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Potential Economic Impacts of a Proposition Limiting Livestock and Poultry Production in Sonoma County

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Background

The Coalition to End Factory Farming (CEFF) has recently created a new ballot initiative that could significantly impact livestock and poultry production in Sonoma County (Figure 1) if approved in the upcoming November elections. The CEFF is composed of numerous animal advocacy, environmental, and social justice organizations. The ballot initiative proposes a ban on concentrated animal feeding operations, or CAFOs. The proposed ban would prohibit the establishment of CAFOs in all areas of the county, including unincorporated areas. The ban also stipulates that existing CAFOs in Sonoma County would be given three years to cease operations or modify their practices, or else incur steep penalties for noncompliance.

However, it can be difficult to understand exactly which agricultural operations this ordinance would prohibit. Language in the ordinance describes animal feeding operations, or AFOs, as facilities that include animals stabled or confined for 45 days or more in a 12-month period. The ordinance explicitly prohibits medium and large AFOs based on their manure discharge and the number of animals, which varies depending on the species. For example, it would prohibit a large dairy CAFO having more than 700 animals; a medium CAFO with more than 200 animals would also be prohibited if animal waste is discharged into surface water. Smaller dairies with less than 200 animals could also be impacted if the dairy has been designated as a CAFO by the "permitting authority" as a significant contributor of pollutants. The ordinance also indicates that those who own two or more lots or facilities on adjoining parcels, or those that shared a waste disposal system, would be viewed collectively to determine whether or not they meet the definition of a CAFO.

CEFF claims the proposed measure intends to protect the environment, animals, and the health and well-being of Sonoma County residents and communities by prohibiting the operation of CAFOs; however, the CAFO designation does not necessarily reflect animal welfare or care, greenhouse gas emissions, or management and simply classifies operations on their size and potential water quality risks. The objective of this study is to gain a better understanding of the potential economic impacts of this proposed ballot initiative on the Sonoma County economy.

Figure 1: Map of Sonoma County

Livestock and Poultry Production in Sonoma County

Agriculture in Sonoma County is diverse. While the highest valued agricultural output is wine grapes, animal production is also significant in the county. Milk is the second highest valued output, with eggs, cattle, and poultry all being in the top 10 commodities produced in the county. Given the variability in output and prices from year to year, we used data from the 2019–2021 Sonoma County Crop Reports to calculate a three-year average value of output to characterize the current livestock and poultry production for Sonoma County (Table 1).

Table 1: Current Livestock and Poultry Production in Sonoma County (2019–2021 Average)

2019-2021 Average Output Values	
Milk	$136,427,400
Poultry	$32,739,800
Eggs	$30,092,200
Cattle/Calves	$20,040,816
Sheep/Lambs	$5,318,333
Hogs	$391,600
Wool	$59,267
Total	**$225,069,416**

Source: Sonoma County Crop Reports 2019, 2020, and 2021.

Notes:

"Poultry" is Misc. Livestock and Poultry (includes chicks, pullets, fryers, roasters, ducks, turkeys, turkey poults, rabbits, goats, etc.)

"Eggs" is Misc. Livestock and Poultry Products (includes duck eggs, turkey hatching eggs, chicken eggs for consumption, egg by-products, and feathers)

It is difficult to identify what portion of these livestock and poultry operations would be directly impacted by the proposed ordinance prohibiting CAFOs in Sonoma County. While data is typically available describing the total output from these agricultural sectors, characteristics of individual farm operations in terms of specific numbers of animals are often lacking. To capture local, pertinent, and accurate information, we worked with University of California Cooperative Extension (UCCE) Sonoma to provide details regarding the number of dairy operations and their approximate herd size in Sonoma County. UCCE Sonoma was able to identify a total of 50 dairy operations in the county, of which 5 would be considered a large CAFO and 33 would be considered a medium CAFO under the ordinance. While this represents approximately $^{3}/_{4}$ of the dairies in the county, it represents nearly 93 percent of the dairy livestock. In addition, it was determined that some of the smaller dairy operations could be classified as a small CAFO under the ordinance and still subject to the restrictions in the proposed ordinance. As such, it appears that nearly all of the dairy production in Sonoma County could be directly impacted by the proposed ordinance. While some efforts were made to better understand the structure of the poultry, egg, and cattle production sectors, we were not able to identify the specific number of animals within each operation to allow us to determine what portion of these sectors might be prohibited as a CAFO under the proposed ordinance. However, conversations with local producers and agricultural stakeholders have indicated that these other livestock and poultry operations might be impacted by the proposed ordinance in a similar way to the dairy industry. As such, this study examines the economic impacts associated with a loss of all livestock and poultry production in Sonoma County as a result of the proposed ordinance.

Economic Impact on Sonoma County

The economic impact associated with changes in livestock and poultry production will include more than just the value of lost farm production; it also needs to capture the impacts these changes have on other sectors of the economy. To measure the total economic impact, the indirect and induced impacts of these changes must also be estimated. Indirect impacts are generated from the business-to-business purchases along the supply chain. For example, reducing the amount of dairy production will likely have indirect impacts on related sectors like feed sales, farm equipment sales, trucking companies, etc. Induced impacts capture the effect of reduced personal consumption expenditures by households as a result of less wages and income being received from the agriculture industry. Induced impacts will capture the regional impacts of spending less of this agricultural income on a variety of other economic sectors like eating out at restaurants, spending on home improvements, medical services, retail establishments, etc.

