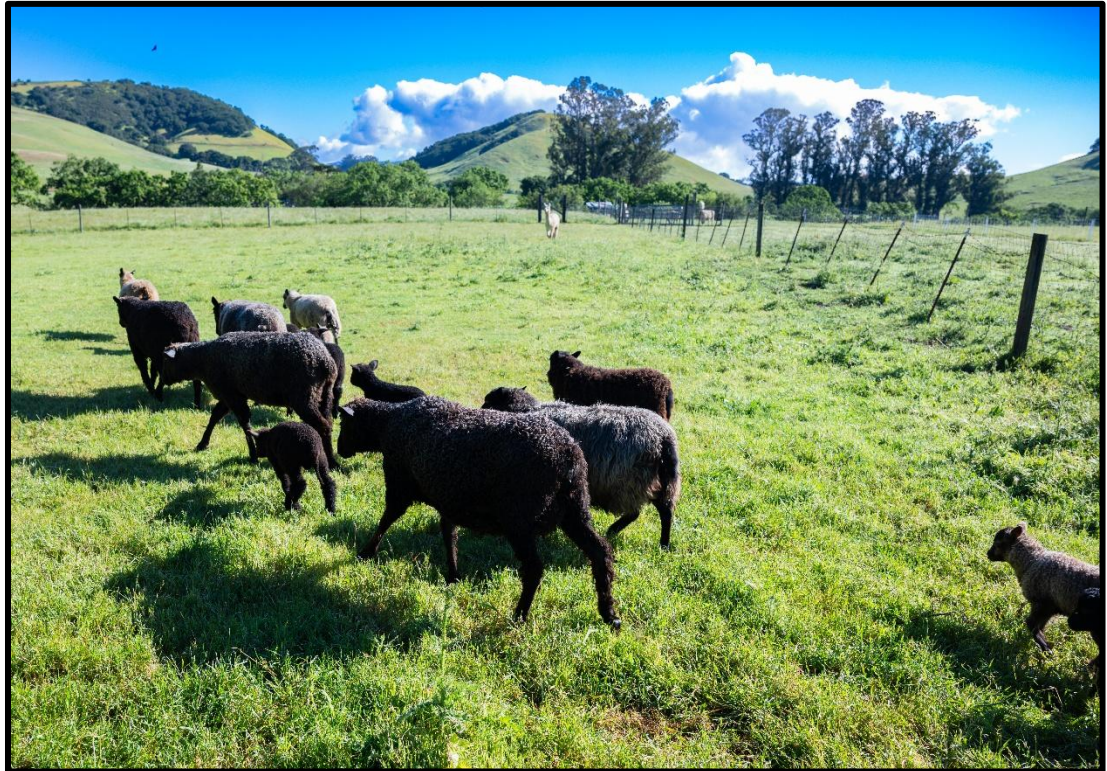


Marin County Sheep and Wool: Preliminary Market and Industry Assessment

FINAL REPORT



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Prepared for:

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1 Purpose and Background

The Marin County Department of Agriculture/Weights and Measures (County) engaged ERA Economics to conduct a reconnaissance-level investigation of the local sheep industry and the market potential for a regional wool processing facility. The analysis includes a baseline evaluation of data, market conditions, and industry potential, and may support future evaluation of Marin wool production and processing. Potential private investments and public funding strategies may be further evaluated through a complete feasibility study and additional market assessments.

The analysis includes a data-driven overview of the current Marin County and broader domestic sheep and wool industries. Industry reports, research reports, industry data, and other industry statistics were reviewed and compiled. ERA and the County worked together to conduct interviews with industry experts, outreach to local producers, and organized meetings with other stakeholders and interested parties. The outreach included industries in Marin County as well as sheep and wool producers in other areas of California and in the broader domestic market.

Marin County has a long agricultural history with a variety of viable crop and livestock production systems on its farms and ranches. However, like many urban-rural counties, the agricultural footprint has changed over time due to various factors including expanding urban areas, increasing cost of production, and agricultural market forces. Agriculture and open space are part of the rural character of Marin County and land conservancies, such as the Marin Agricultural Land Trust, work to preserve the agricultural legacy of Marin County and support the economic viability of remaining farms and ranches. Over 60,000 acres of land in the county is currently in an agricultural or open space easement.

Sheep are a prominent livestock in the region and well suited to Marin County's climate, topography, and agricultural land conservation goals. With plenty of opportunities for grazing, the economic viability of expanding the county's sheep industry depends on the cost of inputs and markets for meat, wool, and contract grazing. Although the sector has established small markets for grazing and meat, current producers have limited market opportunities for wool. The wool generated from Marin County flocks is largely treated as a byproduct of grazing due to the lack of processing infrastructure and markets. Wool production and processing can create stable revenue streams that allow wool to function as an additional source of profitability for producers and improve the long-term economic viability of Marin's protected agricultural lands.

An economic analysis and assessment of the viability of expanding the Marin County sheep and wool industries was developed. The analysis is intended to be an initial overview of the industry, available data, industry structure, and opportunities and constraints for expansion. This report summarizes the results of that preliminary investigation and is structured as follows:

- **Section 2** summarizes the sheep and wool industries, supply chain, and current industry conditions. This includes an overview of the market—supply and demand—for sheep and

wool, including an overview of the regulatory environment, supported with data, tables, and figures.

- **Section 3** describes the Marin County agricultural sector, focusing on the sheep and wool industries. This includes an overview of how the sector is organized, the businesses that operate in it, and where they sell wool, supported by data and industry outreach.
- **Section 4** identifies some of the key constraints and opportunities for the Marin County sheep and wool industry based on the results of the data analysis and findings from industry interviews. This includes a summary of lessons from other regional efforts.
- **Section 5** summarizes findings and identifies areas for additional analysis.

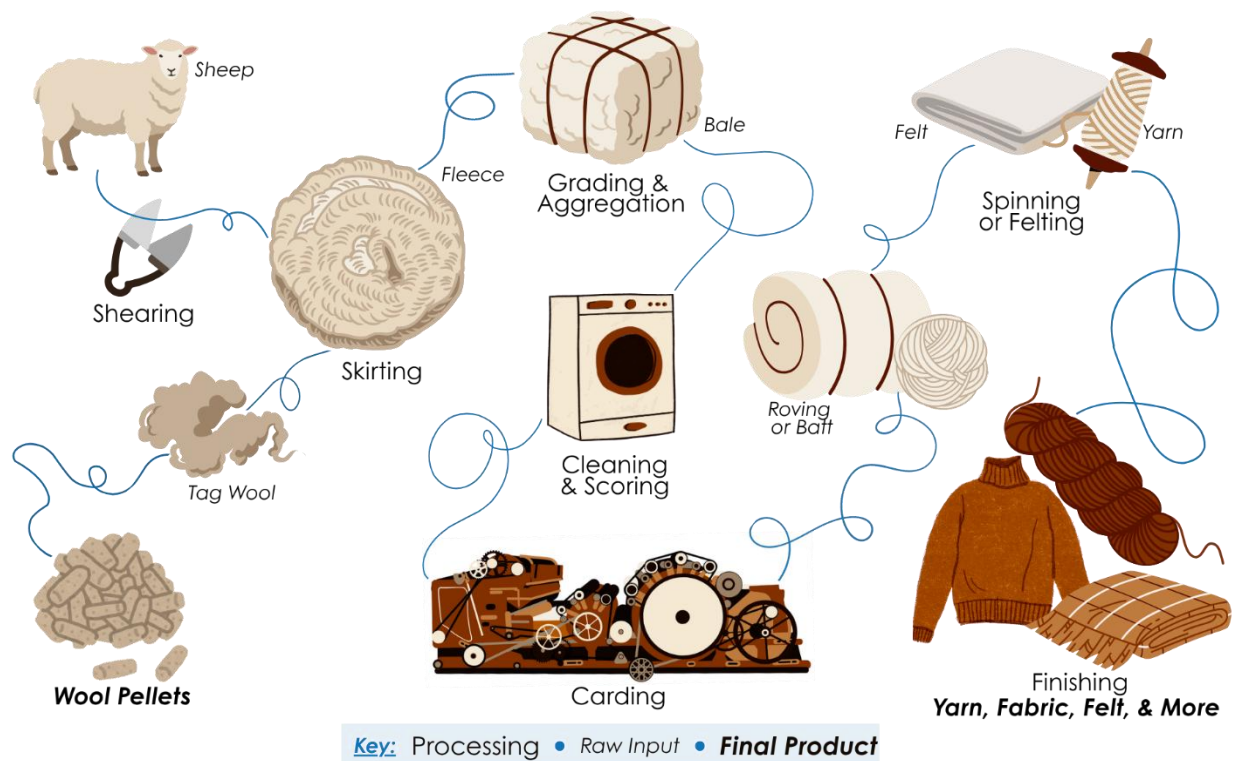
ERA Economics would like to thank the Marin County staff, sheep producers, wool industry representatives, and regional partners who shared their knowledge and insights. This study benefitted immeasurably from interviews with these individuals and organizations.

2 Sheep and Wool Production Overview

Sheep are produced for meat, grazing services, and fiber. The wool industry aggregates, processes, and markets that fiber. This report targets the latter, but the two cannot be understood in isolation.

Figure 1 illustrates the wool supply chain and production process from shearing through example final products. Lower-grade or tag wool may be discarded or diverted to products such as wool pellets. Higher grade wool is processed and turned into various finished goods / textiles.

Figure 1. Overview of the Wool Supply Chain



The U.S. is small share of the global wool supply, accounting for less than 1 percent of global production. Table 1 summarizes raw and processed wool exports and imports for 2025 and 2026 (USDA ERS, 2026). The U.S. is a net exporter of raw wool because it is cheaper to ship and process wool abroad, and it is a net importer of processed wool and wool products as U.S. consumer purchase a substantial share of these commodities.

Table 1. U.S. Wool Trade Summary

Measure	2025	Thru May 2026
<i>Raw</i>	<i>in million lbs</i>	
Raw wool imports (clean)	4.84	1.82
Raw wool exports (clean)	9.82	3.68
Net raw wool trade	4.98 (Net Exports)	1.86 (Net Exports)
<i>Processed</i>	<i>in million lbs</i>	
Wool top (processed) imports	1.14	0.39
Wool top (processed) exports	0.47	0.19
Net wool top trade	0.67 (Net Imports)	0.2 (Net Imports)

Source: USDA FAS GATS.

The global trade data show that the U.S. is not currently well positioned and competitive as a global producer or processor of wool. Current tariff structures may perversely increase the incentive to process U.S. wool overseas. When wool undergoes at least two processing stages abroad, such as scouring and carding, it may qualify as a product of that country and avoid tariffs, while new trade agreements among other wool-producing countries further disadvantage U.S.-scoured wool in export markets. However, there are important, local niche markets for specialty wool production, processing, and direct-to-consumer sales. Marin County sheep and wool production currently includes some of these markets and has potential for expanding in the future. This section provides an overview of the production and market for sheep and wool and supply chain structure.

2.1 Sheep Production

A sheep enterprise is a farm or ranch business organized around a breeding ewe flock and one or more outputs, including market lambs, targeted-grazing services, wool, milk, or seedstock. The industry in Marin County includes a range of hobby and lifestyle flocks, small specialty or commercial producers, and a few larger operations. Many operations are vertically integrated to retain more value by combining flock production with farmstead processing, branded meat or fiber products, and direct marketing.

