

Economic and Fiscal Impact Analysis

2025 Animal Product Standards Regulations

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1. Introduction

The Department of Cannabis Control (Department) is proposing amendments to existing regulations and adoption of additional regulations in the California Code of Regulations, Title 4, Division 19. The purpose of the regulations and amendments is to comply with Assembly Bill (AB) 1885, signed into law on September 18, 2022. Per AB 1885, “the bill would require the department to promulgate regulations for animal product standards no later than July 1, 2025, and would prohibit the marketing or sale of those products before the regulations take effect.”

California law requires that a rulemaking agency provide an assessment of the fiscal impacts its regulations would have on state and local governments and assess the potential economic impact on state businesses and individuals. This economic and fiscal impact assessment (EFIA) describes the data, methods, and analytic approach applied to quantify the economic impacts and fiscal impacts of the proposed regulation and alternatives that the Department considered. The methods are consistent with the economic and fiscal impact analyses conducted to support prior rulemaking for Department regulations. This EFIA applies the data and economic frameworks from a 2016/17 Standardized Regulatory Impact Analysis (SRIA) and subsequent Department EFIA and economic analyses, which have been periodically updated and were further updated under this analysis to assess impacts of the proposed regulations.

1.1 Overview of Proposed Regulations

There are several components of the proposed regulatory amendments. The salient features of the regulatory changes in the proposed animal product standards package are as follows:

- Changes to Section 15000 that removes text stating cannabis products are for human consumption only.
- New Section 17350 (a) defines “animal cannabis products” as products for use on or consumption by animals.
- New Section 17350 (b) establishes that animal cannabis products are subject to the same requirements as existing cannabis products.
- New Section 17350 (c) specifies that only edible cannabis products, orally consumed concentrates, and topical cannabis products can be sold as animal products.
- New Section 17350 (d) specifies that only products containing less than 1 milligram (mg) total THC per package can be sold for animal consumption.

The proposed regulations would modestly affect California’s cannabis industry by expanding the licensed market to include cannabis-based products for animal use. By allowing the production and sale of these products under low THC (1 mg) limits, the regulations would modestly increase sales for licensed cannabis businesses, create new opportunities for product development, and enhance consumer choice. The regulations would result in shifting purchases from existing

hemp-based CBD products. No significant compliance costs are anticipated for businesses, and the overall economic impact is expected to be positive, generating new revenue streams, modest job growth, and increased consumer surplus. The proposed regulations would have minor fiscal effects on state agencies, primarily related to oversight and compliance monitoring. The following sections of this EFIA describe, quantify, and disclose the estimated economic and fiscal effects of the proposed regulations.

1.2 Public Outreach and Input

The economic analysis leverages data, economic models, and information developed for prior rulemaking that has been initiated by the Department. ERA Economics and the Department also conducted targeted outreach in preparing this analysis. This included outreach to researchers, stakeholders, and industry experts to understand current market conditions. This also included assessing the potential effect of components of the regulations on businesses and individuals (e.g., compliance time and associated costs), and discussing potential benefits. The following groups were contacted to support the development of the analysis:

- Industry professionals to review current market conditions, update cost of production information, verify industry data, and receive general feedback on industry trends, challenges, and changes,
- Researchers to discuss industry trends and feedback from other outreach/survey efforts,
- Department staff to assess potential effects on short- and long-term staff level of effort to manage changes (fiscal impacts),
- Veterinary professionals to understand the potential demand for licensed cannabis, and products for animal consumption.

These data were used to develop the economic and fiscal analysis approach.

1.3 Major Regulation Determination

A Major Regulation is a proposed action, amendment, or repeal that would result in an economic impact on businesses and individuals in the State greater than \$50 million in the 12-month period following full implementation of the regulations. (Gov. Code, § 11342.548).

The total estimated economic impact (including all costs, benefits, market effects, and indirect and induced effects) equals \$2.59 million in the 12-month period following full implementation of the proposed regulations. These include:

- \$590,300 increase in gross sales of cannabis products at retail
- \$81,300 increase in cannabis business producer surplus
- \$1.40 million increase in consumer surplus
- \$103,900 decrease in gross sales of hemp products at retail

- \$41,600 decrease in hemp producer surplus
- \$372,800 increase in gross economic output from indirect and induced impacts

The fiscal impacts to the Department or other state or local agencies would include small costs related to compliance and the California Cannabis Track and Trace (CCTT) system. Costs would be minor and will be absorbed within the Department’s existing budget authority. The increase in sales of cannabis products could result in greater Department license fee revenue (for businesses with license fees set by gross revenue tiers). However, the increase in sales of products sold at retail (\$590,300) would be spread across many different businesses and unlikely to lead to a measurable change in license fee revenue.

