**Letter from 35 Scientists to U.S. Climate Leaders:**
**Prioritize Diversion of Biodegradable Waste from Landfills**

October 29, 2021

Special Presidential Envoy for Climate John Kerry and
National Climate Advisor Gina McCarthy,

As President Biden and the EU announce a Global Methane Pledge that aims to cut global methane pollution by at least 30 percent by 2030, we strongly urge policymakers to address methane emissions from the waste management sector through the diversion of biodegradable wastes from landfills. As a complementary measure, landfills must also be fitted with more stringent controls and subject to comprehensive monitoring.

According to current GHG inventories, landfills are the 3rd largest source of anthropogenic methane globally and in the United States.[i] However, new data suggest that landfill emissions, and the opportunity to reduce them, are much greater. A series of recent studies, employing direct measurement of methane plumes via aircraft downwind of landfills, have shown that measured emissions average ***over twice*** the modeled emissions reported in current GHG inventories.[ii-iii] Based on this growing set of data, landfill methane emissions are comparable to the methane emissions from the entire agricultural sector.[iv]

Addressing methane is critically important to combating climate change. Over a 20-year period, methane is over 80 times as potent as carbon dioxide and is the 2nd largest driver of anthropogenic climate change.[v] According to the United Nations Environmental Programme (UNEP), "cutting methane is the strongest lever we have to slow climate change over the next 25 years."[vi] In the near-term, reducing emissions of Short-Lived Climate Pollutants like methane is more effective than reducing $CO_2$.[vii] The newly released IPCC 6th Assessment Report notes that methane reduction "stands out as an option that combines near- and long-term gains on surface temperature and leads to air quality benefits by reducing surface ozone levels globally."[viii]

Within the waste sector, the primary focus must be on the diversion of biodegradable organics from landfills. Diversion is the only approach that can avoid 100% of landfill methane. Establishing organics diversion infrastructure today will quickly reduce methane generation at the source. Conversely, delaying action only adds to our future methane debt. Today's waste inevitably becomes tomorrow's emissions. Diverting organics today breaks this cycle.

Technologies to divert biodegradable wastes from landfills are commercially available and in widespread use today. The extent of their existing use is, in large part, directly a result of public policy. While the relative merits of each of these technologies are beyond the scope of this letter, the severity and magnitude of the climate challenge will require a suite of solutions, each of which can be developed and applied in an environmentally protective manner.

Better control of methane emissions from landfills also is important, but not yet demonstrated as effective. California implemented the most stringent landfill gas control regulations to date, yet a team of NASA and university researchers still identified certain California landfills as "super-emitters" of methane,[ix] even while fully in compliance with the state's strict rules. Additional controls on existing landfills should therefore be

focused on historically placed waste and organics which cannot be diverted and augmented with more accurate and comprehensive monitoring.

The time to act is now. Every year we delay a strong focus on the diversion of biodegradable wastes from landfills, we add to a growing burden of methane emissions to future generations.

Signed,

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[i] U.S. EPA (2021) *U.S. Inventory of Greenhouse Gas Emissions and Sinks: 1990 – 2019*. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019

[ii] Peischl et al. (2013) Quantifying sources of methane using light alkanes in the Los Angeles basin, California, *Journal of Geophysical Research: Atmospheres*, **118**: 4974-4990. https://doi.org/10.1002/jgrd.50413

[iii] Jeong, S., et al. (2017), Estimating methane emissions from biological and fossil-fuel sources in the San Francisco Bay Area, *Geophys. Res. Lett.*, **44**, 486–495 https://doi.org/10.1002/2016GL071794

[iv] Total 2019 U.S. landfill methane emissions, as reported in U.S. EPA (2021) were 4.58 MMT $CH_4$. On average, measured landfill emissions from recent data referenced herein were 2.3X greater than reported. Adjusting U.S. inventory with this factor yields total landfill emissions of 10.5 MMT $CH_4$. Total agricultural sector emissions, inclusive of enteric fermentation, manure management, rice cultivation, and field burning of agricultural residues were 10.26 MMT $CH_4$.

[v] IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press. https://www.ipcc.ch/report/ar6/wg1/#FullReport

[vi] https://www.unep.org/news-and-stories/press-release/global-assessment-urgent-steps-must-be-taken-reduce-methane United Nations Environmental Program (UNEP) (2021) *Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions*, https://www.unep.org/resources/report/global-methane-assessment-benefits-and-costs-mitigating-methane-emissions

[vii] Hu *et al.* (2013) Mitigation of short-lived climate pollutants slows sea-level rise, *Nature Climate Change,* 3, 730-734. https://www.nature.com/articles/nclimate1869

[viii] IPCC (2021)

[ix] Duren *et al.*, California's Methane Super-emitters, *Nature*, **2019**, 575:180-185. https://www.nature.com/articles/s41586-019-1720-3.