Breed selection depends on the objective of the business enterprise. Operations selling lambs or meat tend to use breeds such as Hampshire, Suffolk, and Dorset, or dual-purpose breeds, bred for both meat and wool. For lower maintenance in warmer climates, some producers may select hair sheep for grazing or meat, such as Katahdin and Dorper. Wool-centric operations may focus on white, dual-purpose breeds such as Rambouillet, Corriedale, and Romney, or higher quality wool breeds such as Shetland, Merino, and Merino-type breeds. The East Friesian breed is typically used for dairy production in the U.S. Crossbreeding is also common to combine desirable characteristics across different purposes.

Enterprise revenues can include breeding services, livestock sales, grazing services, meat, dairy, and wool. For many Marin County producers, meat and grazing are the primary source of

revenue; wool adds additional revenue when market opportunities arise. Primary outputs from sheep production include:

- **Meat:** Producers generally maintain ewes for breeding and raise lambs on pasture until they reach appropriate market weight. Lambs are then sold through livestock buyers, direct-market channels, or regional slaughter and processing facilities.
- **Grazing:** Producers may keep flocks on their own lands or move them through grazing areas like ranches, vineyards, orchards, and public lands. This also provides land management and wildfire prevention.
- **Fiber (Wool):** Sheep are usually shorn annually, producing wool that may be sold as raw fiber, processed into yarn or other products, or used in lower-value applications such as pellets and soil amendments.
- **Dairy:** There is a niche market for dairy sheep production for value added products. East Friesians are the most common dual wool and dairy breed. Complex dairy regulations in California can make it difficult for small dairy sheep producers to be economically viable.

Sheep enterprises vary in scale and outputs, with most viable enterprises depending on multiple revenue streams rather than a single commodity. Lamb production and targeted grazing are the primary outputs, with wool, dairy, seedstock, and direct marketing providing supplemental value, or for niche markets. This structure is important context for evaluating opportunities to grow regional wool fiber production in Marin County, which is currently a small share of the sheep business enterprise value.

Operations rarely achieve economic viability through wool alone: lamb sales and, where available, grazing contracts drive revenue. Multiple industry experts interviewed for this study emphasized that enterprises must be diversified across meat, contract, and wool just to achieve a reasonable return. For most producers, wool accounts for around 10-30 percent of revenue from rangeland sheep production (Bieg et al., 2014). In Marin, sheep sold for an average of \$212 per head in 2024, against gross wool revenue of roughly \$8 per head. An enterprise that diversifies across meat, grazing contracts, and wool therefore offsets its risk and increases its odds of success.

2.2 Wool Production

The wool supply chain begins at annual shearing, with raw wool cleaned, sorted, processed, and sold in various final form to markets. The U.S. wool supply chain moves from shearing, skirting, grading, and aggregation at the producer level to testing, scouring, carding or combing, spinning, and finished-product manufacturing. Domestic scouring and intermediate-processing capacity is limited, so wool is often shipped or sent overseas for processing, increasing costs and reducing the value retained by producing regions.

The typical components of the wool supply chain, from raw fleece to finished product, include the following:

- **Shearing.** Sheep are typically shorn once a year. The full coat of wool removed from one animal is called the “fleece.”
- **Skirting and sorting.** The fleece is skirted, i.e. cleaned of the dirtiest parts: the edges, belly wool, and heavily soiled areas. This low-grade material, known as “tag wool”, is unsuitable for textiles but can be used in lower value applications, such as wool pellets for soil amendment.
- **Grading and aggregation.** Fleeces are collected at aggregation facilities, where fiber is weighed, inspected, graded and sorted by quality according to fiber diameter, length, and cleanliness. Wool from multiple producers is then combined into bales large enough to meet processor minimum volumes.
- **Scouring.** The wool is washed in water heated to 140–150°F to remove lanolin (the natural grease produced by sheep), dirt, and plant debris. This industrial process is water- and energy-intensive. Few facilities in the western United States are equipped to scour at scale, and as such scouring is often a critical bottleneck in the supply chain.
- **Carding.** Scoured wool is mechanically combed to align the fibers and remove remaining debris. Depending on the intended end use, this produces a continuous loose rope of fiber called “roving,” or a flat sheet called a “batt.”
- **Spinning.** Roving is twisted into yarn.
- **Felting.** Batts are steamed, stacked, shrunk, and compressed into felts.
- **Finishing.** Yarn, batting, or felt is turned into a final product, whether that is knitting yarn, woven fabric, felted material, or industrial products like insulation or air filters.

Each stage of wool processing typically happens at a different facility, but some small and medium facilities are vertically integrated depending on their market. Regional processing allows producers to capture more of the value of their wool clip and keeps the remaining margin with local processors.

The top five wool-producing states by pounds are California, Wyoming, Utah, Colorado, and Idaho (American Sheep Industry Association [ASI], 2025). California leads the nation in pounds of wool produced and is the second largest sheep-producing state by breeding flock size (UC ANR, 2020).

Table 2 summarizes U.S. sheep and wool production as of 2024/2025. The U.S. sheep and lamb inventory totaled approximately 5.05 million head, including 3.68 million breeding sheep and 1.37 million market sheep and lambs. Market lambs were 94 percent of the total inventory and market sheep were 6 percent of total market inventory. U.S. producers generated 22.5 million

pounds of shorn wool valued at approximately \$35.4 million. U.S. wool is a relatively small but important co-product of the domestic sheep industry.

Table 2. U.S. Sheep and Lamb Production Statistics, 2024/2025

Measure	Units	2024/2025
Breeding Sheep	head	3.68
Market Sheep and Lambs	head	1.37
Sheep and Lamb Total	head	5.05
Shorn Wool Production	million lbs	22.5
Shorn Wool Value	\$ millions	\$32.1

Source: USDA National Agricultural Statistics Service

The national flock numbered approximately 55 million head in the 1940s. As of 2025, the U.S. flock is 5.05 million. The total head of sheep and lambs increased modestly in 2025 over 2024 (USDA NASS, 2025). Wool production has declined as the flock has declined, falling by more than 60 percent since the late 1980s (AgMRC, 2025). In 2024, shorn wool production totaled 22.5 million pounds, which was down about 1 percent from 2023. Wool price is more variable and drives changes in industry gross value. The 2024 average wool price of was \$1.43 per pound, with total U.S. wool production valued at \$32.1 million. This was down 9 percent from 2023 (USDA NASS, 2025).

In short, U.S. wool production has contracted over the past 80 years, driven by a combination of factors including competition from global producers, synthetic fibers, and changing consumer preferences for textiles. It is cheaper to process wool in overseas markets due in part to government subsidies in those markets (e.g., China). Australian fine wool and New Zealand coarse wool supply the majority of the world market (AgMRC, 2025; Fibershed, 2014). The post-1950s rise of synthetic fibers shifted consumer demand for wool, although recent attention on microplastics may modestly affect demand for natural fibers (including wool). Domestic price supports for the wool industry also waned with the elimination of the National Wool Incentive Program (WIP) in 1993.

The value of wool depends on quality and cleanliness, which affect which facilities will accept the fiber, scouring costs, and the eventual price a producer receives. Characteristics such as fiber diameter, crimp, handle, weight, yield, color, condition, and staple length determine the grade and quality of a fiber (Whaley, Froehlich, and Carroll, 2022). Breed is often the leading factor impacting wool quality: meat breeds tend to have courser, shorter fibers (resulting in lower quality grades), while wool breeds have fibers ideal for higher grade applications (fine apparel, etc.).

Margins for wool producers are thin. Most producers would realize a net loss on wool production alone, even before aggregation and shipping costs. Marin County producers reported average farm-gate price of \$1.21 per pound is about 15 percent below the U.S. average price of \$1.43 per pound. At roughly 7 pounds per fleece, gross wool revenue is approximately \$8 per animal,

while shearing alone typically averages \$10–20 per animal depending on location and crew availability.

2.3 Wool Processing

Most of the value-added from wool production is in the processing steps to turn raw wool into finished retail products. Historically, the U.S. processed wool domestically, but due to international competition, trade barriers, and other market forces, there is a limited processing industry in the U.S. Fibershed estimates northern California’s milling capacity at roughly 10,000 pounds per year, or about 0.3 percent of the state’s total wool clip (Fibershed, 2014). Most U.S. wool is exported, with historically about 80 percent of raw wool exported to scouring and processing facilities in China and India (Bieg et al., 2014). In addition, U.S. wool arrives at processing facilities containing significantly more plant matter, burrs, and dirt than New Zealand or Australia wool. New Zealand’s high rainfall effectively pre-rinses fleeces in the field, and Australian producers benefit from drier conditions that reduce contamination. U.S. wool that fails cleanliness standards is downgraded or rejected, reducing effective farm-gate prices (Catalyst Wool Project representative, personal communication, 2026).

There are two large-scale commercial wool scourers operating in the U.S.: Chargeurs Wool Inc. in Jamestown, South Carolina, and Bollman in San Angelo, Texas. Both facilities report production issues with labor shortages and have not operated at full capacity since the COVID-19 pandemic. The pandemic spiked shipping cost and restructured the global textile supply chain (Catalyst Wool Project representative, personal communication, 2026). The South Carolina facility is owned by a global corporation investing primarily in overseas operations. In June 2026, the U.S.-based textile company Crescent Textile Solutions purchased Bollman; the scour is expected to stay open, though the business may change and receive investment funds (Catalyst Wool Project representative, personal communication, 2026).

The remaining scouring sites are important for small and mid-size domestic wool producers. There would be very few domestic options for scouring without these facilities (J. Pozzi, personal communication, 2026). The American Sheep Industry Association’s stress test study calculated that replacing the capacity of these two largest scouring facilities would require building hundreds of small ones (J. Pozzi, personal communication, 2026).

Table 3 summarizes representative wool prices for different product stages. The price spread between raw greasy wool and processed wool reflects the value added in processing. For Marin production, with limited local processing, almost all this value is captured outside the county and state. The spread between the price at the Marin farm gate (\$1.21 per pound) and the price for finished product (up to \$24 per pound) represents the value added by scouring, carding, spinning, and knitting (see Section 2.3 for an overview of wool processing).

Table 3. Representative Wool Prices Along the Value Chain

Product Stage	Unit	Source	Inflation-Adjusted Price per Unit (2026)
Raw greasy wool, Marin farm gate	Pound	Marin Crop Report, 2024	\$1.21
Raw greasy wool, U.S. average	Pound	USDA NASS, 2024	\$1.50
Raw greasy wool, by grade	Pound	Bieg et al., 2013–14	\$1.20-2.73
Wool top (washed and combed)	Pound	Bieg et al., 2013–14	\$3.09-6.40
California wool knit fabric, wholesale	Yard	Bieg et al., 2014	\$15.03-41.00
Hand-spinner fleeces, direct market	Pound	M. Barinaga, 2026	up to \$24

Overseas processors are generally able to operate at lower unit costs than U.S. domestic processors. This is due to several market factors. Government subsidies can increase price and lower costs for other domestic industries. Other countries have lower labor costs, fewer regulations, and lower costs for other inputs. Freight transportation economics is also an important factor. Scouring removes lanolin and impurities, which reduces raw wool’s weight by roughly half. Wool exports are heavy, and after processing, wool returns in a lighter finished product form¹. The return trip freight is substantially less than the outbound trip, and some of that benefit accrues to the scouring facility. Domestic transportation of raw wool to the two remaining U.S. commercial scourers, in Texas and South Carolina, often costs more than exporting, scouring, and re-importing U.S. wool as washed fiber.

