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CALIFORNIA IS ON TRACK TO MISS ITS CLIMATE TARGETS—BY A CENTURY

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MIT Technology Review

California has established itself as a global model on climate issues, with Teslas filling its roads and solar farms stretching across its sun-baked Central Valley.

The state set up the nation's first economy-wide cap-and-trade program, put in place aggressive vehicle fuel efficiency standards, and passed a series of ever stricter climate pollution rules. That includes the [landmark 2018 law](#) requiring all of the state's electricity to come from carbon-free sources by the end of 2045.

But for all its regulatory achievements, California also offers a case study in just how hard it is to make progress on the only thing that really matters: reducing emissions.

The state's climate pollution declined by just 1.15% in 2017, according to the latest [California Green Innovation Index](#). At that rate, California won't reach its 2030 decarbonization goals (cutting emissions [to 40% below 1990 levels](#)) until 2061—and wouldn't hit its 2050 targets ([80% below 1990 levels](#)) until 2157.

If a state that's actively trying to slash emissions is on pace to miss its targets by a century, that bodes poorly for progress in the many other parts of the world that are barely bothering. Crucially, the UN's climate panel says the world as a whole needs to achieve "[net zero](#)" emissions by 2050 to halt warming at 1.5 °C, or by 2070 to stay below 2° C.



What went wrong?

Transportation emissions, the state's largest source, have steadily risen since 2013, as the improving economy put more cars on the road and planes in the sky. Emissions from waste dumped into landfills have also been ticking up since the recovery took hold. Meanwhile, highly potent greenhouse gases from the aerosols, foams, and solvents used in refrigeration and air conditioning are rising sharply.

These increases have offset the highly touted declines in emissions from the electricity sector as a growing share of the state's power comes from renewable sources like wind and solar. Emissions from in-state generation are down 35% since 2000.

The new math means California will now need to boost its annual emissions cuts to 4.51% per year to pull off its 2030 targets—or 5.34% annually to achieve its 2050 goals, the report found. And of course, every year the state comes in below those rates will only push those numbers even higher.

The problem is it's likely to get harder, not easier, for California to achieve ever deeper cuts in emissions. To understand why, consider three areas:

Slowing progress for renewables

Electricity is actually the easy part of decarbonization, because we have relatively cheap and reliable wind, solar, geothermal, and other carbon-free sources. But new renewables projects commissioned by the state's investor-owned utilities, like PG&E and SDG&E, have been nearly flat for the last three years.

The report says that's mainly because utilities had already achieved the state's 2020 renewables targets years early—indeed, they're way ahead.

But energy observers stress that deeper, systemic problems are building: the state's utilities are losing loads of customers to community choice aggregators. These programs allow local communities, like Marin and Berkeley, to buy electricity from in-state or out-of-state sources on behalf of their residents and businesses, but still lean on the utility's transmission and distribution infrastructure.

That's left utilities with more power plants than they need, and thus no reason to enter into additional deals with developers to build renewables facilities. In fact, they could go deep into the next decade without adding contracts for new solar or wind farms and remain in compliance with the state's tightening renewables standards, says Matthew Freedman, staff attorney with the Utility Reform Network, a consumer advocacy group, and a lecturer at the UC Berkeley School of Law.

Bottom line: It could take years before the state starts to see a real uptick in new renewables projects again. Recognizing the growing challenges presented by this fragmentation of the



state's energy system, some [California legislators have proposed](#) tasking a state agency with ensuring the necessary levels of clean electricity development.

Hard-to-solve sectors

Achieving deeper cuts in other areas is even harder.

The glimmer of good news for transportation is that electric vehicles do represent a growing share of new vehicle sales, at [just under 8% in the state last year](#). But they still make up only 1.5% of registered vehicles in the state, with hybrids accounting for 3.4%, the report notes.

At the same time, overall car ownership rates are rising, public-transit use is falling, and consumers are still shifting toward gas-guzzling trucks and SUVs. And the 92% of vehicles sold last year that weren't EVs will, on average, still [be on the roads more than a decade from now](#).

Accelerating the shift to cleaner vehicles is likely to require far stricter policies, far more generous subsidies, cheaper EVs, and a massive build-out of charging infrastructure. And even California's efforts to boost the average fuel efficiency of cars sold in the state [have been complicated](#) by the Trump administration's legal challenges.

California has created some novel programs to help cut emissions in other areas, including agriculture. But there simply aren't available technologies yet to fully decarbonize some of the state's emission sources, including [aviation](#).

Wildfires

Finally, California's worsening wildfires are also complicating its efforts to cut emissions. Burning forests pump out massive amounts of greenhouse gases stored in plants and trees. And rising temperatures and shifting precipitation patterns have already extended the fire season by 75 days across the state's sprawling Sierra Nevada range.

The raging wildfires in 2018 produced about 45 million metric tons of carbon dioxide. That's *nine times* more than the amount by which the state cut emissions the previous year.

Meanwhile, the spiraling liabilities from fires last year also pushed the state's largest utility, PG&E, into bankruptcy. For the foreseeable future, the company's focus will be on returning to solvency and preventing its aging lines from sparking still more fires. That's almost certain to push up system costs, and further divert attention and resources from the task of cleaning up the grid.

The area of the state subject to burning could increase nearly 80% by the end of the century, driving up emissions and fire risks still more, in an ever more dangerous feedback loop. So California is likely to see 2018-style scenarios play out again and again in the years ahead, obliterating hard-won climate gains in a few fiery months.