Therefore, the estimated total economic impact (\$2.59 million) is well below the Major Regulation threshold of \$50 million.

1.4 Report Organization

The report is structured as follows. Section 2 describes the types of economic and fiscal effects attributable to the proposed regulations, and the analytic approach and data used to quantify (monetize) impacts. Section 3 provides an overview of the cannabis industry, establishing important baseline conditions used to evaluate fiscal and economic impacts of the proposed regulations. Section 4 summarizes the economic and fiscal impacts of the proposed regulations. Section 5 summarizes the two alternatives that the Department considered.

2. Analytic Approach and Data

The analysis applies public industry data. When data were not available, judgment and discretion based on industry outreach were applied. It is important to note that data for the cannabis industry is limited because the industry is still relatively young and there is no single source of industry statistics. CCTT data are primarily relied upon, along with tax data and information obtained during outreach. All prices and costs are inflation-adjusted and reported in current (2024¹) dollars.

2.1 Overview of Economic and Fiscal Impacts

The proposed regulations would result in quantifiable and unquantifiable (i.e., non-monetized) costs and benefits for licensed cannabis businesses and the Department.

Economic and fiscal impacts were quantified using a standard sequential approach:

1. **Direct economic impacts.** These represent direct costs and benefits to businesses and individuals that are attributable to the regulation and can be quantified. These include

¹ Inflation indices are released on a lagged basis. 2024 is the most recent year available.

one-time benefits and costs (e.g., capital investments) as well as ongoing annual benefits and costs.

2. **Market economic effects.** The direct economic costs or benefits can represent a change in the cost to produce cannabis and/or the demand for cannabis products. Industry supply changes in response to direct costs or benefits to producers, while demand changes with consumer preferences. Both can affect the market price and quantity of cannabis produced. These market equilibrium changes affect the broader industry as well as consumers.
3. **Indirect and induced economic impacts.** So-called “multiplier” effects on other businesses and individuals result from the direct costs or benefits and changes in the equilibrium market conditions for the industry. These are assessed using a standard input-output model, IMPLAN².
4. **Fiscal impacts.** The fiscal impact analysis follows from the economic impact analysis and quantifies the fiscal cost of the regulation to the Department and other state/local agencies. Fiscal costs are calculated after accounting for the industry adjustments that are reflected in the economic impact analysis.

2.1.1 Baseline for Analysis

The economic impacts of the proposed regulations are measured relative to the defined baseline. The baseline condition is the most cost-effective set of regulatory measures that ensure full compliance with the authorizing statute or other law being implemented.³ This ensures that the economic impacts only measure the incremental changes attributable to the regulation.

In this case, the baseline condition is prohibiting all sales of cannabis products for animal consumption. This would result in no new costs and would comply with statute by developing animal product standards. Since there would be no new costs or products introduced to the market in this case, the baseline condition is effectively the current market condition. All economic impacts are measured relative to this baseline.

2.1.2 Direct Economic Impacts

Direct impacts are costs and benefits that directly affect the businesses and individuals in the industry. In the case of the proposed regulations, businesses that would be directly impacted are licensed cannabis retailers and hemp product retailers in the state. Other related businesses (e.g.,

² Impacts for Planning and Analysis. MIG Inc.

³ Government Code of California, Title 2, Division 3, Part 1, Chapter 3.5, Article 5, §11346.3 (e)

cannabis manufacturers, labs, cultivators, etc.) would be indirectly impacted. These impacts are summarized in the analysis of indirect and induced impacts discussed below.

The potential monetizable direct economic impacts of the regulatory changes include:

- Benefits
 - Increase in supply of manufactured animal cannabis products.
 - Estimated based on the current market for hemp-based CBD-only products for animal consumption.
 - Applied as a market effect and would also affect prices and demand in the market for hemp-based CBD-only products.
- Costs
 - The proposed regulations would not introduce new costs to businesses.

2.1.3 Market Effects

The regulation would affect the supply of and demand for cannabis products. This analysis uses an economic Equilibrium Displacement Modeling (EDM) approach to estimate the potential market effects of the proposed regulations. The EDM is widely applied for evaluating the effects of changes in production costs, trade policies, advertising, taxes, and regulation of agricultural commodities. For example, it has been extensively applied to crop and livestock systems such as the dairy sector, beef production, sheep production, marketing, and research and development (Alston et al., 2006, Alston et al., 1995).

The basic EDM for the aggregate cannabis industry, which modeled both licensed and unlicensed markets, was developed for the 2017 SRIA following Muth (1964), Gardner (1988), and Wohlgenant (1993). The EDM used in this analysis updates the original version to allow for different supply and demand shifts in different parts of the cannabis supply chain, including manufacturing, distribution, and retail.