The economic impact of losing livestock and poultry production in Sonoma County was modeled using the Impact Analysis for Planning (IMPLAN) System (IMPLAN Group, 2024). IMPLAN is a tool that is used to construct regional economic input-output (I-O) models. Input-output analysis uses a mathematical modeling approach to capture the relationships between various sectors of an economy. The IMPLAN model uses more than 500 different sectors that are based on the Bureau of Economic Analysis's (BEA) national input-output study. IMPLAN is used widely for economic impact modeling and is considered the standard approach. In 2009, the United States Department of Agriculture (USDA) recognized the IMPLAN modeling framework as "one of the most credible regional impact models used for regional economic impact analysis" (ECONorthwest, 2012).

The first step in conducting the economic impact analysis is developing the direct impact scenario. While there is uncertainty regarding which animal feeding operations would be prohibited by the proposed ordinance, we examined a scenario where the ordinance resulted in a total loss of all livestock and poultry production in Sonoma County. The average livestock and poultry output values described previously in Table 1 were then adjusted to reflect the appropriate economic sectors that are modeled within the IMPLAN framework (Table 2).

Table 2: Linking County Crop Report Data to IMPLAN Sectors

2019-2021 Average Output Values		Economic Sector in IMPLAN	
Milk	$136,427,400	Dairy Cattle and Milk Production	$136,427,400
Poultry	$32,739,800	Poultry and Egg Production	$62,832,000
Eggs	$30,092,200		
Cattle/Calves	$20,040,816	Beef Cattle Ranching and Farming	$20,040,816
Sheep/Lambs	$5,318,333	Animal Production (except Cattle, Poultry, and Eggs)	$5,769,200
Hogs	$391,600		
Wool	$59,267		
Total	**$225,069,416**	**Total**	**$225,069,416**

Source: Sonoma County Crop Reports 2019, 2020, and 2021; IMPLAN.

We then adjusted these values for inflation and removed these output values from the regional economic model to examine the impacts in current 2024 dollars. The results of these economic impacts are presented in terms of lost Output, Labor Income, and Employment. Labor Income consists of proprietary income (income received by self-employed individuals including private business owners and owner-operators) and wages (includes all worker salaries, payments, and fringe benefits paid by employers), and employment is presented as the number of wage and salary employees, as well as self-employed jobs.

Table 3: Economic Impact of Losing All Livestock and Poultry Production in Sonoma County (Output Lost, Labor Income Lost, and Jobs Lost)

	Output	Labor Income	Total Employment
Direct Impact	$259,049,852	$36,058,857	701
Indirect Impact	$121,666,257	$31,391,115	469
Induced Impact	$37,583,610	$12,934,169	211
Total Impact	**$418,299,719**	**$80,384,141**	**1,381**

Source: IMPLAN.

Results

The results presented in Table 3 represent a significant impact to the Sonoma County economy if their livestock and poultry production is jeopardized by the proposed ordinance. While we estimated a **direct loss** of around $259 million in the livestock and poultry output, there was an additional $122 million worth of **indirect impacts** to related industries and an additional $38 million worth of lost output from the **induced effects** of reduced spending in the region (a multiplier effect of 1.61). We estimated similar results in terms of lost labor income and employment: for every job lost from the livestock and poultry production sector, we can expect to lose one additional job from the Sonoma County economy (a multiplier effect of 1.97). While some may question the extent of the impacts, there are numerous agricultural stakeholders that believe a likely outcome of this ordinance will be the loss of all commercial animal production from Sonoma County. The limitations of this study (below) also acknowledge some additional impacts that might be underestimated by these results. The authors of this report believe more work needs to be done to better understand exactly how this ordinance would be applied and which operations would be prohibited and classified as a CAFO under this ordinance before moving forward with any new policies.

> ***For every job lost from the livestock and poultry production sector, we can expect to lose one additional job from the Sonoma County economy.***

Limitations

While our estimates of the total economic impact of lost livestock and poultry production in Sonoma County will capture some of the downstream impacts on agricultural processors as a result of less local production (indirect impacts), the input-output modeling used in this study will automatically source alternative inputs from out of the area. For example, while a loss of local dairy production in Sonoma County will negatively impact local dairy processors (fluid milk, cheese, ice cream, etc.), the economic modeling for this study assumes more raw milk will be imported from surrounding counties to meet the demands of the processors. However, it is possible that there are regional conditions that could make it prohibitively expensive (or unreliable) to import agricultural commodities from out of the region, and a reduction in local agricultural production could result in a processor going out of business. Without more work examining the local nuances regarding the agricultural processing supply chain in Sonoma County, the ability to estimate whether or not a particular processor would go out of business and result in even larger economic impacts would be outside the scope of this report. In addition, importing more agricultural commodities from out of the area may have effects on retail prices and the carbon footprint of these shipments, which are outside the scope of our analysis and not included in our estimates.

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