One of the impacts of California's difficult fire season has been air pollution. Fires produce smoke. Large wildfires produce a lot of smoke. And large wildfires in the southern Sierra Nevada produce smoke in the southern Central Valley – the part of the United States that already has some of the worst air quality in the country. Moreover, because the southern Central Valley has a large Latino population and has a high poverty rate, the poor air quality disproportionately burdens poor and minority communities. This New York Times article does a great job of describing what it is like to live in the smoke plume of a large fire.

As I noted earlier, the combination of a century of fire suppression and climate change will ensure that fires will only become a larger presence in the future. So, are we forced to resign ourselves to terrible air quality in places like the Central Valley during fire season?

The answer is: not necessarily. And ironically, the solution may be more fire, not less.

The reason is that not all fires are equal. Fires that burn in the middle of fire season, when conditions are hot and dry, burn hotter and longer. Just because they cover more land and burn for a longer period of time means they will produce more smoke. However, if we reduce the fuel load for fires in the forests, then even in the middle of fire season fires may burn less hot, for shorter periods of time, and cover less area. How do we reduce fuel loads in forests? In general, the best way (and usually the most cost-effective way) is to restore fire in our forests. We can do this through prescribed burns and managed wildfires. Because we can choose when and where many of these fires occur, we may be able to produce fires that burn for shorter periods, and that produce less smoke, while still reducing fuel loads in forests.

The problem is that right now, the way our air quality and forest management rules are written, forest managers have to comply with complex air quality rules in order to do prescribed burns or managed wildfires – because they are human-caused events that produce air pollution. Those rules can dramatically narrow the windows of time when prescribed fires can occur – sometimes to just one or two weeks a year. Those narrow windows make it very difficult for us to do prescribed burning on the scale needed to reduce long-term fuel loads.

On the other hand, so long as the land management agency is trying to suppress a wildfire, the pollution impacts from those wildfires can be excluded from the

measurements of ambient air quality that are used to determine whether places such as the Central Valley are in compliance with the Clean Air Act

Overall, then, our regulatory system creates incentives for land managers to avoid prescribed burns and to suppress all fires as quickly as possible, rather than allowing some wildfires to continue to burn in a managed way to reduce fuel loads. But preventing fire in the Western United States is a fool's errand that in the long run will produce worse fires.

What to do? We need to reconsider how we consider the role of fire in our air quality regulatory system. We need to take into account that the active use of fire may, in the long run, be the best way to reduce air pollution problems. But we also need to be careful. If we loosen up the air quality rules for wildfire, then we may be opening the door for other arguments about the use of fire – for instance, agricultural burning, which has a long history in the Central Valley and can have major air quality impacts. It would be a step back in terms of air quality if changes in our rules to facilitate prescribed fire use in forests were also used to justify increases in agricultural burning. Of course, there is an important distinction. In general, agricultural burning (e.g., burning a field to clear it before planting) does not reduce fire risk over the long run – it is used to achieve other goals, such as cheaply disposing of materials leftover form harvesting crops. Thus, any changes to our air quality rules must take that distinction into account, to ensure we really do improve air quality.

How to do that specifically is a challenge going forward. One question is whether the text of the Clean Air Act would even allow for revisions to the relevant rules to improve outcomes – or whether the fix has to be made through Congress (not promising at the moment). EPA is currently considering revisions to some of the relevant Clean Air Act regulations. Another question is what kind of proof we might require to show that prescribed fire really will reduce smoke impacts in the long run – too high a level of proof won't help matters much, but too low and we both run the risk of allowing prescribed fire when it isn't beneficial from an air quality context, and also of allowing other forms of burning that are harmful to air quality overall.

There are a range of avenues to explore. Many of the relevant regulations are at the state, not federal level, so there may be more room for change there. Another option might be to remove the exemption for wildfires from ambient air quality measurements (as proposed in this article) – in the hope that in the long run this will encourage management choices that reduce the risks of impacts from wildfires.