Effects of the Ban on Traditional Ammunition for Hunting in California on Hunting Participation and Associated Economic Measures

For:

The National Shooting Sports Foundation

By:

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About Rob Southwick, President of Southwick Associates

Rob Southwick is the President of Southwick Associates. Founded in 1990, Southwick Associates is the leader in hunting, shooting and fishing market statistics and economics. Southwick Associates specializes in helping the outdoor fishing community and fish and wildlife managers understand customer trends and demands, industry issues and how recreational activities translate into jobs, tax revenues and more. We help individual companies and resource agencies identify new products and niches, set smart prices, track their share of the market and understand the consumers' wants and motivations. Major clients include the American Sportfishing Association (ASA), the National Shooting Sports Foundation (NSSF), the Recreational Boating and Fishing Foundation (RBFF), the Association of Fish and Wildlife Agencies (AFWA), and many of the top outdoor manufacturers and retailers. Rob received his business and economics training at the University of Florida. With over a dozen very talented experts on staff, Southwick Associates provides the outdoor community with the market intelligence needed to improve performance, participation and profits.

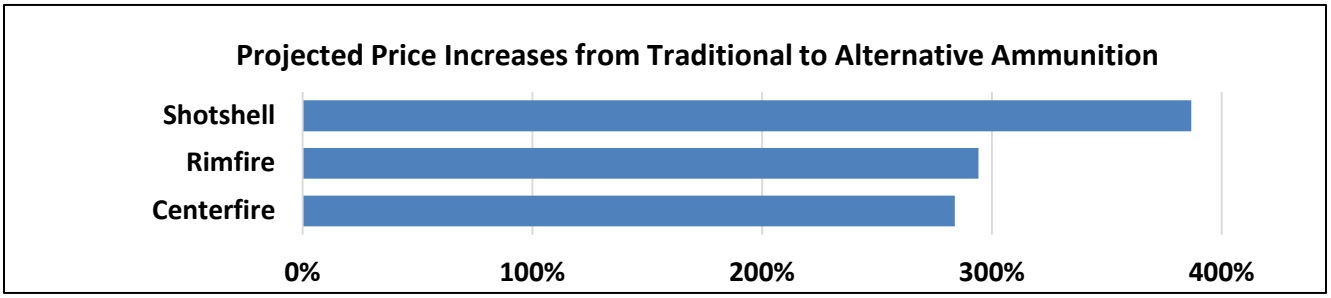
Experience related to the ammunition sector includes:

- Economic impacts – the first and only organization to statistically measure the economic contributions generated by hunting, fishing & shooting in California and the U.S. This work has been conducted for state wildlife management agencies and industry. Ammunition has been examined in each case.
- Size and trends – we track gross U.S. sales of ammunition and sales trends for individual ammunition manufacturers.
- For 12 years, Southwick Associates has monitored trends associated with ammunition production and distribution via semi-annual surveys of ammunition manufacturers.
- Only company recognized by the top quantitative research firm by the hunting & shooting sports industry (NSSF).
- Regularly hired by financial industries to explain opportunities and risks in the outdoor arena, including ammunition sector reviews.

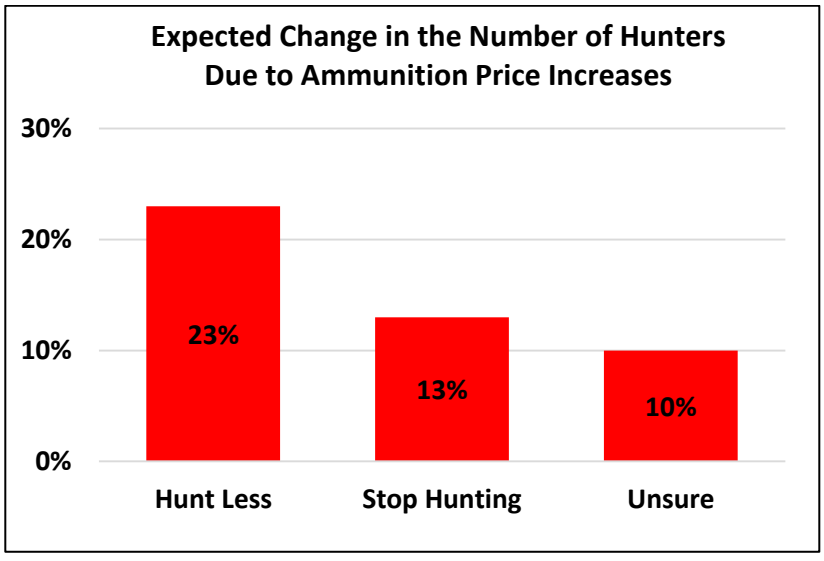
Executive Summary:

This paper examines the economic and supply issues associated with requiring California hunters to switch to alternative ammunition composed of metals other than lead. The best available data sources were utilized, augmented with information obtained via surveys directly from California hunters and U.S. ammunition manufacturers. Highlights include:

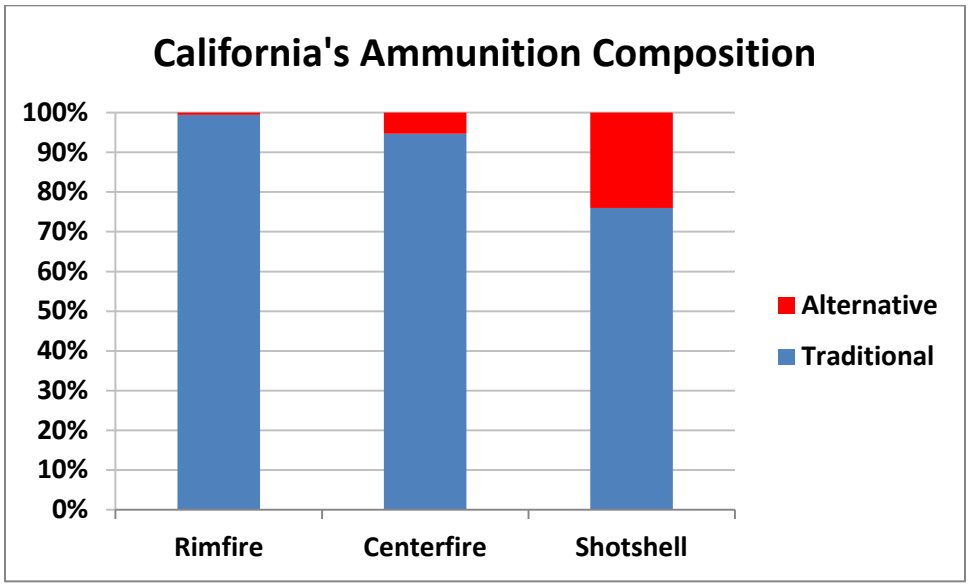
1. Via a survey, major U.S. ammunition manufacturers report that a ban on traditional ammunition with lead components in California for hunting would translate to substantially higher prices:
    a. Centerfire: up 284%
    b. Rimfire: up 294%
    c. Shotshells: up 387%



2. Based on a survey of California hunters, higher ammunition prices will drive 36 percent of California hunters to stop hunting or reduce their participation. Thirteen percent of California hunters report they would stop hunting as a result of the higher prices (51,676 fewer hunters). An additional 10 percent were unsure if they would continue to hunt and another 23 percent said they would likely hunt less than in recent years. For the rest of this analysis, we only assume a loss of 13 percent of hunters to maintain conservative estimates.