The market effects in this analysis can be summarized as follows:

- The introduction of cannabis products for animals would increase the overall supply of low-THC cannabis prices and quantity sold of these products.
- The introduction of cannabis products for animals would decrease demand for hemp-based CBD-only products and decrease the price and quantity sold of these products.

These would result in changes to consumer surplus, producer surplus, and gross economic output. The EDM is applied to quantify these effects.

2.1.1 Indirect and Induced Impacts

The analysis of indirect and induced impacts evaluates the overall effect of changes in income and gross economic output on jobs, taxes, and value-added across the State. The direct impacts (including market effects) summarized above are inputs into the analysis of indirect and induced impacts.

The total economic impact is the sum of direct, indirect, and induced impacts. The direct impact in this analysis is a change in primary production value (gross economic output) and one-time costs incurred by businesses in the cannabis sector (evaluated as a change in proprietor income). The indirect impacts capture changes in intermediate input purchases by the primary industry from other sectors of the economy. For example, cannabis retailers purchase inputs from other suppliers in the state. This includes wholesale cannabis products and services from other cannabis businesses (e.g., testing labs), as well as technology such as POS systems and other supplies required to run a retail business. Induced impacts capture the change in expenditures by proprietors and employees in the primary industry and all linked industries.

This analysis uses the Impacts for Planning and Analysis (IMPLAN) model with a California county-level 2014 dataset as the baseline year for the analysis.⁴ The IMPLAN software is an input-output economic model that estimates the effects of exogenous changes in final demand within a specified geographic region (in this case, California). The model uses a comprehensive dataset of national and regional economic accounts that document purchasing relationships between industries through multiple rounds of spending. The software also incorporates institutional demand and inter-institutional transfers that reflect purchases made by households and government agencies.

A limitation of the IMPLAN model or any input-output model is that the default IMPLAN model data does not include any businesses in the cannabis industry. Customized sectors for cannabis production have been developed by ERA and applied in the analysis. In other cases, sectors already available in IMPLAN are applied when they have similar spending patterns to cannabis sectors.

2.1.2 Fiscal Impacts

Fiscal impacts are changes to public agency costs and revenues associated with the regulations.

⁴ The IMPLAN 2014 data for California counties is used for consistency with the 2016/17 SRIA and other previous economic and fiscal analyses of the cannabis industry. Importantly, this model includes custom cannabis industry sectors. The default IMPLAN model does not have these sectors and is therefore not appropriate to apply for this analysis. All values are reported in current, inflation-adjusted (2024) dollars and therefore reflect current period economic impacts. A review of IMPLAN data from 2015 to 2022 for the industries identified to be similar to cannabis shows little variation in IMPLAN multipliers from this 2014 data. The economic multipliers in the 2014 IMPLAN database, with custom cannabis sectors, are appropriate for this impact analysis.

Potential fiscal impacts of the proposed regulations to the Department that were identified include:

1. Possible additional revenue from license fees related to increases in revenue for retailers, manufacturers, testing laboratories and distributors handling or selling animal products (because these license fees are based on gross revenue).
2. Costs to verify that manufacturers and retailers are correctly following new regulations during inspections.

Costs would be minor and will be absorbed within the Department's existing budget authority. The gross increase in sales of products at retail would be spread across many different businesses and is unlikely to result in a measurable change in Department license fee revenue.

3. Cannabis Industry Baseline Overview

Current baseline conditions for the cannabis industry were developed using cultivation license data, industry data developed for the 2017 SRIA and previous EFIA's, California Cannabis Track and Trace (CCTT) data, the Department's online Cannabis Unified License Search (ULS), and other updated data developed for this analysis. The proposed regulatory amendments would affect licensed manufacturers, retailers, and distributors. Therefore, this section focuses on these parts of the licensed cannabis supply chain in California.

3.1 Number of Active Businesses

Based on CCTT, there are 5,463 businesses holding one or more active cannabis license(s) in California as of January 7, 2025. All 5,463 businesses throughout the cannabis supply chain would potentially be affected. Of these 5,463 businesses, an estimated 97.1 percent (5,303 businesses) are estimated to qualify as small businesses.

Producers of hemp products would also be impacted. According to CDPH (California Department of Public Health), there are 156 businesses registered to produce hemp products for human consumption as of February 2025⁵. Many of these companies sell directly to consumers. There are also many large retail stores (e.g., grocery stores, pet supply chains, etc.) that sell hemp-based products to consumers. However, there is no data on the number of stores in this category. Impacts to large retailers are generally small and difficult to quantify. Therefore, the number of businesses producing hemp products in California, as reported by CDPH, is applied as the number of businesses that would be affected by the proposed regulations.