Costs for domestic scouring are also higher in the U.S. relative to competitors. For example, a New Zealand-scale commercial scouring facility costs an estimated \$19–38 million and generates roughly \$350 per operating hour (Catalyst Wool Project representative, personal communication, 2026). By one Lake County estimate, a scouring line capable of processing California’s full wool clip would cost approximately \$36 million (R. Burgess, personal communication, 2026). Fibershed’s 2014 feasibility study estimated that a full vertically integrated mill would cost \$26 million (in 2014 dollars) and would cost substantially more today. Equipment capital costs in the U.S. are comparable to other countries, but land costs, the opportunity cost of capital, and operating expenses (including labor costs, benefits, taxes, insurance, etc.) are higher in the U.S.

Developing a new facility in the U.S. or Marin County would be time intensive (permitting and regulatory requirements) and capital intensive. Equipment for a mid-scale facility would be sourced from Italy (Ramella is the recommended manufacturer for fine wool equipment), Canada (Belfast Mini Mills is being explored for smaller scouring units), or China (R. Burgess, personal communication, 2026; Catalyst Wool Project representative, personal communication, 2026). The New Zealand-made Kiwi Scour went out of production in 2025, and existing units have underperformed. Firm pricing for smaller-scale alternatives is not yet available.

¹ One interviewee estimated a round-trip freight shipping to New Zealand at roughly 47 cents per pound (J. Pozzi, personal communication, 2026).

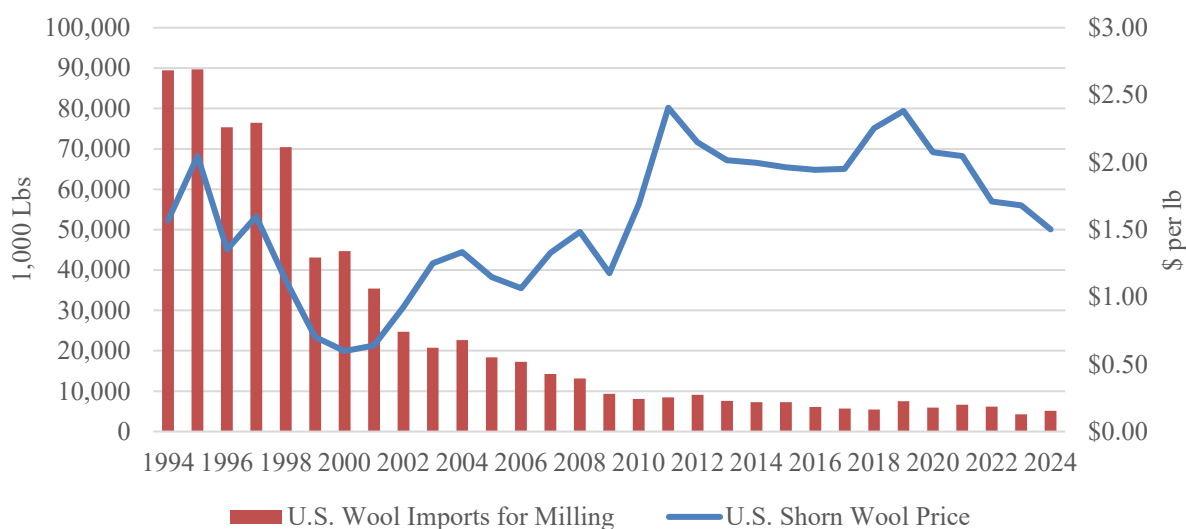
A specific project/facility feasibility—which is beyond the scope of this study but included as a potential next step—would develop capital and operating costs as well as revenues per operating hour for a California facility and evaluate appropriate financial metrics. This would provide a careful financial comparison of different facility development alternatives, operating, markets, competitors, etc. This was beyond the scope of this assessment.

2.4 Wool Demand

Wool is processed to meet consumer demand, which has changed over time. As consumer preferences and purchases change, these shifts affect the production of goods and the price they can ultimately be sold for.

U.S. wool production and imports have been declining for several decades. Figure 2 illustrates the farm-gate (U.S. average, inflation-adjusted) price of wool and U.S. wool imports for milling. In inflation-adjusted dollars, the U.S. farm-gate wool price has been relatively stable with variability year-to-year. The domestic demand for raw, U.S. wool has decreased substantially.

Figure 2. U.S. Wool Imports and Farm-Gate Prices



Source: USDA ERS.

USDA data show U.S. wool production, processing, and raw imports have declined. Consumer demand for wool-containing consumer goods (e.g., clothes, textiles) is supplied predominantly through imports.

As domestic production has decreased buyers are competing for a shrinking pool of U.S. wool. Domestic wool prices are currently (not shown in figure 2) at seven-year highs (Catalyst Wool Project representative, personal communication, 2026), reflecting tightening domestic supply alongside renewed end-market demand for natural fibers and trade disruption to overseas processing.

The U.S. wool market is projected at \$437 million in 2026 and is expected to reach \$581 million by 2033, growing at a compound annual rate of 4.1 percent, with growth driven by rising demand for sustainable, biodegradable fibers (Persistence Market Research, 2026). This combination of high prices and growing end-market demand creates a more favorable backdrop for infrastructure investment than has existed in years.

Rising consumer awareness of microplastics contributes to demand for natural fiber alternatives like wool. Nearly three-quarters of microplastic pollution in San Francisco Bay consists of fibers, 53 percent of which was identified as plastic, primarily polyester and acrylic. An estimated 7 trillion microplastic particles enter the Bay through stormwater each year (Sutton et al., 2019). Wool's environmental profile (biodegradability, recyclability, and the absence of microplastic shedding) aligns with tightening regulations, consumer awareness of plastic pollution from synthetic fibers, and brand sustainability commitments.

Wool producers have responded to price signals before. From 1935 to 1945, the U.S. sheep population grew from roughly 35 million to 55 million head in response to wartime demand for wool (Bieg et al., 2014). With wool at seven-year highs and growing institutional and consumer interest in natural fibers, today's price environment is more favorable than it has been in decades.

The recent increase in wool prices is driven, in part, by several demand drivers. These include:

- **Apparel brands.** There has been a resurgence of interest in wool apparel over the past decade. Brands including Patagonia, The North Face, and Ibex have sought domestically grown wool inputs (such as yarn and textiles) but have been unable to source them due to processing infrastructure gaps (Fibershed, 2014).
- **Industrial buyers.** Air filter and home insulation manufacturer Havelock in Reno, Nevada, uses New Zealand wool for its products because American wool cannot be cleaned to the standard its equipment requires. The company has stated it would buy scoured domestic wool if scouring quality could be assured (Catalyst Wool Project representative, personal communication, 2026).
- **Government procurement.** Government procurement is more stable than fashion or consumer markets. Federal acquisition regulations require some agencies to give preference to domestically produced, manufactured, or home-grown products. For wool, agencies such as the Department of Defense must use "fiber forward" products, with each step in the production process taking place in the U.S. (Fibershed, 2014). In addition, early outreach to state agency procurement staff has found openness to wool-related eco-labels such as the Responsible Wool Standard and Climate Beneficial Wool, and interest in expanding use of natural fibers through agency procurement channels (Catalyst Wool Project representative, personal communication, 2026). Marin County adopted a Plastic Free July resolution in 2025 and is considering a 2026 campaign focused on natural fibers (J. Deviney, personal communication, 2026). Public awareness campaigns can affect

consumer demand (purchases) of natural fibers. This is different from government purchases of natural fiber products, which would also support an increase in demand.

- **Specialty fiber spinning.** Driven in part by the natural fibers movement, a growing movement of artisans are seeking quality wool for specialty textiles and crafts. This includes wool for hand spinning, yarn, weaving, dyeing, garments, and other crafts. Many individuals seek wool of specific characteristics and breeds that are not commercially available, and growing local and regional direct-to-retail markets can serve this consumer segment. A market demand analysis would establish specific buyers and the ability to tap into this market. This may include through large crafting retailers, direct-to-crafter outlets, or online platforms like the Woolery or Revolution Fibers.

Section 4.2 provides an overview of additional market opportunities for Marin County sheep and wool production. Additional analysis of each of these demand channels and new market opportunities (e.g., price, types of wool purchased, volumes, etc.) is warranted but is beyond the scope of this initial assessment.

3 Marin Sheep and Wool Industry

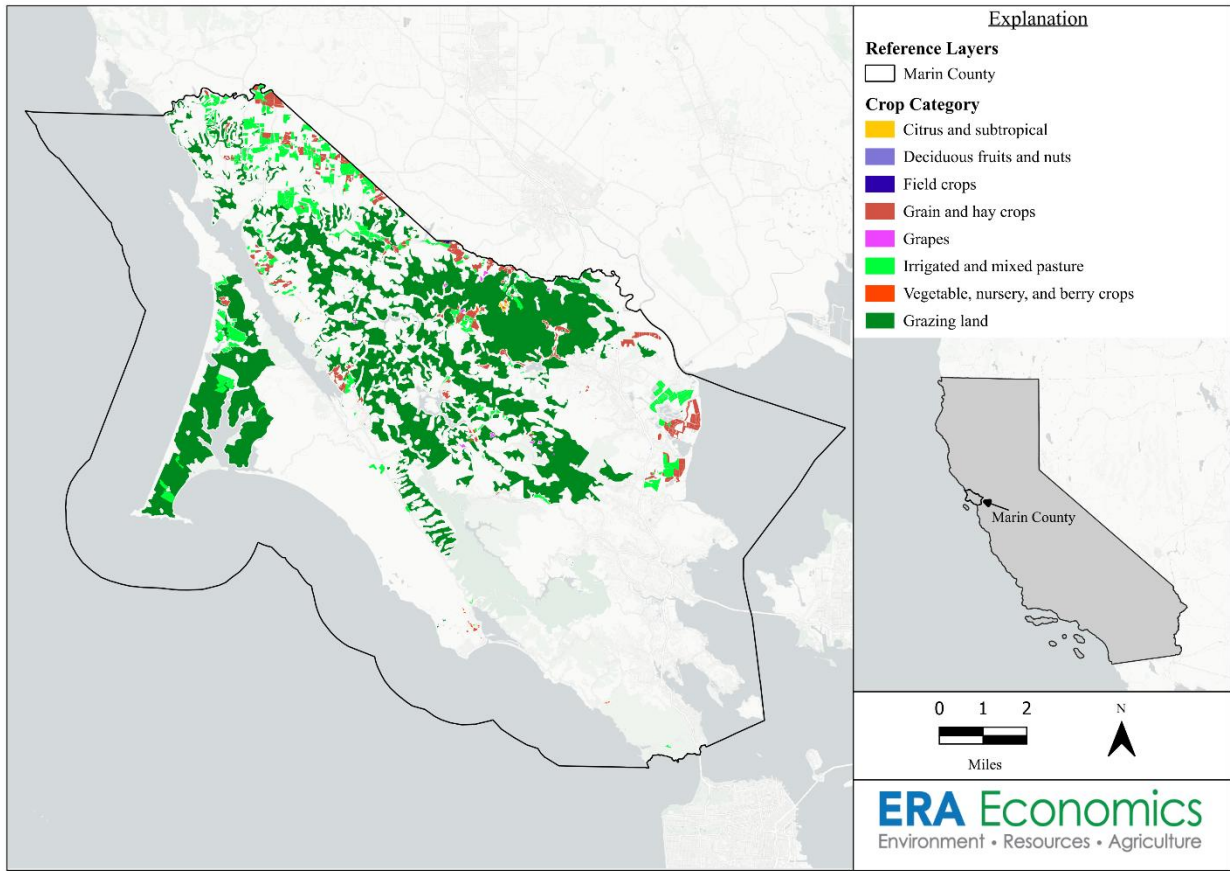
Marin hosts a small but active base of sheep production businesses earning revenue from meat, grazing, and fiber, and a thin, improvised set of wool marketing and processing channels, none of which is sufficient to fully support regional wool production. This section describes the current industry organization: current production, returns, and markets and retail outlets.

