

## How Kore Infrastructure Plans to Reduce Wildfire Risk by Turning Waste Into Energy

Kore Infrastructure uses a closed-loop process to turn the deadwood and brush that create enormous wildfire risks into carbon-negative hydrogen, renewable natural gas and biogas.

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*The Kore Infrastructure team. (Image courtesy of Kore Infrastructure.)*

Could producing clean energy for the artificial intelligence (AI) boom also reduce wildfires? Kore Infrastructure's founder and CEO, Cornelius Shields, hopes so. "Everyone wants to talk about AI [and] where's the power coming from," he said. "We can play a part."

Kore's high-heat pyrolysis process converts biomass — such as agricultural prunings, nut shells and organic waste — into carbon-negative hydrogen, renewable natural gas and biogas. It keeps biomass out of waste streams while producing energy in a closed-loop system that powers itself. And by using dead, dying and diseased trees as feedstock, it could have the added preventative benefit of reducing wildfire risk.

### Pyrolysis proving grounds

"Nobody wants to take a risk on something new until it's fully proven," Shields said. "I think that's what it really takes to succeed. To bring in new energy, new infrastructure, you have to really be patient. You can't rush it to market."

In 2022, Kore partnered with the Southern California Gas Company to produce clean fuel from organic waste to demonstrate how that energy could be made available to industries that are not easily electrified, specifically transportation. The project spared landfills 24 tons of trash every day it was in operation.

Shields credits some of the project's success to Kore's modular system. Instead of building a massive complex, the pyrolysis plants fit on just an acre, drastically reducing the cost of operation. That small size also makes the modular plants ideal for forest

settings, where he's eager to demonstrate that removing deadwood for processing can have a positive impact on wildfire prevention.



An overhead view of Kore Infrastructure's Los Angeles facility. *(Image courtesy of Kore Infrastructure.)*

### **Converting wildfire fuel to energy**

Kore is testing that theory in partnership with the Tule River Tribe in California, where tribe members are removing brush and deadwood near power lines. Left as is, all of that tinder creates an enormous wildfire risk. The 2018 fires in Paradise, California, began when downed power lines set the nearby national forest ablaze.

“There is evidence to support, based on controlled burns and others, that managing forests is not only healthy for the forest, but it does mitigate wildfires,” Shields said. “In layman's terms, there's just less fuel ... I truly believe that, once we get some early proof statements, integrating a technology like Kore's into forest management will become a regular and known, established practice.”

### **Stepping in where there's too much fuel for prescribed burns**

Between irresponsible logging methods, the suppression of natural fires and overgrazing by livestock, North American forests have suffered mismanagement under the U.S. and Canadian governments' tutelage. One way authorities tried to course-correct this is by intentionally setting controlled fires, which they call prescribed burns.

Indigenous people have used intentional, controlled cultural burns for many millennia to manage the land, but federal and state fire suppression regulations have long prohibited and hindered the practice. However, due to the scale of the problem now, these burns often can't be the only solution.

“With some of the factors that exist in forests, like dense areas of trees that have limited moisture, there's so much fuel,” Shields said. That makes burns more difficult to control.

There's also the matter of how much carbon could be released at a time when the planet is already choking on our excess. “Pyrolysis is a non-incineration technology,” he said. “The emissions profile from a non-combustion process is far superior.”

In addition to producing clean energy out of potential wildfire fuel, pyrolysis also results in a substance known as biochar. Biochar is nutrient-dense and can be used in regenerative agriculture or reapplied to the forest floor to restore the soil in the same way that allowing deadwood to decay does, Shields said.



Kore Infrastructure's pyrolyzers, which are used to convert biomass into carbon-negative hydrogen, renewable natural gas and biogas. *(Image courtesy of Kore Infrastructure.)*

**One potential pitfall stands out**

Scaling the use of deadwood for conversion to clean energy doesn't come without risk. While Kore handles the production of clean energy and biochar through pyrolysis, the inputs are provided by contractors. This leaves the harvesting side open to abuse by those entities.

"I think there's potentially a shadow side of it, as well," Shields said. "Most of these contracts to manage the forest go to paper companies and logging companies. And you hope that they choose the dead and decaying ones, right? That's what we want to make sure [of], and that it's not an opportunity for them to ... take other trees."

Clear-cutting healthy trees, or including them in the feedstock, in the name of profit could override the benefits of forest-based pyrolysis. "Those that have the best interests of the natural world at heart, they have to have a seat at the table to make sure that doesn't happen," he said.

Partnerships with Indigenous communities, such as Kore's collaboration with the Tule River Tribe, are therefore ideal. But the company is not able to control who forest management contracts are given to.

### **AI's appetite for energy could spur clean energy tech**

With data centers expected to require 160 percent more electricity in 2030 than they do today, the AI boom is threatening to cause a surge in energy use. Without enough clean energy options, this will likely lead to an increased reliance on fossil fuels, undermining global goals for decarbonization.

But Shields is optimistic that the tech industry will be a boon for carbon negative options like pyrolysis. "Their search for clean energy for AI, which is a fascinating turn of events, I think will actually accelerate technological solutions," he said.

As such a solution, pyrolysis comes with the added benefits of keeping waste out of landfills and potentially protecting forests from wildfires. And unlike wind and solar, the fuels that are produced aren't intermittent, which is a huge challenge for the energy transition, Shields said. "Overlap between profit and planet is so important for the development of these types of technologies."