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<https://www.cdph.ca.gov/Programs/CEH/DFDCS/CDPH%20Document%20Library/FDB/FoodSafetyProgram/IndustrialHemp/AuthorizedIHFirms.pdf>

The estimated total number of businesses directly affected by the proposed regulations in the state is 5,619.

3.2 Current Market for CBD Products

Existing estimates of the retail value of hemp-based CBD-only products in the U.S. are inconsistent. Various industry groups report retail values of the U.S. market ranging from \$1.2 billion to forecasts of more than \$35 billion. These estimates are typically based on limited survey data. Based on reported hemp production from the United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS), average CBD yield and extraction efficiency, and a reconnaissance-level review of online prices in terms of dollars per mg of CBD, a conservative estimate of \$4.2 billion⁶ is most in line with expectations for size of the U.S. market. Based on reports on the retail value of CBD products, California represents between 12% and 22% of retail sales in the country.⁷

Low-THC products represent a very small share of products currently sold at DCC licensed cannabis retailers. Based on the share of products observed in CCTT testing sample data, only 0.4% of cannabis products have less than 0.3% THC or less than 1 mg of THC. These products are purchased because they contain CBD and/or other non-intoxicating cannabinoids. Applying this to the estimated licensed market size of \$5.2 billion implies that annual sales of low-THC products at licensed DCC retailers are approximately \$20.7 million.

3.3 Current Market for Medicinal Manufactured Cannabis Products

The current size of the market for manufactured, non-combustible medicinal cannabis products in California (based on CCTT data) is an estimated \$380 million, or 7.3% of the total licensed market of \$5.2 billion.

3.4 Current Market for CBD Products for Animals

Currently, products with THC cannot be legally sold for animal consumption. However, hemp-based CBD products can be sold for animal consumption, with the requirement that they have less than 0.3% THC. Based on a review of available information, the size of the market for CBD-only products for animals is between \$248 million⁸ and \$528 million⁹ in the U.S. This implies that out of a total market size of \$4.2 billion, animal products represent between 5.9% and 12.6% of hemp-derived, CBD-only products sold in the U.S.

⁶ <https://csnews.com/cbd-cannabis-categories-look-traction>

⁷ <https://www.statista.com/statistics/1065838/dollar-sales-of-us-cbd-market-by-state/>

⁸ <https://www.grandviewresearch.com/industry-analysis/cannabidiol-pet-market>

⁹ <https://straitresearch.com/report/cbd-pet-market#:~:text=Market%20Overview,21.4%25%20during%20the%20forecast%20period.>

4. Economic and Fiscal Impacts: Proposed Regulations

Economic and fiscal impacts were evaluated for three alternatives: the proposed regulations, and two alternatives to the proposed regulations that were considered by the Department. This section presents the results of the analysis of the proposed regulations. The proposed regulations and regulatory amendments would increase sales of cannabis products (specifically low-THC products) as a result of animal cannabis products entering the market.

4.1 Direct Economic Benefits

This section summarizes the estimated direct benefits to businesses from the proposed regulations. This includes an increase in sales of manufactured animal cannabis products.

4.1.1 Increase in Sales of Animal Cannabis Products

The proposed regulations would allow licensed cannabis manufacturers and retailers to begin making and selling animal cannabis products. Currently, animal products represent between 5.9% and 12.6% of hemp-derived, CBD-only products sold in the U.S. It would be expected that purchases of animal cannabis products limited to 1 mg of total THC per package in California would be proportional to this market share. This is based on the evidence that consumers would purchase animal cannabis products for CBD or another non-intoxicating cannabinoid, not THC. Furthermore, products with 1 mg or less THC are generally purchased for CBD or other non-intoxicating cannabinoids. Therefore, the increase in supply of low-THC products in California (with a current estimated market size of \$20.7 million) is estimated to be between 5.9% and 12.6%. This would have additional impacts on demand for hemp-based CBD products and prices, which are described and quantified further as part of the Market Effects analysis.

4.2 Direct Economic Costs

The proposed regulations would not result in direct costs to businesses or individuals.

4.3 Market Effects

The market effects of the proposed regulations were evaluated using an equilibrium displacement model (EDM) of the California cannabis market. The EDM is used to assess how the market would respond to the change in supply estimated above. The cannabis market EDM was developed by ERA Economics and initially applied in the 2017 SRIA of the CalCannabis Cultivation Licensing Program (and Medical Cannabis Cultivation Program). The market structure has changed since the initial assessment based on new laws, regulations, better industry data, industry interviews, and various economic studies. The EDM framework has been updated to reflect this new information, incorporate hemp-derived products, and include animal products.