3.1 Agriculture in Marin County

Located north of San Francisco, Marin County has a long history of agriculture in the region. As of 2022, the county had 255 farms representing 514 producers over 121,00 operating acres. The median farm size was 81 acres (USDA Census of Agriculture, 2022). In 2024, the total gross value of Marin County's agricultural production was \$83.82 million, down slightly from 2023. 48 percent of total production value came from livestock, with another 28 percent from livestock products (milk and wool). Field crops provided 12 percent of the county's value, while aquaculture and fruit, vegetable, and nursery crops contributed another 8 and 4 percent, respectively (Marin County Agricultural Commissioner, 2024).

Figure 3 illustrates the crop acreage in Marin County as of 2024. Pasture is the dominant agricultural land use and is concentrated primarily in the northern and western portions of the county. The crop map data does not include all non-irrigated rangeland, which is included in the Marin County Crop Report which shows about 154,000 acres of rangeland. Crops include a mix of grain and hay as well as smaller acreage of grapes, other field crops, orchards, vegetables, nursery, and berry crops. This land-use pattern reflects the grazing-based livestock production and the continued importance of rangeland to the county's agricultural economy.

Figure 3. Marin County Crop and Grazing Lands



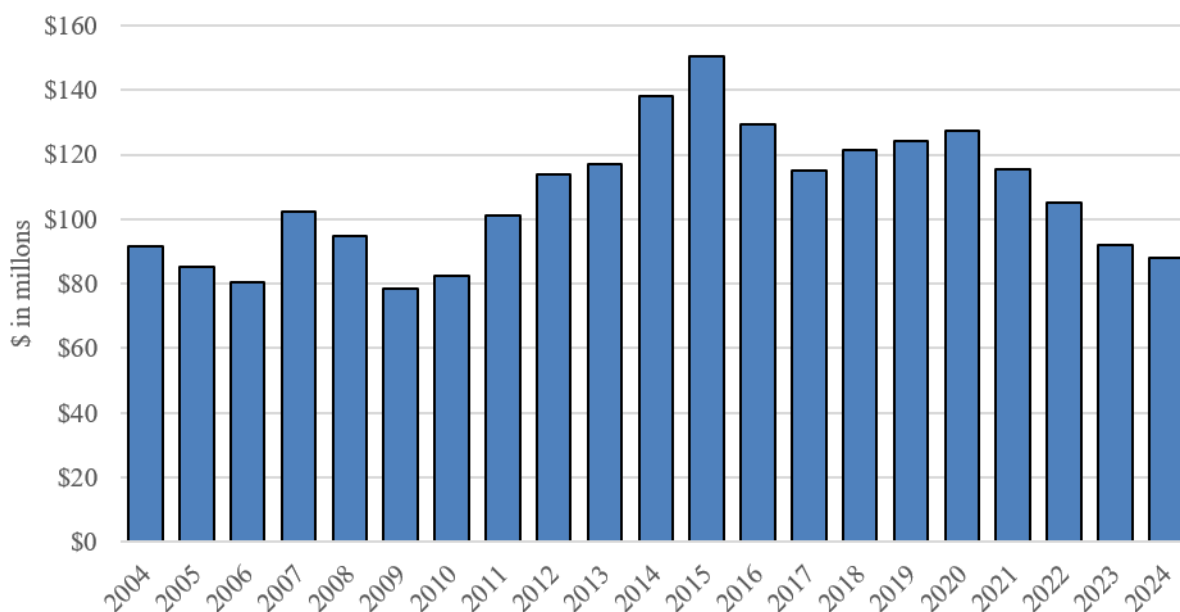
Source: DWR Crop Map 2024, DOC Grazing Land Map; some rangeland is not highlighted in the map

Table 4 summarizes the gross value and acreage of agriculture for various products and outputs in Marin County as of 2024 (Crop Report 2024). In 2024, poultry was the highest grossing livestock at \$21.9 million, followed by cattle and calves (\$16.1 million), aquaculture (\$6.4 million), and sheep and lambs (\$2.1 million). Of the livestock products produced in Marin County, organic milk accounted for the highest gross value of \$21.63 million for 736,000 cwt. Conventional milk was valued at \$1.71 million. Wool production was valued at about \$27,000, with 23,900 pounds of raw wool produced in the county. The field crop sector includes various feed and grain crops including hay, silage, and pasture. 154,000 acres of irrigated, non-irrigated, and rangeland acres are valued at \$9.39 million. Hay and silage, totaling over 2,000 acres, yielded over 12,000 total tons in 2024, valued at \$939,000.

Table 4. Marin County Agriculture Acreage and Gross Value, 2024

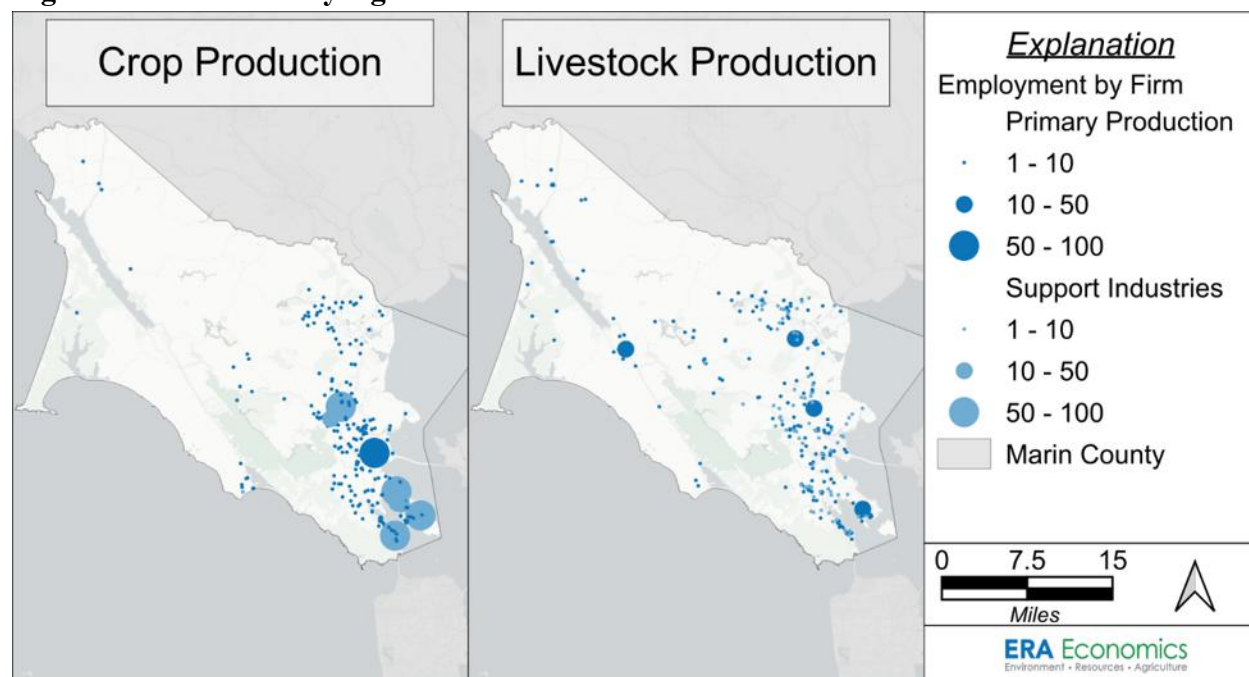
Crop / Livestock	Production	Units	Gross Value (\$M)
Fruits & Vegetables	244	acres	\$2.4
Wine Grapes	136	acres	\$1.0
Nursery Products	7.5	acres	\$0.2
Hay	1,030	acres	\$0.3
Silage	1,050	acres	\$0.6
Pasture	154,000	acres	\$9.4
Cattle & Calves	11,100	head	\$16.1
Sheep & Lambs	9,930	head	\$2.1
Poultry	-	-	\$21.9
Organic Milk	736,000	cwt	\$21.6
Conventional Milk	79,000	cwt	\$1.7
Wool	24,000	lb	\$0.0
Aquaculture	-	-	\$6.4

The agriculture sector has transformed over time in response to different pressures and market conditions. Both generational and new producers currently operate in the region. Figure 4 illustrates trends in the gross value of agriculture in Marin County over the last 20 years of available data, adjusted for inflation (Crop Reports, 2004 – 2024). The gross value of the industry has declined from the (inflation-adjusted) peak value during 2014 – 2016 period. This period coincided with favorable export market conditions for California commodities, strong hay prices, and drought conditions across much of the western U.S. The current gross value of Marin County agriculture is about 35 percent below the historical peak.

Figure 4. Inflation-Adjusted Gross Value of Agriculture, Marin County 2004 - 2024

Agriculture is an economically important industry in Marin County, contributing to a diverse economy and part of the base of local jobs. Figure 5 illustrates the location of selected firms in the crop and livestock production industries and the approximate number of jobs by location. The industry spans the entire county with jobs in cities that are not located near the primary growing regions.

