

# Concentrated Animal Feeding Operations



## Executive Summary

The United States Department of Agriculture (USDA) defines a concentrated animal feeding operation (CAFO) as an intensive animal feeding operation (AFO) in which over 1000 animal units<sup>1</sup> are confined for over 45 days a year. Missouri Senate Bill 391<sup>1</sup> made it more difficult for local governments to block CAFOs. SB 391 was signed into law in 2019 and prohibits counties within the state of Missouri from implementing health ordinances that restrict activities or impose standards on AFOs and CAFOs that are stricter than state requirements.

## Highlights

- Despite increased consolidation in animal production in the U.S., most production continues to be carried out on family farms.
- The benefits related to CAFOs are economic; for example, CAFOs make animal food prices less expensive.
- Communities where CAFOs are located can experience an increase in local employment.
- Negative impacts on communities near CAFOs include local environment pollution, health, noxious odors, water contamination and depreciation of property values.
- CAFOs generate 335 million tons of waste annually, which is often managed inadequately.

## Limitations

- Currently, there are no empirical impact assessment studies showing the full costs of CAFOs when considering externalities. If CAFO operators were required to internalize the full costs of production, some CAFOs might be less efficient than the smaller farms they replace.
- Steps to use animal waste in environmentally and economically sustainable ways have been undertaken (e.g. biogas injected to national natural gas pipelines), but they are still in early stages.

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## Research Background

CAFOs are categorized into sizes based on how many animal units they can accommodate. An animal unit is the equivalent of 1000 pounds of "live" animal weight. A CAFO is typically made up of one or more large, covered barns, often located next to a wastewater lagoon. Larger CAFOs may have dozens of barns at different sites- each barn with its own wastewater lagoon. Currently, in the U.S. there are approximately 450,000 CAFOs and 2020 data from the U.S. Department of Agriculture (USDA) shows that the average

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<sup>1</sup>Animal unit (AU) is a unit of measurement for any animal feeding operation. For example, 1,000 animal units equates to 1000 cows, 700 cows used for dairy purposes, 2500 pigs weighing more than 55 pounds, 125,000 chickens, or 82,000 egg laying hens or pullets. Animal Feeding Operations". Livestock. Washington, D.C.: United States Natural Resources Conservation Service. Retrieved 2020-06-06.

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farm size is increasing, while the number of farms is declining.<sup>2</sup> **Despite increased consolidation, most production continues to be carried out on family farms.** Large corporate firms play a coordination role in U.S. farming through the use of contracts, particularly in hog and poultry production. Some firms – for example, in specialty crops, cattle feedlots, poultry, and hogs – operate multiple farms. On average 90 percent of meat and eggs raised in the U.S. come from CAFOs.<sup>3</sup>

As of 2019, there were 502 CAFOs in Missouri, concentrated in the southwest, central, and northeast portions of the state with 90,294 Missourians living within three miles of a CAFO.

*Table 1. Categories of CAFOs*

Animal Sector	Large CAFOs	Medium CAFOs	Small CAFOs
cattle or cow/calf pairs	1,000 or more	300-999	less than 300
mature dairy cattle	700 or more	200-699	less than 200
turkeys	55,000 or more	16,500-54,999	less than 16,500
laying hens or broilers (liquid manure handling systems)	30,000 or more	9,000-29,999	less than 9,000
chickens other than laying hens (other than a liquid manure handling systems)	125,000 or more	37,500-124,999	less than 37,500
laying hens (other than a liquid manure handling systems)	82,000 or more	25,000-81,999	less than 25,000

## Benefits associated with CAFOs

### *Economic benefits*

The benefits related to CAFOs are mainly economic in nature. **On average, larger farms have lower production costs than smaller farms;** the differences are substantial and hold across a wide range of herd sizes. For example, larger farms are more likely to realize positive net financial returns to milk production due to the reduced production costs with fewer resources.<sup>20</sup>

CAFOs also **promote rural economic development for economically depressed rural communities.** The economic benefits come from the people who are employed in CAFOs, the provision of new job opportunities for locally unemployed workers, as well as workers who will move into the community and the use of local materials in the animal production.<sup>19</sup> The increased number of workers also positively impacts the local economic activity, leading to an increase in local tax revenues.<sup>19</sup>

Industrial farm animal production (IFAP) has increased farm employment over the period from 1969 to 2005. Moreover, according to a study on farm operations in Indiana, on average, a 3 percent increase in livestock and milk sales as a percent of total farm sales increases farm hired labor expenses by one 1 percent. When this labor expansion occurs on CAFOs, the earned wages tend to be competitive with other opportunities in the two-county area.<sup>11-12</sup>

### *Lower prices for animal food products*

Because CAFOs require less human labor, but produce more meat at lower costs than independent operations, the median meat prices and animal food products become more affordable. When properly managed, located, and monitored, **CAFOs can provide a low-cost source of meat, milk, and eggs,** due to efficient feeding and housing of animals, increased facility size, and animal specialization.<sup>19-20</sup> CAFOs have evolved to meet the increased food demand and are able to keep costs to consumers low because technological advancements have enabled efficient practices.<sup>6</sup> Food cost as a percentage of the average U.S. household budget has decreased dramatically over time. In the 1930s, American families spent about 30

percent of their income on food. In 2019, Americans spent an average of 9.5 percent of their disposable personal incomes on food.<sup>7,14</sup> This efficiency of producing meat and dairy is a result of several developments, such as improvements in animal breeding, mechanical innovations, specific formulated feeds, and CAFOs, contributing to the decrease in cost of animal products to consumers.<sup>18</sup>