The EDM evaluates the effect on market price and wholesale quantity¹⁰ attributable to the proposed regulations, and the model includes potential changes to the following California market segments due to the proposed regulations:

- Cannabis-derived production of low-THC products (less than 0.3% THC or less than 1mg THC),
- Hemp-derived CBD production,
- Licensed cannabis market consumer demand for low-THC products, and
- Hemp market consumer demand for CBD.

Inputs into the EDM model include the changes to production of cannabis-derived low-THC products caused by the proposed regulations. As described in the previous section, the proposed regulations would allow manufacturing and sale of non-combustible animal cannabis products with not more than 1 mg of total THC per package, affecting industry supply and demand.

To evaluate the market impact of production (supply) changes caused by the proposed regulations, the estimated supply shift in low-THC cannabis products was calculated and implemented in the EDM. That is, there is no increase in demand for low-THC animal products, rather there is new production/product offering for cannabis producers. This is represented by a shift in supply of low-THC cannabis products that is proportional to the existing market for low-THC and CBD animal products. This effectively evaluates the introduction of new (low-THC) animal products to the market. The change in production was calculated based on current market shares of low-THC cannabis products and the market share of animal products within the market for hemp-derived CBD.

Table 1 summarizes the estimated range of percent changes in low-THC cannabis products from the proposed regulations. Supply changes represent the estimated increase in supply of low-THC cannabis products from allowing the manufacture and sale of products for use by or on animals. The lower bound increase in low-THC cannabis products is 5.9%, the mean increase is 9.2%, and the upper bound increase is 12.6%.

Introducing low-THC cannabis products for animals is likely to cause some product innovation. However, it was not possible to quantify potential product innovation, and any innovation is not expected to be substantial or occur in the short run (e.g., 12-month period following full implementation of the regulations). Therefore, it is not separately quantified in the economic analysis. Any additional product innovation would require investments from businesses and could result in additional sales of low-THC products.

¹⁰ The EDM evaluates the wholesale market. All production is expressed on dry flower equivalent basis.

Table 1. Supply Change Range

Estimate	Percent Change in Low-THC Cannabis
Lower Bound	5.9%
Mean	9.2%
Upper Bound	12.6%

The percent changes in the supply of low-THC cannabis products were entered as inputs to the EDM model and used to evaluate the effect on the overall market. Table 2 summarizes the results of the EDM market analysis. The proposed regulations would affect the price and quantity of both hemp and cannabis production and retail sales. The analysis shows average and high/low bounds to provide context for the potential range of outcomes.

Table 2. EDM Analysis Market Effects Results

Description	Lower Bound	Upper Bound	Midpoint
	<i>Percent Change</i>		
Quantity of low-THC cannabis products	3.88	8.28	6.05
Quantity of hemp-derived CBD products	-0.07	-0.15	-0.11
Price of low-THC cannabis products, retail	-2.02	-4.32	-3.15
Price of hemp-derived CBD products, retail	-0.05	-0.10	-0.07
Price of cannabis for low-THC products, farm	-2.02	-4.32	-3.15
Price of hemp for CBD products, farm	-0.05	-0.10	-0.07

The market effects result in changes in the price and quantity of cannabis- and hemp-derived products. Table 3 summarizes the market effect changes in consumer surplus, cannabis cultivator (producer) surplus, gross retail sales of cannabis products, hemp cultivator (producer) surplus, and gross retail sales of hemp products. Price decreases partially offset surplus gains from quantity increases, resulting in surplus gains for producers ranging from \$51,600 to \$112,600 and a gross increase in retail sales of \$388,200 to \$787,400. Consumers benefit the most from the increased supply of low-THC products for animals, with surplus gains ranging from \$895,600 to \$1,933,000. Hemp cultivators lose between \$26,700 and \$56,900 in producer surplus, and there is a projected decrease in retail sales of hemp-based products of between \$66,700 and \$142,300.

Table 3. Market Effects Changes in Surplus and Gross Revenue

Description	Lower Bound	Upper Bound	Midpoint
	<i>Change, \$1,000</i>		
Consumer surplus	895.6	1,933.0	1,402.9
Cannabis cultivator surplus	51.6	112.6	81.3
Cannabis gross retail revenue	388.2	787.4	590.3
Hemp cultivator surplus	(26.7)	(56.9)	(41.6)
Hemp gross retail revenue	(66.7)	(142.3)	(103.9)

Changes in consumer and producer surplus are the gross costs and benefits of the proposed regulations to the cannabis/hemp industry. Changes in retail sales of animal cannabis products would also cause indirect and induced impacts to related businesses through changes in purchases/sales in related businesses (e.g., additional lab testing), employee wages, and similar ripple effects. These indirect and induced (or so-called multiplier) effects are described in the next section.