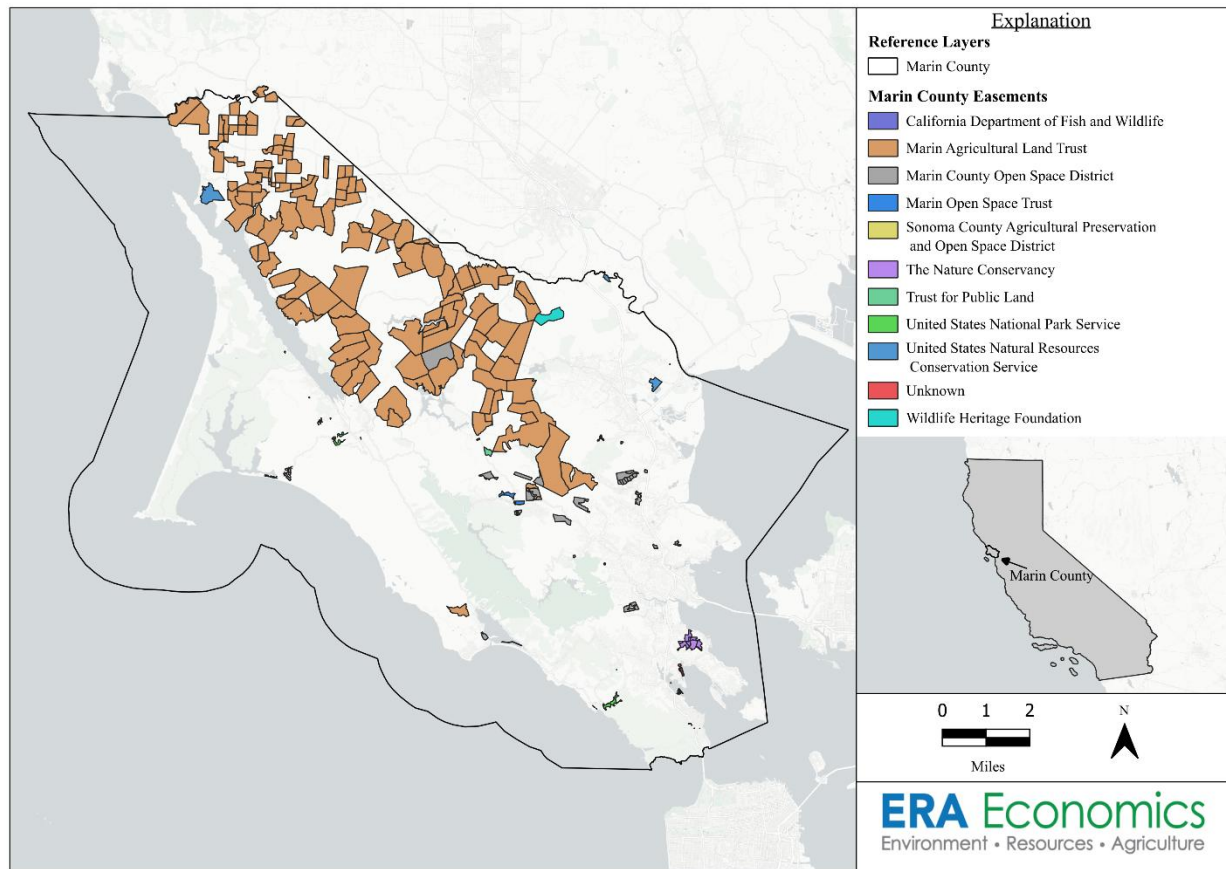
Figure 5. Marin County Agricultural Industries and Jobs



Local farming operations range from mid and large-scale dairy and grazing livestock systems to a network of small and midsize crop and livestock producers. In addition to traditional processing and wholesale markets, the industry has a robust local farmer’s market, farmstand, and direct-to-consumer channels enjoying support from cities and towns across the Bay Area. Like many urban-rural counties, Marin County has realized some agricultural land conversion as land is developed for urban uses.

Several land conservancies operate in Marin County, working to protect agricultural lands and open space. Figure 6 illustrates lands current under agricultural, open space, or selected other easements. The Marin Agricultural Land Trust (MALT) currently holds easements on nearly 60,000 acres. The protected areas in the northern portion of the county generally overlap with the existing agricultural footprint. Agriculture near the 101 Corridor in the eastern portion of the county shows fewer agricultural easements.

Figure 6. Marin County Selected Lands in Agricultural or Other Easements



A substantial share of land in Marin County is protected under agricultural other open space easements. Easements help prevent agricultural land and other open space lands from being developed for other purposes (e.g., urban development). Agricultural easements typically require that the land remains in defined agricultural uses. Those lands require sufficient economic opportunity to sustain agricultural enterprises. Livestock, including sheep grazing and expanded wool production, is a potentially viable industry that would support continued production on these lands.

3.2 Marin County Sheep and Wool Production

The county's cool, coastal climate and expansive rangeland support sheep and livestock production. The 2022 Census of Agriculture reported 44 farms in Marin County with sheep: 25 operations had less than 25 head of sheep and lambs, 15 had 25 to 99 head, and four had 100 to 999 head.

An estimated ten operations in the county run sheep at commercial scale, with a larger number of smaller farms and a growing cohort of young producers entering the industry (J. Jensen, personal communication, 2026). Most of these operations are focused on grazing and meat production, with wool as a smaller component of revenue, or treated as byproduct. The county also has a

community of smaller, fiber-focused producers focused on niche, artisan wool production, selling fleeces directly to hand spinners and specialty retailers. As of 2022, there was at least one small dairy sheep operator in Marin County (USDA Census of Agriculture, 2022).

Local producers focus on either meat breeds, such as Dorset, Katahdin, Suffolk, and Hampshire, or dual purpose Corriedale, Romney, and Cormo breeds (meat and wool) (UC ANR, 2026). Meat breeds typically produce coarser, lower quality wool best suited for heavier commercial applications, such as filters, insulation, and carpets. Dual purpose breeds can produce a range of fiber qualities, but selective breeding over the last century has provided a greater percentage of stock with higher quality fiber for apparel and textiles. For niche producers in Marin County, fine, high quality wool breeds with highly sought-after characteristics are kept in small, mixed flocks.

As the primary sheep production revenue source, grazing services are established in the local industry. Marin already has a history of grazing activity on public lands and open space, though it has focused primarily on fuel reduction rather than agricultural production. For example, Marin County Open Space has grazed sheep at King Mountain in Larkspur, and goats are used to manage vegetation at the Terra Linda/Sleepy Hollow Preserve in conjunction with several ranches. Other grazing projects are active at Sorich Park in San Anselmo, Canon Village in Fairfax as part of the Ross Valley Shaded Fuelbreak Project, and various Marin Water watershed sites (J. Deviney, personal communication, 2026).

Sheep and goats are often included in grazing management plans because they are more mobile than cattle, require fewer inputs, can help keep invasive species in check, and are visually appealing to community members (J. Deviney, personal communication, 2026). Producers typically focus on meat production from grazing animals as part of their management strategy. However, most sheep breeds used produce some wool, which must be sheared annually.

Over the past century, sheep and wool production in Marin has declined. At its mid-20th-century peak, the county supported about 50,000 sheep and produced roughly 300,000 pounds of wool per year (J. Jensen, personal communication, 2026; J. Pozzi, personal communication, 2026). As of 2024, there were fewer than 10,000 sheep in the county.

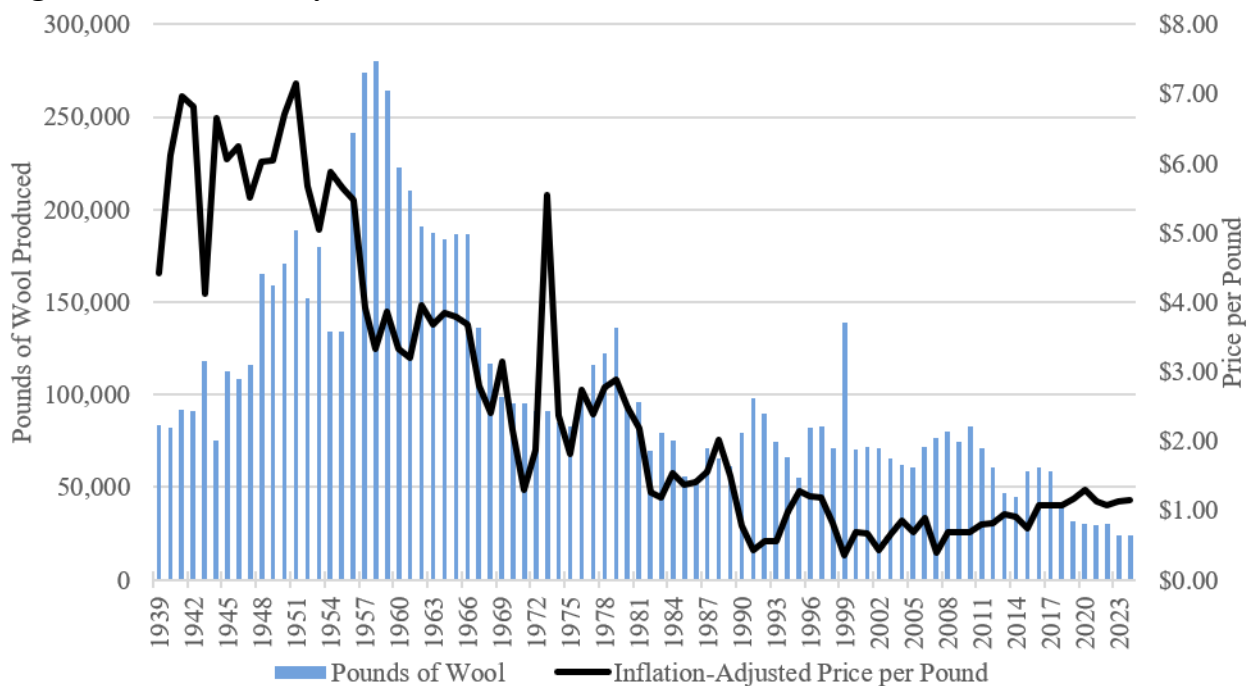
Table 5 shows sheep, lamb, and wool production and prices. In 2024, Marin County sheep and lambs had a gross value of \$2.11 million, with an additional \$27,000 from wool production for the year. The county documented 9,930 sheep and lambs in 2024, down from 11,000 in 2023. The average price of \$212 per head primarily reflects the livestock/meat value of the animal. Wool production totaled 23,900 pounds at \$1.15 per pound (Marin County Agricultural Commissioner, 2024).

Table 5. Marin County Sheep, Lamb, and Wool Production and Prices

Product	Unit	Production		Price (\$/Unit)	
		2023	2024	2023	2024
Sheep & Lambs	Head	11,000	9,930	\$202	\$212
Wool	Pounds	24,000	23,900	\$1.10	\$1.15
	Total Value	\$26,000	\$27,000	—	—

Source: Marin County Agricultural Commissioner (2024).

Figure 7 illustrates historical wool production and prices in Marin County. Marin produced more than 140,000 pounds of wool per year through the 1950s and 1960s, with wool prices generally above \$0.40 per pound. Production fell sharply in the 1970s and again in the 1990s, which was consistent with the national herd liquidation trend. The decline was driven by competition from synthetic fibers beginning in the 1950s and competition from other global producers. In 1993, the WIP was eliminated, which had provided direct payments supporting producer returns under the National Wool Act. Without those price supports, wool revenue no longer justified holding flocks for fiber, and producers liquidated herds or shifted to meat-focused operations. Since the late 2010s, Marin County's annual wool production has remained below 50,000 pounds.

Figure 7. Marin County Wool Production and Prices, 1939 - 2024

Source: Marin County Agricultural Commissioner

Inflation-adjusted wool prices peaked in 1956 over \$7 per pound in inflation-adjusted terms and have steadily declined since. Prices decreased 7 percent on average from 1960 to 1972, with a few rebound recoveries between 1969 and 1973. Prices held steady overall in the late 1970s. In 1979, Marin producers sold 136,000 pounds of wool at \$3.50 per pound, for \$476,000 gross value. In the 1990s, Marin wool averaged \$0.70 to \$0.80 per pound despite sufficient production

volumes, driving many producers out of the market. Producers today receive about \$1.15 per pound, roughly one-third of the late-1970s real price.

3.3 Marin Wool Marketing and Processing Channels

Marin County wool moves through several distinct marketing and processing channels depending on clip size, fiber quality, and intended end use. Interviews were conducted with local producers and marketing and processing businesses to inform this section. Producers may sell raw fleeces directly to hand spinners and specialty buyers, aggregate and ship larger lots to distant commercial processors, use small custom mills for yarn and finished fiber products, or divert lower-grade wool to pellets and soil amendments. These channels provide some market access, but the absence of a coordinated regional system limits scale, increases transportation and processing costs, and reduces the value retained by local producers

Table 6 summarizes selected marketing channels and processing businesses currently serving Marin County wool producers based on interviews with local experts. Most of the local wool production is shipped out of the county for processing. Some local processors and direct sales operate locally, including for direct markets and soil amendments.