However, how much precisely American consumers save from operations such as CAFOs needs to be determined with applied, impact assessment studies. For example, **including the costs that are associated with the negative production externalities of CAFOs could increase the final CAFO-retail prices of the meat and dairy products**, making the products produced at smaller family operations more competitive in terms of their retail prices.<sup>21</sup>

## Concerns associated with CAFOs

### *Waste generation*

According to the U.S. Department of Agriculture, animals at feeding operations, including CAFOs, produce 335 million tons of manure annually in the U.S.<sup>19</sup> If CAFO waste is not properly stored, transported, and applied to land, then pollutants can enter the air, seep into the **groundwater, and run off into surface waters**.<sup>17</sup> Additionally, one of the biggest concerns over CAFOs facilities is also shallow groundwater contamination.

Some of the harmful pollutants that are associated with CAFOs include nitrogen and phosphorus (nutrient pollution), pathogens (disease-causing organisms such as bacteria and viruses), odorous/volatile compounds such as carbon dioxide, methane, hydrogen sulfide, and ammonia, and others. **Most of the potential water and air pollution escaping from CAFOs today is caused by the unsatisfactory method for disposing of the massive amounts of animal wastes CAFOs produce.** Under this method, animal wastes are simply collected in a large outdoor storage basin or "lagoon", where they gradually decompose. The Clean Water Act, administered by the United States Environmental Protection Agency (EPA), is a federal law that prohibits the discharge of any pollutant by any person from any point source, into navigable waters of the United States, except for those who obtain requisite permits.<sup>8</sup> However, small CAFOs and some medium CAFOs are considered "nonpoint sources," and are not held to the same standards as large CAFOs, even when they discharge pollutants into U.S. waters. Moreover, the Clean Air Act, which is the principal U.S. law regulating air pollution emissions from stationary and mobile sources, is not always enforced.<sup>3</sup>

Anaerobic digestion, a process through which bacteria break down organic matter (manure) and creates methane, the primary component of natural gas, has been proposed as a sustainable alternative to waste management. Dominion Energy and Smithfield Foods announced last year an investment of \$500 million to become the largest renewable natural gas supplier in the U.S., **using the manure generated in their farms**. One example of the project comes from Albany Missouri, where the operators inject biogas from covered hog manure is a technology that makes economic and environmental sense, helping the operators to restore native prairie grasses that are harvested and double biogas production that is then injected to the national natural gas network.<sup>22</sup>

### *Socio economic impact*

Studies in Iowa have found that property values near animal feed operations can be reduced by 20 to 40 percent, depending on distance, wind direction and other factors.<sup>9</sup> The property values are an outcome of the CAFO odors (ammonia and hydrogen sulfide smell)<sup>10</sup>, flies, and general reduction in the quality of life of residents near CAFOs.

Some economists also claim that CAFOs are at an unfair competitive advantage because they shift the costs of animal waste from CAFOs to the surrounding regions (negative externalities or unaccounted costs). Legislative scholars have suggested that the "polluter-pays" principle should be extended to CAFOs to address the environmental and public health damage associated with them.<sup>3</sup> If CAFOs internalized the environmental, animal and human health, and welfare costs that they generate, they would incur higher production costs,<sup>13</sup> which would likely pass to the consumer, representing the "true cost" of the retail prices of meat, dairy and eggs products produced at CAFOs.

Finally, since the majority of the CAFO operations are controlled through contractual arrangements with agribusiness corporations, important decisions may be made by contract supervisors or executives in corporate headquarters outside the local community or the farming family.

### **Current Missouri's CAFOs legislation**

Traditionally, any orders, ordinances, rules, or regulations on CAFOs were promulgated by county commissions and county health center boards. SB 391 waived the ability of county health boards and commissions to impose local regulations on CAFOs in their counties. The bill has been met with resistance and conflicts against the weak regulations over CAFOs or openings of new CAFOs that are playing out around rural Missouri.<sup>15</sup> Farmers, community leaders, local boards of Health and advocacy organizations have been campaigning against establishing new CAFOs in their communities, raising the health and environmental hazards associated with CAFOs. Recently, while Livingston County residents from northwestern Missouri fought against the United Hog Systems establishment, state waivers were put in place for governing CAFOs in order to ease operations during the COVID-19 pandemic. Last, in response to the complaints of "little action, low or nonexistent fines and CAFOs allowed to keep their permits despite repeat offenses"<sup>16</sup>, the Cooper County Board of Health recently filed a lawsuit against Gov. Parson, the Missouri Air Conservation Commission and the Missouri Clean Water Commission. The opponents, who argue that the permits of the MO Department of Natural Resources are too lenient, are requesting that CAFOs' regulation should be grandfathered into new legislation, and health boards and county commissions should be able to continue monitoring CAFOs.<sup>16</sup>

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