

# Factory Farms, Fracking and California's Methane Emergency

With every day that the status quo continues, the chance of keeping global temperature rise below the 1.5-degree Celsius tipping point slips further and further away.<sup>1</sup> Much focus remains on cutting carbon dioxide (CO<sub>2</sub>) emissions, the largest source of greenhouse gas emissions and warming.<sup>2</sup> But reducing its more insidious counterpart, methane, is even more essential in stabilizing global climate and reducing short-term warming. Banning the largest sources of methane emissions — factory farm expansion and fracking — is the quickest and only way to secure California's future.

## Methane's Importance

Since the Industrial Revolution, greenhouse gas emissions have skyrocketed, filling the air with an overabundance of gases and amplifying the Earth's natural warming effect.<sup>3</sup> Methane is responsible for a third of total warming since then,<sup>4</sup> with a warming effect 86 times stronger than CO<sub>2</sub> on a 20-year timescale.<sup>5</sup> A short-term pollutant, methane stays in the atmosphere for only around 12 years.<sup>6</sup> Despite this shorter lifespan, it traps significantly more atmospheric heat than CO<sub>2</sub> and contributes to the formation of other greenhouse gases, giving it a higher global warming potential than CO<sub>2</sub>.<sup>7</sup> This means that reducing the rate of emissions is essential to stabilizing long-term temperature rises,<sup>8</sup> while providing more immediate climate-cooling effects.<sup>9</sup>

## Factory Farms

According to the California Air Resources Board (CARB), agriculture contributed 8 percent of total state greenhouse gas emissions in 2021, but livestock's share is 70 percent of this. Emissions from methane are a major contributor, largely stemming from the nearly 1.7 million cows living on California's factory farms.<sup>10</sup> In fact, California has more dairy cows living on factory farms than any other state — double that of the number two state, Wisconsin.<sup>11</sup> Food & Water Watch (FWW) estimates that methane emissions from dairy and beef cows on factory farms<sup>a</sup> in 2022 totaled up to 647,000 metric tons.<sup>12</sup> This is equivalent to 13 million cars driven for a year, or 142.3 billion miles driven.<sup>13</sup> This figure does not even include emissions from producing and processing livestock feed — the single largest source of global livestock greenhouse gas emissions.<sup>14</sup>

Most of the on-farm livestock emissions come from manure management on mega-dairies,<sup>15</sup> which favor methane-releasing systems like lagoons.<sup>16</sup> FWW estimates that manure management on California's mega-dairies in 2022 generated up to 373,700 metric tons of methane.<sup>17</sup> In comparison, manure deposited in fields by grazing cattle releases little to no methane. The rapid industrialization

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<sup>a</sup> In this analysis, factory farms are defined as those with 500+ head for dairy farms or 1000+ head for beef operations.

of U.S. agriculture systems and the collapse of family-scale farms are to blame for a more than doubling of U.S. methane emissions from dairy manure over the past thirty years, while total dairy cows remained about the same.<sup>18</sup> Anaerobic lagoons, used by factory farms in an attempt to stifle the smell,<sup>19</sup> still produce more than three times as much methane as the cattle on these farms release through enteric fermentation.<sup>20</sup>

Enteric fermentation is a process within the digestive system of ruminants like cattle that also releases significant amounts of methane.<sup>21</sup> FWW estimates that enteric fermentation on California's mega-dairies in 2022 produced over 253,000 metric tons of methane, while beef feedlots contributed nearly 18,500 additional metric tons.<sup>22</sup> California's mega-dairies (and thus, their emissions and manure pollution) are concentrated in the Central Valley, with Tulare County housing nearly 500,000 mega-dairy cows — more than any other California county.<sup>23</sup> This extreme concentration of mega-dairies is proving disastrous for California's climate and nearby communities. Factory farms routinely threaten human health and safety, with waste containing numerous toxins that contaminate waterways and groundwater. Similarly, non-methane air pollution like ammonia harms nearby residents, contributing to respiratory diseases.<sup>24</sup>

In response to pollution concerns, California officials enthusiastically endorsed anaerobic digesters and factory farm biogas, a false solution to on-farm emissions peddled by Big Ag and Big Oil. "Biogas" or "renewable natural gas (RNG)" refers to the mixture of gases that are produced after organic materials like factory farm manure are broken down in a process called anaerobic digestion.<sup>25</sup> Waste goes into an oxygen-free space called a digester, and even more waste and gas (mostly methane and CO<sub>2</sub>) come out.<sup>26</sup> Once upgraded, this gas is often interchangeable with fossil or fracked natural gas, used primarily for vehicle fuel.<sup>27</sup>

While sold by industry as a transformative opportunity,<sup>28</sup> digesters cannot tackle enteric fermentation emissions.<sup>29</sup> They leak methane at higher rates than oil and gas supply chains,<sup>30</sup> and produce the same pollutants as fossil fuels when burned as fuel.<sup>31</sup> Nonetheless, California's Department of Food and Agriculture began supporting these problematic systems in 2015,<sup>32</sup> and CARB jumped on board by further incentivizing factory farm gas in the state's Low Carbon Fuel Standard (LCFS).<sup>33</sup> LCFS is a pollution trading program designed to decarbonize the transportation sector by offering credits for fuels with lower carbon intensities. Factory farm biogas has the lowest transportation carbon intensity,<sup>34</sup> making the LCFS the most developed anaerobic digester incentive in the U.S. to profit off.<sup>35</sup>

## Fossil Fuels

Even as Californians suffer from climate change-related disasters like wildfires and droughts,<sup>36</sup> oil and gas production continues. According to CARB, overall industrial emissions, which include refineries and oil and gas production, account for nearly 20 percent of California's total greenhouse gas emissions.<sup>37</sup> FWW estimates that shale gas withdrawals — fracking — produced over 65,700 metric tons of methane emissions in 2022,<sup>38</sup> equivalent to 1.2 million cars driven for a year.<sup>39</sup> Emissions and shale gas production in 2022 were *higher* than in 2021,<sup>40</sup> a dangerous trend for our climate.

Similar to factory farm siting, the Central Valley is a hotspot for fossil fuel extraction. Over 80 percent of California's new and active wells drilled by the oil and gas industry are in the Central

Valley.<sup>41</sup> In 2024, Governor Gavin Newsom's administration formally began rulemaking to end issuing fracking permits,<sup>42</sup> an urgently needed measure to protect California's future. While a promising first step, however, it still does not do enough to end emissions from this dangerous industry, as the state continues to approve new drilling and rework permits for existing wells.

## Urgent Need to Reduce Methane

These filthy industries created an air quality crisis for California's Central Valley, with the American Lung Association ranking cities in Tulare and Kern counties in the top ten cities nationwide for the worst ozone pollution.<sup>43</sup> Methane emissions help form ground-level ozone, an unhealthy pollutant that poses respiratory and circulatory mortality risks.<sup>44</sup> Even just a few hours of exposure increase a person's risk of worsening illness, hospital admission, or death.<sup>45</sup>

To protect Californians and their future, the state must take immediate action to end methane emissions from destructive industries.

### Food & Water Watch recommends that California:

- Ban new mega-dairies and factory farms and the expansion of existing ones.
- Place an immediate moratorium on new oil and gas operations, stop all new permits, and transition off fossil fuels.
- Reform the LCFS to exclude factory farms gas and eliminate subsidies for these dirty industry schemes.

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## Endnotes

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