinking about the tradeoffs involved. In a post last July, I suggested the idea of calculating the extinction cost of carbon — that is, the number of species that will go extinct due to additional carbon emissions. For instance, my rough estimate was that adding 144,000 electric vehicles results in saving a species somewhere in the world from extinction. Alternatively, we could think in terms of the number of human lives saved by cutting carbon emissions (dubbed the "mortality cost of carbon"). Either one would help sharpen our intuitions about what tradeoffs are worthwhile to cut emissions.

We shouldn't kid ourselves into thinking that combatting climate change will be cost-free in environmental terms. We're undoubtedly going to be faced with some really difficult choices about individual projects. There are things we can do, however, to make those hard choices less frequent.