Table 6. Example Marin Wool Processing and Marketing Channels

Business / Channel	Location	Role in the supply chain
Bollman Industries	San Angelo, Texas	Commercial scouring at scale
Frankenmuth (via Fibershed)	Michigan	Vertically integrated hand-washing mill; focused on bedding
Barinaga Ranch	Marin County	Fiber-focused producer; direct sales to hand spinners
Valley Oak Wool Mill	Woodland, California	Small-lot washing, carding, spinning
The Wool Shed (L. Patterson)	Marin County	Purchases wool from producers; retail (fleeces, yarn, pelts)
Mountain Meadow Wool	Wyoming	Small mill accepting small lots; processing for fiber-focused producers
Brazil Ranch	Marin County	Wool pelletizer (tag wool, skirted material)
Point Reyes Compost	Marin County	Wool pelletizer (tag wool, skirted material)

Industry experts indicated that large-scale producers currently can send wool to Bollman Industries scouring facility in San Angelo, Texas (J. Pozzi, personal communication, 2026). Bollman accepts wool but reportedly has a six-to-twelve-month processing backlog, and a water recycling practice that produces output at approximately \$1.50 per pound (J. Pozzi, personal communication, 2026; Catalyst Wool Project representative, personal communication, 2026). Recently, Bollman was acquired by Crescent Textile Solutions. The scouring facility is expected to continue operating, but the scour price is reported to decrease and the minimum clip is still 5,000 pounds (Catalyst Wool Project representative, personal communication, 2026).

Some local wool producers sell through a Fibershed supply chain connection to Frankenmuth, a Michigan-based hand-washing mill. Frankenmuth has maintained relationships with smaller producers but has narrowed its scope to bedding production. Producers trying to recover fiber for yarn or textiles would need to identify other processing options. Shipping requires palletizing bales of 250–400 pounds, which represents roughly 60–70 sheep, and prices barely cover shearing costs even with significant family labor (J. Jensen, personal communication, 2026).

Smaller Marin wool producers have local options for processing and direct sales. For example, Barinaga Ranch, and several other smaller producers, focus on direct-to-consumer sales of fleece for hand spinners and textile artisans. Valley Oak Wool Mill in Woodland offers washing, carding, spinning, and return shipping at pricing oriented toward small producers. The finished product is often sold at Liebe Patterson's Wool Shed, which also purchases wool outright from Marin producers (L. Patterson, personal communication, 2026).

Local industry experts noted that there are currently limited economically viable options for processing for very small wool producers in Marin County. Processors such as Bollman and Valley Oak may have minimum volume requirements or lack the equipment for specific fiber types of very small producers (M. Barinaga, personal communication, 2026). Some producers can send wool to mills in Montana or Wyoming that accept small lots.

Some lower-grade fiber can be used for wool pellet production. Wool pellets are a soil amendment made from compressed raw sheep wool that act as a slow-release fertilizer. Pellets typically provide a NPK ratio around 9-0-2. Pellets also support soil moisture retention by absorbing water and aerating the soil. A review of online prices found that retail consumer prices are around \$15 to \$20 per pound. Brazil Ranch and Point Reyes Compost both operate pelletizers, using tag wool and skirted material that would otherwise go to waste (R. Burgess, personal communication, 2026; L. Patterson, personal communication, 2026).

Navigating California's regulatory environment introduces a highly frustrating, costly, and time-consuming bottleneck for ranchers aiming to market wool pellets as an organic soil amendment. For example, registering under the California Department of Food and Agriculture's (CDFA) unique Organic Input Material (OIM) program requires a minimum backlog review of 60 to 90 days, intense scientific scrutiny of packaging labels, and substantial upfront licensing and per-product registration fees. Furthermore, state-specific mandates like Assembly Bill 1201 strictly ban "compostable" marketing claims unless the manufacturer invests in rigorous, ongoing

laboratory testing to prove total compliance with National Organic Program standards and strict PFAS limitations.

In summary, Marin's wool processing and marketing supply chain current consists of four key channels: (i) larger producers that sell to scouring facilities outside of Marin, (ii) smaller producers that use local processing for targeted products, (iii) very small producers with local processing and direct markets, and (iv) other local byproduct processing (e.g., pellets).

4 Opportunities and Constraints for Marin County Sheep and Wool

Marin County has a small but economically important local livestock industry, including sheep that are produced for grazing, meat, and targeted wool products. Wool processing capacity in the county is currently limited, with most wool production shipped out of the county to larger scouring facilities. Some local producers have been able to identify direct markets and have local processing capacity.

One of the purposes of this preliminary market and industry assessment was to characterize the current sheep and wool industry baseline and evaluate opportunities for expansion within the county. For sheep producers, the sheep enterprise value comes from the “three-legged stool” of meat, grazing, and wool. Expanding wool production would likely require expanding meat and grazing opportunities to ensure that the sheep enterprise is economically viable. Wool processing costs are substantial and international competitors process wool at much lower unit costs than U.S. facilities. Identifying new or expanded markets and demand for locally produced wool would support expanding Marin County sheep production and, potentially, local processing demand.

Sheep and wool production also provide public economic benefits to Marin County. Grazing land preserves open space and the rural character of Marin, supports biodiversity, and provides fire protection benefits, among other public values. Sheep are an integral part of livestock grazing systems on the pasture and rangeland that comprises a substantial share of agricultural acreage in the county. Sheep and wool need to be viable private business enterprises and can also provide broader public economic benefits for the region.

Successful wool production and processing has been able to identify niche markets and operate as diversified enterprises. For example, wool products can meet local Bay Area market demand and other production industries that need fiber (e.g., filters). Agritourism is also a small, but growing industry across the state and there may be potential for its expansion in Marin County to provide another revenue stream for ranchers. The Marin County industry is small, but supports grazing, open space, and lands that are protected under agricultural easements. These producers and other local businesses create jobs, income, and economic activity in Marin County.

The U.S. wool production and trade data shows the industry conditions that have persisted for several decades. California is one of the leading wool producing states in the U.S. The U.S. is a net exporter of raw wool (meaning exports exceed imports, by both value and volume). The U.S. (and California) currently have limited scouring and intermediate processing capacity, so this processing is done overseas. The U.S. is a net importer of wool top and a much larger net importer of wool-containing textiles and finished products. That is, the U.S. imports substantially more processed wool and finished form products than it exports. California participates in this broader supply chain primarily as a wool-producing state, but its limited processing

infrastructure means that much of the value associated with scouring, topmaking, spinning, textile production, and finished-goods manufacturing is captured outside the state.

4.1 Historical Investments and Regional Initiatives

Evaluating historical investments in sheep and wool processing capacity can identify lessons learned and inform what may work in the future. A review of recent studies was completed and targeted outreach to study authors, businesses, and industry experts was conducted to inventory and summarize recent initiatives and investments in the region.

There have been several initiatives to expand wool processing infrastructure in the North Bay and surrounding regions over the past decade. Producers, processors, nonprofits, and public agencies across the North Bay and Northern California have invested in processing facilities, aggregation models, market development, and feasibility studies, with mixed results.

Mendocino Wool and Fiber (Ukiah). Mendocino Wool and Fiber operated for about eight years and was owned and operated by a local family. The mill did fine-count wool processing and produced quality yarn. Fibershed organized institutional support, connecting the owners with economic development capital and a campaign that secured a live-work facility. The mill closed due to a combination of factors: the family could not sustain operational demands alongside a growing family, the city blocked opening for 2.5 years over aesthetic objections despite appropriate zoning, and financial management was insufficient for a regulated manufacturing operation (R. Burgess, personal communication, 2026; L. Patterson, personal communication, 2026). A \$125,000 spinning frame purchased by Fibershed for the operation on a revenue-based loan may be moved to a facility in the Sierra Nevada foothills.

Morro Fleece Works (Morro Bay). Morro Fleece Works was a small mill specializing in scouring and batting for fine wool, including Merino and alpaca. It operated for more than two decades as a custom fine-fiber mill specializing in scouring, picking, carding, and pin-drafting wool and other animal fibers. Its owner decided to retire and closed the facility in 2026. The facility equipment was purchased by Ebey Road Fiber Mill, a new operation on Whidbey Island, Washington, where it was still being set up as of March 2026 (Ebey Road Fiber Mill, 2026; Catalyst Wool Project representative, personal communication, 2026).

Sacramento-area Facility. Fibershed consulted with a Sacramento-based wool facility startup for several years. The business purchased used equipment from multiple sources to develop their line. However, there were reported issues with purchasing and verifying used equipment parts compatibility and replacements, which ultimately led to the business shutting down after about five years (R. Burgess, personal communication, 2026). The operation reduced capital expenditures by relying on used parts and equipment, but this limited available replacement parts, particularly for European-manufactured textile machinery. Relying on used equipment requires a machinist and knowledge of parts and repair for older and foreign equipment.

Valley Ford Mercantile and Wool Mill (Valley Ford). In 2013, Valley Ford Mercantile and Wool Mill opened in western Sonoma County, operated by ranchers Ariana Strozzi and Casey Mazzucchi. The initial facility included a loom, carding machine, and washing and processing lines. It operated for several years producing wool bedding, with their mattress pads and comforters ranging from \$275-\$695 in 2014. The mill ended production in 2016, with limited information available on the reasons for closure (Sonoma Magazine Staff, 2014; Digitale, 2014; Markoulakis, 2014).

Recent regional investments and business failures highlight the complexities of establishing a viable local fibershed. The businesses reviewed and experts interviewed indicated that operations failed for multiple reasons. Some lessons learned include:

- Success requires both a mission-driven operator that might have strong craft skills and genuine commitment as well as expertise in business management, workforce planning, and capital. Streamlining operations to manage operating costs requires an understanding of the complex operational demands of small manufacturing. Sufficient capital reserves can provide a buffer to achieve profitability. Several industry experts noted that they have observed mills close because the operator is passionate and knows the product, but lacks the business skills and capital to create a profitable business enterprise (R. Burgess, personal communication, 2026).
- The regulatory/permitting process can take substantial time and resources. For example, processors must manage wastewater permitting, lengthy local approval processes, and have sufficient capital to cover the cost of these efforts. Rebecca Burgess has observed two mills close due to the costs and complexities of permitting (R. Burgess, personal communication, 2026).
- Other permitting and regulatory requirements and costs can substantially delay the timeline for a new facility. For example, contracting with engineers, biologists, attorneys and other specialists that can compile the kinds of analysis that often goes into a complete permit application is expensive. In addition to permit fees, and permit typically requires engineered drawings, biological surveys, calculations of wastewater uptake from the surrounding soils, CEQA compliance, etc. These requirements add substantial time, and cost.

