THE HILL

Getting the most out of methane reduction

BY MATT TOMICH, OPINION CONTRIBUTOR — 05/06/21

Congress and the Biden administration are starting to address methane emissions, and that's a giant step forward for U.S. climate policy. But to keep spending on methane reduction accountable, and maximize its impact, we'll need to look at a range of emissions sources, and focus on the most cost-effective methods with the greatest potential for overall methane abatement.

Methane is classified as a "short-lived climate pollutant," but it's also the second most prevalent greenhouse gas in the atmosphere, it's 86 times more powerful a warming agent than carbon dioxide over 20 years, and it's spiking. New National Oceanic and Atmospheric Administration data shows methane emissions have risen rapidly since 2000, and surged in 2020 despite the pandemic. We're unlikely to meet our ambitious climate goals without reversing that rise.

Conversely, lowering methane levels will have powerful positive effects on the climate. The near-term benefits of methane abatement are far greater than CO2 abatement. New research finds cutting methane emissions could slow climate change by 30 percent.

The administration and Congress recognize this. Biden's infrastructure plan includes provisions for cutting methane emissions, mainly from the oil and gas industry. The American Jobs Plan allocates $16 billion for capping old oil and gas wells and cleaning up abandoned coal mines, which emit methane. The $565 billion CLEAN Future Act has a methane reduction target of 90 percent by 2030. The Department of Energy (DOE) announced $35 billion to develop new technologies for reducing methane leakage from fossil fuel operations. And the White House is in talks with the fossil fuel industry on an executive order requiring it to cut its methane emissions.

These are crucial initiatives. But to keep government spending on them accountable, we need to know how much methane comes from various sources (not just from the fossil fuel sector), what abating emissions from each source would cost, and what reductions could be achieved. So far, that information has been missing from the policy debate.

U.S. infrastructure costs are notoriously opaque in general, and the Congressional Budget Office has yet to score the infrastructure bill. The bill says DOE will award grants to states to cut methane emissions, according to the amount reduced and the cost-effectiveness of the project. But it doesn't specify the reductions threshold, or costs per unit of reduction (dollars per metric ton of CO_2 equivalent, or CO_2e) needed to qualify for grants.

One independent analysis by researchers at Columbia University found that capping abandoned oil and gas (AOG) wells in the U.S. would cost somewhere around $67 per ton of CO2e. At that rate, we could cap all 2.1 million AOGs in the U.S. for between $50 billion and $100 billion, cutting methane emissions by 24 to 34 million tons of CO2e.

Active U.S. oil and gas operations are another major source of methane, emitting about 158 million tons of CO2e per year. But oil and gas only account for 30 percent of total U.S. methane emissions. More than 50 percent come from non-fossil fuel sources: agriculture (38 percent) municipal solid waste (MSW), most of which still ends up in landfills, and wastewater (17 percent). How can we reduce methane emissions from these organic sources, and what would it cost?

One solution that's commercially available now is capturing the biogases emitted by these organic wastes as they decompose, which are 50 percent to 60 percent methane. Instead of escaping into the air and warming the climate, the gases are contained and refined into clean, renewable fuel known as renewable natural gas (RNG).

RNG is chemically similar to conventional fossil natural gas and can be used in all the same ways — cooking, heating, generating electricity, or as vehicle fuel. It slashes methane emissions from farms and turns urban organic waste streams into ultra-low-carbon energy. When it is used to displace diesel fuel in heavy-duty trucks and buses, it deeply cuts GHG emissions, and also prevents emissions of health damaging pollutants from diesel exhaust.

RNG is the lowest-carbon fuel available today, and can often be net carbon-*negative*, meaning that more greenhouse gases are captured in producing the fuel than are emitted in consuming it, especially when it's used as road fuel.

The infrastructure bill contains a 30 percent tax credit for building anaerobic digesters, which process organic wastes into RNG. How much emissions reduction will we get for that money? Based on conservative assumptions (i.e., a 20-year global warming potential of methane and a 15-year operating life of digester infrastructure), GHG

abatement from RNG would cost just $16 per ton of CO2e, vs. $67 per ton for capping abandoned oil and gas wells.

Investing $5.5 billion to develop 400 new RNG projects over the next five years could cut 33 million tons of CO_2e a year — comparable to the amount saved by capping AOGs, but at a small fraction of the $50 - $100 billion price tag.

Unlike abandoned wells, RNG projects generate salable products, including fuel and compost, which can attract private investment. Federal money for RNG is seed capital which can spur investment and have economic multiplier and job creation effects.

Not only does RNG cost dramatically less than capping abandoned wells for the same amount of emissions reduction, RNG's potential for overall emission reductions is far greater. As RNG infrastructure develops further, it could reduce between 101 million and 235 million tons of CO_2e, according to one conservative estimate. That's somewhere between four and ten times the amount capping AOGs could reduce.

More RNG-fueled trucks and buses and RNG refueling stations would help decarbonize the hard-to-decarbonize heavy transport sector, while injecting more RNG into natural gas pipelines would help decarbonize existing natural gas infrastructure.

We can't meet our mid-century climate goals without addressing methane emissions head on. And while we must cap abandoned wells and do everything possible to stop methane leakage from the fossil fuel industry, if we're allocating trillions for infrastructure and billions for clean energy, we also need to assess what different emissions abatement approaches cost and how much GHG they reduce — and prioritize spending accordingly. Capping AOGs is critical, but ramping up RNG is much more cost-effective and could eliminate much more methane.

Matt Tomich is President of the non-profit organization Energy Vision, which receives some funding from the RNG industry.