4.4 Indirect and Induced Effects

The total economic impact is the sum of the direct, indirect, and induced impacts. Indirect and induced (secondary) economic impacts include other changes in spending resulting from the direct impacts of the proposed regulations. Indirect impacts are changes in business-to-business spending, and induced impacts are changes in spending related to changes in income to employees and owners. Indirect and induced impacts are estimated using multipliers from regional input-output models, also called multiplier models.

Multiplier models are calibrated using national tax data. Since there is no national licensed cannabis market, these models do not have defined cannabis sectors. A custom retail cannabis sector was developed using the “Retail - Health and personal care stores” sector in IMPLAN as a base. ERA reviewed IMPLAN sectors and identified this sector as best approximating the spending and employment of a licensed cannabis dispensary. Spending patterns were modified to reflect wholesale purchases of cannabis from custom cannabis cultivation sectors, and from a custom cannabis labs sector.

Impacts on the retail sales of hemp products are analyzed using the “Retail – Food and beverage stores” sector. Hemp-derived CBD products can be purchased at grocery, convenience, or similar stores and this IMPLAN sector best represents the purchasing patterns of these establishments.

The IMPLAN model geographic scope is California because the economic impacts of the proposed regulations would apply to all of California. Total economic impacts are summarized in terms of jobs, total economic output, value added, and labor income.

Table 4 summarizes the results of the IMPLAN analysis. The \$590,300 increase in cannabis retailer’s revenue creates an increase in gross economic output of \$183,200 and \$289,800 due to the indirect and induced effects, respectively. The \$103,900 decrease in hemp retailer’s revenue creates a decrease in gross economic output of \$38,900 and \$61,400 due to the indirect and induced effects, respectively. Total indirect and induced impacts would be an increase of \$372,800 in gross economic output.

Table 4. IMPLAN Results

	Impact Type	Employment	Labor Income	Value Added	Output
Impacts due to Changes in Gross Retail Revenue from Cannabis-Based Products	Direct Effect	9.5	\$230,736	\$329,325	\$590,300
	Indirect Effect	1.5	\$98,040	\$129,123	\$183,210
	Induced Effect	1.5	\$97,716	\$173,096	\$289,828
	Total Effect	12.5	\$426,492	\$631,544	\$1,063,338
Impacts due to Changes in Gross Retail Revenue from Hemp-Based Products	Direct Effect	-1.2	(\$56,183)	(\$84,615)	(\$103,900)
	Indirect Effect	-0.2	(\$13,147)	(\$23,062)	(\$38,882)
	Induced Effect	-0.3	(\$20,697)	(\$36,666)	(\$61,393)
	Total Effect	-1.7	(\$90,027)	(\$144,343)	(\$204,175)
Total Impacts	Direct Effect	8.3	\$174,553	\$244,710	\$486,400
	Indirect Effect	1.3	\$84,893	\$106,061	\$144,328
	Induced Effect	1.2	\$77,019	\$136,430	\$228,435
	Total Effect	10.8	\$336,465	\$487,201	\$859,163
	Total Indirect & Induced Effects		\$161,912	\$242,491	\$372,763

4.4.1 Employment (Job) Estimated Effects

As shown in Table 4, the total employment effect (sum of direct, indirect, and induced effects) would be an increase of 10.8 jobs.

4.5 Other Economic Impacts Summary

This section summarizes other economic impacts of the proposed regulations.

4.5.1 Estimated Effects on a Typical Business and Small Business

There are not expected to be any direct costs incurred by businesses, so costs to a typical and small business would be \$0.

4.5.2 Other Economic Impacts to Businesses, Individuals, Worker Safety, and the State’s Environment

The proposed regulations are unlikely to encourage the expansion of businesses in the State. There may be some modest product innovation in the long run, but it was not possible to quantify

these potential effects. The proposed regulations simply standardize products that are already available on the market.

The proposed regulations would not result in significant creation or elimination of businesses in California. The market analysis shows that the proposed regulations would cause an increase in gross sales of cannabis-based products, but relative to the size of the licensed market in California this increase is modest (less than 0.1% increase). It would be a modest expansion of existing businesses but would not significantly increase the number of businesses in operation. The estimated decrease in gross sales of hemp-derived products is not estimated to decrease the number of businesses. The proposed regulations would not otherwise increase or decrease investment in the State.

The proposed regulations would not negatively affect the ability of businesses in the State to compete with those in other states. Cannabis-derived products made in other states cannot be sold in California and therefore there is no competition.

The proposed regulations would not require additional business reports or the use of specific technologies or equipment.