Other current regional wool initiatives were reviewed to identify potential opportunities for Marin County to define a strategic niche and potentially work with these existing initiatives. Several initiatives were identified, including grant funded academic research efforts and regional investigations. These include:

- The Catalyst Wool Project is a near-term development in California. The project is modeling a range of wool volumes and scour sizes for the northern California region, covering Humboldt, Del Norte, Lake, and Mendocino counties, and includes a demand analysis, a grazing land assessment, and a supply chain mapping exercise (Catalyst Wool

Project representative, personal communication, 2026). A regional scouring facility capable of processing the state's full wool clip is estimated at roughly \$36 million (R. Burgess, personal communication, 2026). As an alternative, the project investigated possible small-scale equipment options for the North Bay. This included the New-Zealand based Kiwi Scour. The Kiwi Scour has relatively small processing volume of 500 pounds of wool per day and lower capital costs of \$1 to 3 million. However, operations using the Kiwi Scour system reported insufficient heating capacity and an actual throughput at around 20 percent of what was advertised. One facility using the equipment opened with an immediate backlog, and since then equipment has been managed remotely since no technical support is domestically available. Kiwi Scour was discontinued in 2025. (Catalyst Wool Project representative, personal communication, 2026; Zucker, 2024)

- Clean Fleece, a facility in Mechanicville, New York opened in late 2023 by the nonprofit Hudson Valley Textile Project, has reported significant equipment issues. Despite these operational challenges, Clean Fleece demonstrates a smaller regional model that avoids commercial-scale capital requirements, and it has since received a grant through Empire State Development to add lanolin recovery, wool storage capacity, and a fabric finishing system (Zucker, 2024). Stakeholders are currently in talks with Belfast Mini Mills about developing a smaller scouring unit (Catalyst Wool Project representative, personal communication, 2026).
- Mountain Meadows Wool in Wyoming is the last mid-scale mill serving the western U.S. It is a growing family-operation that has been expanding through used equipment acquisition, and it received a USDA grant for responsible scouring with lanolin recovery and constructed wetland treatment (Catalyst Wool Project representative, personal communication, 2026; R. Burgess, personal communication, 2026).
- Lost Coast Spinnery, in Fernbridge, Humboldt County, is a full-service wool and fiber mill that opened in February 2025 (IJPR, 2025; Peninsula Press, 2026). The mill raises its own small flock and offers custom processing of raw fiber through finished yarn (Livestock Conservancy, n.d.; Fibershed, n.d.).

Other regional initiatives are evaluating wool supply, processing capacity, market demand, and potential facilities in Northern California. Research and supply-chain planning are already underway outside Marin County. Marin could coordinate with these initiatives, contribute local producer and market information, and position itself as a partner in regional development efforts.

4.2 Marin County Sheep and Wool Industry Opportunities

A strong local appreciation for sustainability, open space and agricultural land preservation, a legacy of agricultural production, and shifting global trade dynamics may position Marin County to revitalize some of its regional wool economy. Identifying economic opportunities for protected agricultural land (e.g., MALT agricultural easements) and adjacent affluent markets

(e.g., Bay Area consumers) could help support the local livestock sector and grow the local fiber industry.

The following opportunities were identified through the analysis and outreach conducted for this project:

- **Ecosystem services and climate fit.** Managed grazing maintains grassland health, controls invasive species, and reduces fire fuel loads. These services provide real value to public land managers that can be translated into grazing contracts. However, much of this value is a public benefit that does not directly translate to wool business revenue, and as a result, creative funding models are necessary. Climate concerns and water constraints may also favor sheep over other livestock. Sheep typically consume 1 to 3 gallons of water per head per day, and during cool, wet grazing seasons, a flock of sheep may not need supplemental water at all. By contrast, cattle require 8 to 20 gallons and up to 30 gallons on hot days. Sheep can also tolerate a higher proportion of body-weight loss to dehydration than cattle, and some breeds can meet winter water needs from snow (J. Deviney, personal communication, 2026; V. Trotter, personal communication, 2026; UC ANR, 2020).
- **Land base.** Marin County's land base, climate, and proximity to a large and affluent consumer market position it well for sheep and wool production. The proximity to the Bay Area offers opportunities for identifying niche markets that can support local processing costs through increased direct sales.
- **Agricultural land preservation.** MALT holds easements on extensive protected agricultural land, much of which formerly supported dairy. Sheep are one alternative to keep Marin's agricultural lands in production. Marin County's Vegetation and Biodiversity Management Plan offers one roadmap to institutionally supported grazing contracts. The County Open Space District names grazing services with sheep and goats as a measure to reduce fire hazards on open space preserves (Marin County Open Space District, 2015). Expanded opportunities for grazing access and contracts can further support the industry's growth.
- **Global trade conditions.** Locating scouring capacity closer to producers would reduce reliance on foreign markets, insulate domestic wool from trade policy shocks, and keep regional value. It would also capture freight savings that scouring's weight reduction currently delivers to offshore processors. Recent reciprocal trade barriers left containers of U.S. wool stranded at Houston docks (J. Pozzi, personal communication, 2026). U.S. processing still operates at a cost disadvantage to China, but the gap has narrowed. Tightening credit conditions and stricter effluent disposal standards enacted since 2015 have raised China processing costs, and the US-China trade dispute reduced domestic wool exports by 60 percent (ASI, 2019). However, it is not clear if these trade conditions are going to remain in place.

- **Federal, state, and local funding and opportunities.** Grants and low interest loans are available to support sheep and wool market evaluations and development. The USDA Natural Resources Division funds the Catalyst Wool Project. A Marin or North Bay application could potentially access the same funding opportunity. USDA grants offer pathways for funding. For example, the USDA Value-Added Producer Grant (VAPG) is a natural fit for a producer-owned aggregation cooperative, and the USDA Rural Development programs, including the Rural Energy for America Program and the Rural Business Development Grant, are available to rural producers. Marin-specific funding opportunities include FARE (Food, Agriculture, and Resilient Ecosystems), a locally funded Marin County program, and MALT grant programs, which are not restricted to easement properties if framed around broad agricultural impact.
- **Philanthropic and other private-public partnerships.** Philanthropy and integrated capital are possible funding sources for significant infrastructure investment. For example, a philanthropist established Churchill Dairy, a regenerative dairy, in the Hudson Valley that shifted public perception and created infrastructure others could learn from (R. Burgess, personal communication, 2026). Non-traditional sources include climate philanthropy, workforce development funders, fire resilience programs, and impact investors. Private companies, such as Google and others, make investments in water conservation and similar environmental projects to support their sustainability initiatives.
- **Successful local cooperative models.** Industry experts interviewed for this project indicated a key to expanding sheep and wool production is a short supply chain that returns a significantly higher price without requiring more marketing, brand-building, or product development. The Straus Family Creamery model came up repeatedly in these conversations as an example of a system that is well established, the margins are attractive, and producers can join without taking on additional operational burden (V. Trotter, personal communication, 2026).
- **Expanding near-term markets.** The ultimate wool product determines processing infrastructure, equipment specifications, breeds, and preparation standards. Near-term potential markets include:
 - **Hand spinners and specialty fiber.** The hand spinner market is growing and is networked through social media and other online communities. Producers sell fleeces nationally at \$24 per pound, far above the roughly \$3 per pound producers receive from commercial mills. San Francisco specialty yarn shops, such as Imagiknit, are beginning to stock locally produced yarn after years of stocking only commercial product (M. Barinaga, personal communication, 2026). This market rewards quality, does not require high volume, and is accessible to small producers without any scouring infrastructure beyond farm-level preparation.

- **Blankets, woven goods, and branded products.** Origin and local identity command premium prices that Marin-branded wool products could capture. For example, the Duckworth model in Montana, where a producer-brand dictates supply chain decisions back to specific sourcing ranches and processing facilities, is a template for this approach (J. Jensen, personal communication, 2026).
- **Bedding.** Wool bedding, including comforters and mattress pads, requires only scouring and carding, not spinning. The Futon Shop in San Francisco makes wool mattresses and is a potential local buyer for scoured and carded fiber. This market does not require fine wool, making it a good fit for the coarser 28–32 micron clip that many of Marin’s breeds produce.
- **Wool pellets and soil amendments.** Multiple Marin operations already produce wool pellets and soil amendments from lower-grade fiber that would otherwise be wasted. Field evidence from Humboldt County showed that skirted wool mulch substantially outperformed controls in barley germination and growth, attributed to wool’s nitrogen content and air-pocket structure (O. Yee, personal communication, 2026; R. Burgess, personal communication, 2026).
- **Expanding longer-term markets.** Longer-term potential markets include:
 - **Air filtration.** Havelock in Reno, Nevada produces wool air filters sold at Home Depot. It currently uses New Zealand wool because American wool cannot be cleaned to the standard its equipment requires. The company has stated it would prefer domestic wool if scouring quality improved (Catalyst Wool Project representative, personal communication, 2026). This is potentially a large-volume buyer, and the Catalyst Wool Project is exploring the relationship directly.
 - **Sheep skins and pelts.** Sheep skins are the best-selling item at the Wool Shed, with quality pelts selling for \$300–500. This market is accessible to meat-focused producers who would otherwise receive only carcass value. A tanning infrastructure gap needs to be addressed: the nearest facilities require shipping to Modesto or southern Oregon (L. Patterson, personal communication, 2026).
 - **Lanolin recovery.** Lanolin recovery offers a partial solution to wastewater challenges and a potential revenue stream (Catalyst Wool Project representative, personal communication, 2026). Mountain Meadows Wool in Wyoming received a USDA grant for scouring with lanolin recovery and constructed wetland treatment, a useful reference for any facility planning in this region.
 - **State and local procurement.** Government procurement is more stable than consumer markets and can anchor demand at both state and federal levels. In addition, early outreach to state agency procurement staff has found openness to wool-related eco-labels such as the Responsible Wool Standard and Climate Beneficial Wool (Catalyst Wool Project representative, personal communication,

2026), and Marin County's Plastic Free July resolution shows how county government can signal direction and create local institutional demand (J. Deviney, personal communication, 2026).

- **Federal procurement.** At the federal level, the Berry Amendment (10 U.S.C. § 4862) requires the Department of Defense to procure certain textile products, including wool fibers, yarns, fabrics, and clothing such as military uniforms, from domestic sources unless a statutory exception applies. The U.S. has frequently failed to meet this requirement due to insufficient domestic processing capacity, forcing waivers that allow overseas procurement (J. Pozzi, personal communication, 2026). Rebuilding processing capacity would create an institutionally guaranteed buyer that is largely insulated from price competition with China and Australia.

In summary, Marin County has several opportunities to strengthen its sheep and wool economy, including an extensive grazing land base, proximity to high-value Bay Area markets, appreciation for ecosystem services provided by grazing, emerging specialty and institutional markets, and access to public and private funding. The most promising strategy is incremental with expanded grazing and producer participation, improved wool quality and aggregation, and then developing reliable buyers for specific products. This would also coordinate with other Northern California processing initiatives before committing to major infrastructure.

4.3 Marin County Sheep and Wool Industry Constraints

There are constraints to expanding the sheep and wool industry in Marin County. Many constraints are not unique to Marin County but are representative of the difficulties faced by small livestock producers. The primary constraint is that it is currently cheaper to transport and export wool for processing, and then import finished goods for sale in the U.S. A successful local industry needs to work within these economic realities.

The data and interviews highlight a consistent set of constraints on Marin's industry, which are summarized as follows:

- **Production scale.** At an average of 23,900 pounds of wool per year, Marin County's clip cannot justify industrial-scale scouring infrastructure on its own. To maintain profitability and cover capital costs, a new mill would need enough wool to operate on a regular schedule. A medium-sized industrial scouring facility could process Marin's entire annual clip in approximately 3 to 7 days (Australian Wool Educational Trust, 2009). Unless additional wool supply is imported for processing to fill excess capacity, infrastructure opportunities for Marin County need to align with the current scale of the industry.
- **Market access for small flocks.** Small-scale producers (roughly 30 to 50 sheep) cannot meet most of the minimum processing volumes of existing marketing channels and currently have limited paths to market. No aggregation or cooperative structures formally

exist, but an aggregation function could bundle their clips into shipments that meet minimum volume requirements and open otherwise unreachable markets.