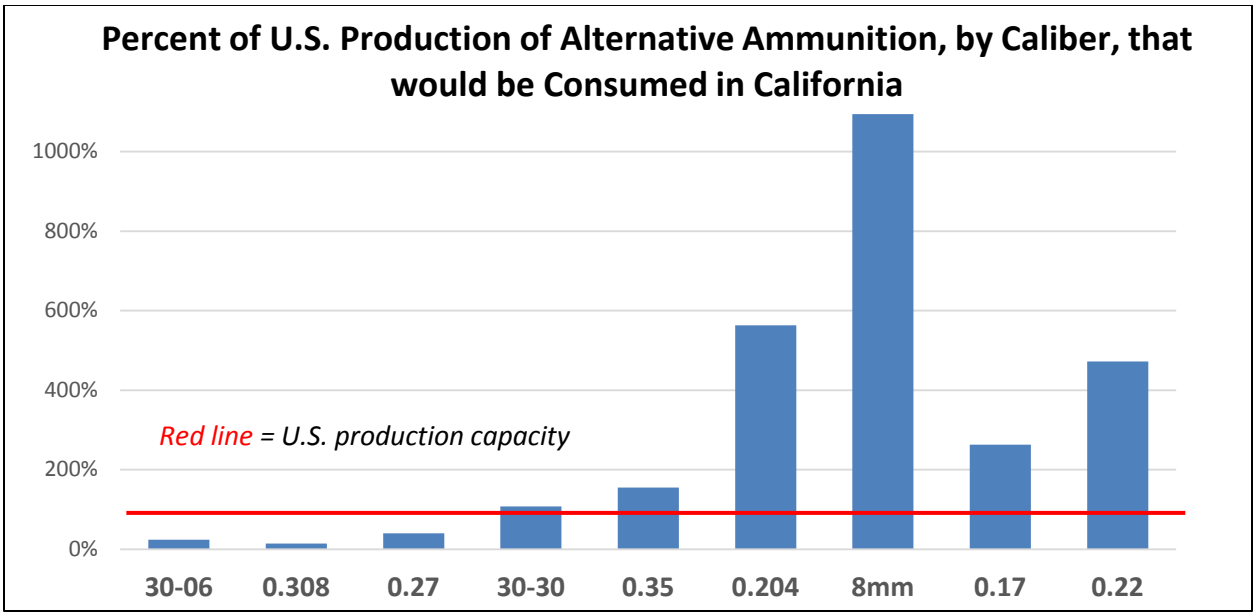
3. Alternative ammunition in some calibers is available to some degree at retail. However, alternative ammunition only makes up a very small percentage of annual ammunition manufacturing. Of the alternative ammunition that is produced, not all is for hunting purposes; for example steel core ammunition is produced for target shooting. Of all ammunition produced, the following percentages are alternative:
    a. 5.3% of centerfire ammunition production,
    b. 0.5% of rimfire rifle ammunition production, and
    c. 24% of shotshells produced.



4. The most critical impacts from the proposed ammunition prohibitions will be associated with rimfire. Manufacturers report an inability to increase rimfire production. Currently, only 0.5% of rimfire is produced using alternative metals and most of these are designated for indoor and specialty uses, not the mass hunting market. These manufacturers are very small in size, unable to ramp up to the levels required of California. Considering rimfire's primary application for small game hunting and its widespread use by young hunters, the loss of rimfire rounds to California hunters will have serious impacts on short and long-term participation.

5. For centerfire ammunition, given the ongoing national shortage of ammunition, manufacturers report very little extra capacity and specialized machinery are available to expand production of alternative ammunition. Manufacturers report production of alternative ammunition can only increase 5.5% for centerfire and that it is not possible to increase production for rimfire rifle ammunition. Data are not available for shotshell production.

6. California is one of the top states for hunting, ranking #8 nationally in terms of total spending by hunters. If all hunters were to switch to alternative ammunition, with no drop in hunting participation caused by higher prices and other factors, the demand in California for the following calibers will exceed national production or require a large portion of national production of all alternative substitutes, causing shortages and canceled hunting trips:
    - ✓ .22 rimfire demand in California will exceed the entire U.S. production of alternative .22 rounds by 472%
    - ✓ .17 rimfire demand in California will exceed the entire U.S. production of alternative .17 rounds by 263%
    - ✓ 8mm demand in California will exceed the entire production of U.S. alternative 8mm rounds by 1,094%
    - ✓ .204 demand in California will exceed the entire U.S. production of alternative .204 rounds by 563%
    - ✓ .270 demand in California currently equals 40% of the entire U.S. production of alternative .270 rounds.
    - ✓ 30-30 demand in California will exceed the entire U.S. production of alternative 30-30 rounds by 108%
    - ✓ .308 demand in California currently equals 14% of the entire U.S. production of alternative .308 rounds.
    - ✓ .35 demand in California will exceed the entire U.S. production of alternative .35 rounds by 155%
    - ✓ 30-06 demand in California currently equals 24% of the entire U.S. production of alternative 30-06 rounds.
    - ✓ For all other rounds, sources for alternative ammunition were not identified and therefore not available in commercial quantities.