The proposed regulations would not impact housing costs.

The proposed regulations would not directly incentivize innovation in products, materials, or processes. However, as described above, the regulations may encourage product innovation in the long run. It was not possible to quantify the potential product innovation.

The proposed regulations would not affect the State's environment.

4.5.3 Department Fiscal Impacts

The fiscal impact of the proposed regulations follows from the estimated economic impacts of the proposed regulations. That is, the economic analysis measures how the industry would adjust and quantifies defined economic impacts; and the fiscal impact evaluates the resulting changes to state and local budgets. Potential fiscal impacts of the proposed regulations to the Department that were identified include:

1. Additional revenue from license fees related to increases in revenue for retailers, manufacturers, and distributors selling animal products. These Department license fees are based on gross revenue tiers and there would be a modest increase in license fees paid to the Department.
2. Department staff costs to update CCTT to include selection for specifying if a product is an animal product.
3. Department staff costs to verify that manufacturers and retailers are correctly following new regulations during inspections.

Department staff costs would be minor and absorbed within the Department's budget. The estimated increase in retail sales (\$590,300) would be spread across many different businesses and unlikely to lead to a substantial change in license fee revenue.

4.5.4 Other State and Local Public Agencies Fiscal Impacts

There would not be changes to other State and local public agency costs under the proposed regulations.

5. Economic and Fiscal Impacts: Proposed Alternatives

This section presents the results of the economic and fiscal impact analysis of two alternatives to the proposed regulations that were considered by the Department. These alternatives are summarized as follows:

- 1) Allowing animal products that contain the same level of THC currently allowed in products for human consumption.
- 2) Implementing animal product standards that ban all cannabis-based animal products.

5.1 Economic and Fiscal Impacts of Regulation Alternative 1

Under this alternative, allowable THC levels would be the same as those allowed currently for human consumption. All other components of the proposed regulations would be unchanged.

5.1.1 Alternative 1 Direct Economic Benefits

Under the proposed regulations, direct economic benefits would include an increase in retail sales of cannabis products with up to 1 mg of THC. Under this alternative, there would also be an increase in sales of cannabis products with higher amounts of THC as a result of higher THC products available for medicinal use for animals.

Based on preliminary feedback from veterinarians, products with higher THC could be developed for medical use in pets. Economic impacts were estimated using the potential market size for animal THC products based on the existing human and animal pain medication markets and the market share of medical cannabis in the pain medication market.

The current size of the market for manufactured, non-combustible medicinal cannabis products in California (based on CCTT data) is an estimated \$380 million, or 7.3% of the total licensed market of \$5.2 billion. There are no data available on the potential market size for medicinal cannabis products with THC for pets. Therefore, the relative market size for general pain management medication is compared between humans and animals.

The current size of the pain management medication market in the U.S. for humans is estimated to be between \$31.1 billion¹¹ and \$70.1 billion¹². The current size of the pain management medication market in the U.S. for animals is estimated to be between \$1.7 billion¹³ and \$2.1 billion¹⁴. This implies that the market for pain management medication for animals is between 2.4% and 6.7% of the market for pain management medication for humans.

The current share of the pain medication market for animals was applied as an approximation for the potential increase in sales of manufactured, non-combustible products for medicinal use in California's licensed market. Therefore, the increase in cannabis-based THC-containing products for medicinal use for animals would be between 2.4% and 6.7%. This, in combination with the increase in cannabis-based low-THC products described under the proposed regulations (and included in this alternative) would have additional impacts on demand for hemp-based products and prices. These are described and quantified below.

5.1.2 Alternative 1 Direct Economic Costs

Direct economic costs under this alternative would be similar to the proposed regulations, i.e., there would be no quantified direct costs.

5.1.3 Alternative 1 Market Effects

Alternative 1 would drive additional production of cannabis products relative to the proposed regulations.

Table 5 summarizes the changes in consumer surplus, cannabis cultivator surplus, and retailer gross revenue under this alternative. Price decreases partially offset surplus gains from quantity increases, resulting in gains for cultivators ranging from \$1.1 to \$2.9 million and gains to retailers of \$0.7 to \$1.8 million (in terms of gross revenue). Consumer benefits range from \$9.8 to \$26.3 million under this alternative. Surplus losses for hemp producers would be between \$78,100 and \$210,800, and gross retail revenue for hemp products would decrease between \$175,700 and \$474,300.