- **Wool preparation quality.** Domestic wool competitiveness is limited by poor preparation quality. Mills frequently receive soiled, unskirted wool contaminated with plant matter. Lack of proper preparation limits regional processing capacity and forces local wool into lower-value production tiers.
- **Shearing capacity.** The pool of shearers has contracted alongside regional sheep numbers, leaving small producers with unreliable access to crews and unpredictable costs from year to year. Regional training capacity exists but has not closed the gap. For example, the Hopland Research and Extension Center at UC ANR in Mendocino offers week-long shearing courses. Class sizes are limited to 6-9 students, and classes are consistently fully enrolled. Fibershed supports students through scholarships and equity pricing; tuition costs approximately \$800, and travel and equipment add expense. Still, few students who complete these courses go on to shear professionally (Fibershed, 2024).
- **Diversified sheep enterprise.** The wool produced in Marin County comes from flocks with multiple revenue streams (e.g., meat plus wool/grazing, or grazing plus wool, or mean, wool, grazing). Per-head shearing costs decrease substantially with scale, starting as high \$40 to \$45 for a flock of less than 5 and falling as low as \$5 to \$6 for herds over 100. Assuming sufficient wool clip and marketing channels, larger operations may viably finance shearing needs with wool sales, but smaller producers marketing raw wool may not justify costs without added value from processing. A recent Pacific Northwest study found that raw wool prices are so low that producers in that region report being unable to justify keeping more than approximately 30 sheep (Manke & Paquette, 2024). A similar economic dynamic applies to the North Bay. Some producers have resorted to storing, composting, or abandoning raw wool to avoid additional costs of marketing or disposal. In short, a successful sheep enterprise includes meat and grazing in addition to wool.
- **Processing access.** The nearest commercial scour is in Texas, which reportedly has a six-to-twelve-month backlog. Small-lot options exist in Woodland (California), Montana, or Wyoming. For many producers, the costs of transportation to and processing at these sites exceed the clip value.
- **Capital.** Building a commercial-scale scouring facility costs \$19–38 million with an approximate 10-year payback period. Smaller-scale options like the Kiwi Scour showed promise but underperformed and are now out of production. Firm pricing for other smaller-scale equipment is not currently available.
- **Land use.** Marin County’s land use code carve-out for processing raw commodities into value-added goods is written for owner-operators processing their own produce, not shared-use facilities. A facility serving the broader producer community may require a conditional use permit or a zone permitting industrial processing outright. Additionally,

the Local Coastal Program under the California Coastal Commission imposes strict provisions on development and land use changes. An industrial or municipal zoned site is likely more practical than a farm location for any scouring operation in the North Bay, a grain milling project in Sonoma County reached the same conclusion (V. Trotter, personal communication, 2026).

- **Wastewater and siting.** Wastewater from wool scouring falls under the jurisdiction of the Regional Water Quality Control Board (RWQCB). Most of Marin County is in RWQCB Region 2, the San Francisco Bay Area. Processed wastewater must be discharged to either municipal or permitted on-site treatment infrastructure. Water supply presents further constraints. Hard, high-iron water washes wool less effectively than soft water and can leave mineral residue that affects downstream dyeing (L. Patterson, personal communication, 2026).
- **Other regulations.** Navigating state and local regulations and permitting is a time-consuming bottleneck for ranchers and processing businesses. For example, ranchers aiming to market wool pellets as an organic soil amendment must register under the CDFA OIM program, which requires a minimum backlog review of 60 to 90 days, intense scientific scrutiny of packaging labels, and substantial upfront licensing and per-product registration fees. State-specific mandates like Assembly Bill 1201 strictly ban "compostable" marketing claims unless the manufacturer invests in rigorous, ongoing laboratory testing to prove total compliance with National Organic Program standards and strict PFAS limitations.
- **Producer coordination.** Past regional efforts show that a solid business plan is needed to support otherwise sound cooperative projects. For example, when a group of Northern California ranchers faced a critical loss of local slaughter capacity, a study demonstrated that mobile processing units were viable. However, the group failed to consolidate around a single effort with some ranchers insisting on independent operations, while others pushed for a cooperative. Three mobile units ultimately launched, one later folded (V. Trotter, personal communication, 2026). Multiple producers are skeptical of cooperative structures, citing concerns that include poor operational efficiency, divisive leadership politics, and complex dividend allocation negotiations. Others worry that cooperatives will jeopardize existing buyer relationships or erode tight profit margins through membership fees. For any regional, coordinated effort, establishing credibility is vital to secure producer buy-in and full participation.

The constraints for growing Marin County's industry are typical for a small livestock industry in a competitive global market. Marin County and the U.S. more broadly are small components of the global sheep and wool market. However, there are unique opportunities for the Marin County industry and if investments, innovative markets, institutions, or changes in local policy can address specific challenges, these challenges become new opportunities.

5 Summary

This report is a preliminary, reconnaissance-level overview of the sheep and wool industry supply, current market conditions, Marin County operations, and constraints and opportunities for expansion. It is meant to be an initial review of information and is not a complete feasibility assessment or market overview. A detailed plan for Marin County's future wool economy would require additional research, analysis, and data gathering, as well as input from producers, institutional partners, and regional collaborators.

The U.S. wool production and trade data shows the fundamental economics of the industry. California is one of the leading wool producing states in the U.S. The U.S. is a net exporter of raw wool (meaning exports exceed imports, by both value and volume). The U.S. (and California) currently have limited scouring and intermediate processing capacity, so this processing is done overseas. The U.S. is a net importer of wool top and a much larger net importer of wool-containing textiles and finished products. That is, the U.S. imports substantially more processed wool and finished form products than it exports. California participates in this broader supply chain primarily as a wool-producing state, but its limited processing infrastructure means that much of the value associated with scouring, topmaking, spinning, textile production, and finished-goods manufacturing is captured outside the state.

Marin County is unlikely to support a large-scale scouring facility in the immediate future due to market and trade conditions, water constraints, capital requirements, and land use, permitting, and other regulations. However, there are local opportunities. The more realistic, near-term contribution is to develop the aggregation, downstream processing, and market development infrastructure that a regional scour would need to function. This includes:

- **Wool aggregation:** A central location, either cooperatively or privately owned, where producers deliver fiber, fleeces are graded and sorted, and shipments are organized to meet minimums for existing or future processors. Aggregation sites require minimal capital and create immediate value for producers to whom markets are currently inaccessible. This “wool guild” concept, as coined by Liebe Patterson, can be established under a cooperative model, private-public partnership, or other governance design to meet local needs.
- **Downstream milling:** Carding, spinning, and finishing capacity for the output of a regional scour. Valley Oak Wool Mill already fills parts of this role for smaller producers, as can other small and regional mills such as Lost Coast Spinnery and Mountain Meadow Wool. Strengthening the network or adding Marin-based capacity would build the necessary value to justify scouring investment in the region.
- **Market development:** Many market opportunities exist in both the short and long term. However, accessing them is challenging for local producers due to the fragmented supply chain and limited capacity. Developing these channels and securing space for Marin wool

is essential to future success as processing capacity grows. Establishing a local position, committee, or cooperative dedicated to facilitating producer access to markets can create the institutional expertise, quality standards, and knowledge exchange and education necessary for a future scouring facility to provide clean, high quality wool to meet demand.

Marin County can continue to act as a convener, market developer, and early institutional customer. The county is well positioned for this role, with established relations with relevant institutions, proximity to Bay Area markets, a committed producer community with established market relationships, and a compelling narrative of land stewardship, climate resilience, and microplastic reduction. Specific, near-term steps may include:

- **Continue to incorporate grazing and sheep in the county vegetation management plans.** For example, Marin County Open Space District’s long-term plan for managing vegetation and biodiversity names grazing services by sheep as a strategy to reduce fire fuel load and maintain ecosystem balance, which enables access to grazing contracts. Continued and expanded institutional support for grazing on county lands secures producer revenue, which provides the necessary security for wool infrastructure investment.
- **Establish training and quality standards.** This can help raise the cleanliness and consistency of incoming wool. American wool’s competitiveness is primarily limited by quality downgrades due to plant matter and dirt contamination. Improvement starts at the farm level.
- **Convene an advisory group, commission, or steering committee** of producers, MALT, Fibershed, UC ANR, and regional partners to guide Marin’s role in the regional supply chain and market development, with attention to governance design informed by past efforts. Many of the local experts were interviewed for this study.
- **Support development of a wool guild** that would act as a raw wool aggregator to access immediate markets. Currently, this is likely the lowest cost intervention available that would open access to a range of available market channels.
- **Use county procurement and campaigns to anchor local demand.** For example, building on the 2025 Plastic Free July resolution and the proposed 2026 Natural Fibers campaign. These and other campaigns highlight the value of natural fibers to consumers.
- **Continue collaborating with nearby regions** that are exploring expanded processing capacity. Infrastructure decisions made in Lake County, Glenn County, and elsewhere will shape market availability for decades, and the County can maintain a seat at the table as the regional supply chain takes shape.

To support these efforts, this preliminary study identified several areas for further investigation:

- **Expand and improve study data.** Several points draw upon older pricing and market reporting data for Marin County specifically. More recent, representative values across the sheep and wool supply chain would enhance the study.
- **Explore other small-scale equipment options.** With Kiwi Scour discontinued, no firm pricing exists for smaller-scale scouring options. The Belfast Mini Mills exploration is also unresolved. Additional research is necessary to identify other available options.
- **Coordinate with the Catalyst Wool Project.** Align Marin County’s planning with the regional scouring analysis and determine how Marin can position itself to support the region (aggregation volume, quality standards, downstream capacity).
- **Survey Marin and North Bay producers.** Develop better data on flock size, wool volumes and quality, current marketing channels, and willingness to participate in aggregation. An aggregation pilot concept could be developed.
- **Expand analysis for a local feasibility study.** This would include further evaluation of local costs to develop new facilities and a consumer demand assessments with specific buyers identified in this report to test volumes and price points.
- **Continue to monitor funding opportunities and timelines.** The VAPG, USDA Rural Development, CDFA, FARE, and MALT programs provide funding for some of this potential work. The USDA Sheep Production and Marketing Grant Program² is currently (as of August 2026) accepting applications for sheep projects, which provides an additional funding opportunity for additional data/research, industry supply, marketing, and development.

The most realistic path forward is incremental, with a focus on niche markets that Marin County producers can meet and working with the local needs for grazing (e.g., MALT and ecosystem services). This includes ensuring that more wool product markets are identified, more consumers choose wool over synthetics, more municipalities build sheep into their land management plans, and more producers find that the diversified meat-grazing-fiber model is sustainable. This approach supports longer-term industry growth. Infrastructure investments could follow a similar trajectory with aggregation first, then downstream milling, and eventually scouring as justified by volume. Marin County can lead the institutional foundation, producer relationships, funding strategy, and market connections before infrastructure investment occurs to support the future of the local sheep and wool industries.

² United States Department of Agriculture. Agricultural Marketing Service. Sheep Production and Marketing Grant Program. Active as of August 2026 (October 2026 application deadline).

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