

Economists detest externalities - those nasty hidden costs that businesses don't face when they sell polluting or dangerous products and services, but that are instead imposed on the public or the environment. And economists are right to be concerned. A polluter that does not pay the cost for its pollution is likely to keep polluting. A company that does not bear the cost of things it does that endanger the public is likely to keep endangering.

So what should we think about the potential role that electric power lines and other equipment may play in sparking wildfires? According to some estimates, damages from the recent wildfires in Northern California's wine country may approach \$9 billion. We may not know for some time if Pacific Gas & Electric Company's (PG&E's) equipment caused any or all of these fires. But if they did, then the loss of life and property and related costs are externalities that are not normally reflected in the cost of electric service.

Transmission is a relatively small portion of the cost of electric service. This is a fact used to support efforts to dramatically expand the number and size of transmission lines. But judging from the role that transmission failures have played in past wildfires, it appears that those transmission costs are artificially low.

Expansion of transmission capacity can always be about reliability improvements or cost savings, but in recent years, one reason for expansion has been an interest in building large-scale solar and wind generating stations in remote locations. These generators are seen to be less costly than small solar installations closer to where the power is used. The other objective has been to support the development of a robust wholesale market among electric generators. Again, a major reason for doing this is to keep costs down. To be certain, the cost of recent wildfires has not been part of the equation.

Most transmission lines and related equipment are mounted above ground on poles and towers, and this is what makes the system so vulnerable to outages and fires. Utilities and regulators will tell you that it would be too expensive to install lines underground, instead. And, indeed, it would be expensive. Estimates for undergrounding high voltage lines range from \$1 million to \$5 million per mile. If spending as much as \$9 billion on undergrounding prior to this year could have avoided the wine country fires, it would have been a good thing.

Let's take a middle-of-the-road cost estimate for undergrounding, and do some basic math. At a rate of \$3 million per mile, a \$9 billion investment could bury 3,000 miles of cable. That number sounds quite large, but PG&E claims to have lines running perhaps six times that length. And that does not count the tens of thousands of miles of distribution equipment that the company maintains.

Does that make a major investment in undergrounding a lost cause? Not so fast. First, when it comes to fire risk, not all transmission line miles are created equal. Some lines run through sparsely vegetated desert or are otherwise far away from human-made structures. California regulators have labored for years to create a detailed map of fire risk near utility transmission lines. And in the past, regulators have used fire risk analysis to guide the approval of new transmission routes. Smart planning and strategic undergrounding could go a long way to reduce fire danger, and a \$9 billion investment could make a big dent.

The other factor suggesting a need for regulators to take a hard look at major undergrounding investment is the reality of our changing climate. The wine country fires were not the only devastating wildfires in California this past year. Plus, there is every reason to believe that without dramatic intervention, fires of similar or greater magnitude will occur again, and again, and again. Who should absorb this year's \$9 billion cost? And next year's? And costs in the years after that?

If transmission lines caused recent fires and the utilities were found to have been reasonable in the way they operated and maintained those lines, then damages from the fires are part of the cost of electric service - or at least part of the cost of providing electricity the way we do it. And if that is the case, then it is time to stop pretending that moving electricity is as cheap as people think it is and start building more realistic infrastructure.