¹¹ <https://www.biospace.com/u-s-pain-management-drugs-market-size-and-growth-statistics-2024-to-2033>

¹² <https://www.gminsights.com/industry-analysis/pain-management-drugs-market>

¹³ <https://www.gminsights.com/industry-analysis/veterinary-pain-management-market>

¹⁴ <https://www.grandviewresearch.com/industry-analysis/veterinary-pain-management-market>

Table 5. Changes in Gross Revenue Related to Market Changes Under Alternative 1

Description	Lower Bound	Upper Bound	Midpoint
	<i>Change, \$1,000</i>		
Consumer surplus	9,753.2	26,348.6	17,560.1
Cannabis cultivator surplus	1,081.6	2,922.8	1,947.6
Cannabis gross retail revenue	678.4	1,798.8	1,211.8
Hemp cultivator surplus	(78.1)	(210.8)	(140.5)
Hemp gross retail revenue	(175.7)	(474.3)	(316.2)

5.1.4 Alternative 1 Indirect and Induced Effects

The direct changes in economic activity would result in indirect and induced impacts. Table 6 summarizes the results of the IMPLAN input-output analysis of alternative 1. The \$1.80 million increase in cannabis retailer revenue would create an increase in gross economic output of \$0.56 and \$0.88 million due to the indirect and induced effects, respectively. The \$0.32 million decrease in retailers' revenue for hemp products would cause a decrease in gross economic output of \$0.12 and \$0.19 million due to the indirect and induced effects, respectively. The net indirect and induced effects would be \$1.1 million.

Table 6. IMPLAN Results Under Alternative 1

	Impact Type	Employment	Labor Income	Value Added	Output
Cannabis Retail Gross Output Impacts	Direct Effect	29	\$703,112	\$1,003,540	\$1,798,800
	Indirect Effect	4.7	\$298,754	\$393,471	\$558,291
	Induced Effect	4.6	\$297,767	\$527,470	\$883,182
	Total Effect	38.3	\$1,299,633	\$1,924,481	\$3,240,273
Hemp Retail Gross Output Impacts	Direct Effect	-3.7	(\$170,977)	(\$257,502)	(\$316,190)
	Indirect Effect	-0.6	(\$40,010)	(\$70,183)	(\$118,326)
	Induced Effect	-1	(\$62,986)	(\$111,582)	(\$186,832)
	Total Effect	-5.3	(\$273,973)	(\$439,267)	(\$621,348)
Total Impacts	Direct Effect	25.3	\$532,135	\$746,038	\$1,482,610
	Indirect Effect	4.1	\$258,744	\$323,288	\$439,965
	Induced Effect	3.6	\$234,781	\$415,888	\$696,350
	Total Effect	33	\$1,025,660	\$1,485,214	\$2,618,925
Total Indirect & Induced Effects			\$493,525	\$739,176	\$1,136,315

5.1.5 Employment (Job) Estimated Effects under Alternative 1

As shown in Table 6, the total employment effect (sum of direct, indirect, and induced effects) is an increase of 33 jobs.

5.1.6 Estimated Effects on a Typical Business and Small Business under Alternative 1

The estimated effects on typical small businesses under this alternative would be similar to the proposed regulations.

5.1.7 Other Economic Impacts to Businesses, Individuals, Worker Safety, and the State's Environment under Alternative 1

Economic impacts on businesses, individuals, worker safety, and the State's environment would be the same as under the proposed regulations. One difference would be the potential risk associated with THC intoxication in animals. There is insufficient data to quantify these potential health impacts, but they could include substantial negative impacts on health, safety, and/or the environment.

5.1.8 Department Fiscal Impacts under Alternative 1

Potential Department fiscal impacts under this alternative would be similar to the proposed regulations.

5.1.9 Other State and Local Public Agencies Fiscal Impacts under Alternative 1

Other state and local public agency fiscal impacts under this alternative would be similar to those under the proposed regulations.

5.1.10 Basis for Rejecting Alternative 1

Alternative 1 was rejected due to the unknown impacts of introducing products with higher levels of THC for animal consumption. Increased cases of THC intoxication to animals could have substantial associated costs. The economic costs of alternative 1 are otherwise the same as the proposed regulations. Therefore, the cost of alternative 1 would be greater than the proposed regulations. More research is needed to understand the potential for increased THC intoxication in animals before allowing the sale of products containing more than 1 mg of THC for animal consumption.

5.2 Economic and Fiscal Impacts of Regulation Alternative 2

Under this alternative, animal product standards are set that ban all cannabis-based products for animal consumption. This is the same as the baseline considered for evaluating the proposed regulations and Alternative 1. Therefore, there would be no economic impact because there is no change from the baseline.

The fiscal impact of alternative 2 would be the same as the proposed regulations.

5.2.1 Basis for Rejecting Alternative 2

Banning all cannabis-based products for animal consumption was not deemed necessary, especially given that hemp-based CBD-only products are already marketed for animal consumption.

6. References

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