7. The projected reduction of hunters by 13% (51,676 hunters) will reduce economic activity in California. Losses will include:

    a. 1,868 jobs
    b. $68.7 million in salaries and wages,
    c. $13.9 million in state and local tax revenue and
    d. $5.8 million of federal tax revenues.

8. Individual hunters and some businesses will suffer economically. In addition wildlife and all who enjoy wildlife in any manner also will suffer as hunter's licenses and excise taxes on firearms and ammunition are the primary funding source for the California Department of Fish and Wildlife's conservation efforts. The expected decreases in hunters and their spending will cause a direct loss at least $2.7 million in revenue (a loss of 11%) from reduced license sales and a $695,000 reduction in its allocation of excise tax revenues (a 5.7% loss) from the federal Wildlife Restoration Trust Fund. These funds benefit all wildlife, not just game species.

In summary, prohibiting use of alternative ammunition will have significant effects on the state economy, wildlife conservation and hunters' ability to enjoy the outdoors. These negative impacts need to be carefully considered by those responsible for the well-being of California's residents and wildlife.

Effects of the Ban on Traditional-based Ammunition for Hunting in California on Hunting Participation and Associated Economic Measures

Background:

In October, 2013 California Assembly Bill 711 was approved by the Governor and chaptered into law by the Secretary of State. AB 711 added several sections to Fish and Game Code, one of which (3005.5(b)) requires a complete ban on the use of traditional ammunition for any hunting purposes anywhere in the State by July 1, 2019. This section also requires the Fish and Game Commission to develop a phase-in regulation by July 1, 2015. (source: http://www.dfg.ca.gov/wildlife/hunting/traditional-free/)

As yet, there is no clear information regarding the current availability of alternative ammunition manufactured in the various calibers that are widely used for hunting, or its expected availability in 2019 when the complete ban is scheduled to take effect. Moreover, given the cost of specialized machinery to produce alternative ammunition, the current shortages in traditional ammunition and the hesitancy by manufacturers to make long term investments based on the unpredictable nature of politics in California, it is unlikely that manufacturers will be able to supply an adequate volume of alternative ammunition to meet the demand by hunters in 2019.

To quantify the economic and participation effects of a complete ban on the use of traditional ammunition by hunters in California, the National Shooting Sports Foundation commissioned this study. Southwick Associates conducted hunter and manufacturer surveys and combined the results with their previous economic analyses of hunting in California to determine the potential effects of the ban.

Size of the California Ammunition Market and Current Use of Alternative Ammunition:

The market size estimates listed below report ammunition sales to hunters plus all target shooting-related sales associated with hunting (sighting-in, patterning & practice shooting). Ammunition sales not associated with hunting are excluded, including recreational shooting, self-defense, police and other security, plus military. National ammunition market estimates are based on data from the National Sporting Goods Association, U.S. Census Bureau, proprietary Southwick Associates' HunterSurvey research panel[1] and federal data regarding annual ammunition excise tax collections. These data sources and steps taken include:

1. The first step was to quantify the proportion of U.S. hunting days that occur in California. This was done using U.S. Fish and Wildlife Service data.[2] (2.39%). With the assumption that ammunition consumption rates are consistent across states, this ratio was then applied to the total hunting ammunition market to estimate ammunition consumption in California.
2. The proportion of ammunition sales were segmented across calibers using data provided by the Southwick Associates' HunterSurvey® data. HunterSurvey® is an industry sales monitoring service that tracks hunters and targetshooting activity levels and purchases.
3. The size of the ammunition market was obtained from Southwick Associates' *2013 Hunting Market Size* report, which is produced using HunterSurvey market data and federal ammunition excise tax collection data obtained from the U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives and the Internal Revenue Service.
4. The proportion of sales comprised of traditional and alternative ammunition was obtained via surveys of U.S. ammunition manufacturers conducted by Southwick Associates. All ammunition manufacturers within the NSSF's industry database were contacted, representing approximately 99% of annual ammunition manufacturing in the U.S. Additional questions were covered including the feasibility of increasing capacity and production of alternative ammunition, and the price increases necessary to fund expansion.

With these data, it was then possible to determine how much alternative ammunition is consumed in California.

Centerfire sales (rifle and pistol):

- Total alternative centerfire sales in California - $1,288,528
- Total traditional centerfire sales in California - $22,139,251
- Total value of alternative centerfire sales in ALL 50 States - $53,913,298

California's centerfire ammunition market, if fully converted to alternative, represents 43% of the entire supply of alternative centerfire ammunition in the US. Expecting most

[1] Southwick Associates' *2013 Hunting Market Size* report.
[2] *2011 National Survey of Fishing, Hunting and Wildlife-Associated Recreation* (USFWS), as quantified and reported in *Hunting in America: An Economic Force for Conservation* (NSSF, January 2013).

of the current supplies to shift from current customers nationwide to new customers in California is not reasonable.

Shotshell sales:

- Total alternative shotshell sales in California - $1,940,511
- Total traditional shotshell sales in California - $6,387,861
- Total US value of alternative shotshell sales in ALL 50 States – $81,192,916

California's shotshell ammunition market represents 8% of the entire alternative ammunition market in the US. Supplies exist, but alternative shotshells are more frequently priced 25-50% higher than traditional shotshells, with the higher prices expected to suppress participation. It is uncertain whether the existing limited supply will be sufficient with the implementation of the ban.

Rimfire sales:

- Total alternative rimfire sales in California – $14,546
- Total traditional rimfire sales in California - $2,050,709
- Total value of alternative rimfire sales in ALL 50 States – $604,860

Alternative rimfire production in the *US would need to increase by 432%* to fully replace traditional rimfire used by California hunters. This assumes all shipments could be diverted away from other users outside California, and that demand would not be impacted by skyrocketing prices created by shortages and high costs associated with such an extreme expansion of production capacity.

Supply Challenges:

Manufacturers have expressed concern about the ability to meet demand for alternative ammunition in California if traditional ammunition bans go forward. Earlier calculations showed that, to meet demand in California, production of alternative rimfire ammunition would have to increase by over 432% just to meet current demand levels in California. It must be noted that for the last seven years, ammunition demand has been unprecedented. Manufacturers have not been able to meet demand, with retailers regularly experiencing shortages in most calibers. Very little unused production capacity is available. To provide insights regarding what a shift in traditional versus alternative ammunition might mean, manufacturers were queried in the surveys discussed in the previous section.

Manufacturers were questioned to determine the feasibility of increasing production of across a range of calibers. Combined with information on the size of the U.S. and California markets presented earlier, it is possible to identify which calibers would be in shortage situations.

The results show a probable shortage of alternative ammunition for .204 caliber, 8mm, .35, 30-30, .17, and .22 caliber, meaning the current volume of these calibers consumed in California exceeds the total US production. Other calibers would be in critically short supply, if only alternative ammunition is required of California hunters. Details include:

- ✓ .22 rimfire demand in California will exceed the entire U.S. production of alternative .22 rounds by 472%
- ✓ .17 rimfire demand in California will exceed the entire U.S. production of alternative .17 rounds by 263%
- ✓ 8mm demand in California will exceed the entire production of U.S. alternative 8mm rounds by 1,094%
- ✓ .204 demand in California will exceed the entire U.S. production of alternative .204 rounds by 563%
- ✓ .270 demand in California is 40% of the entire U.S. production of alternative .270 rounds.
- ✓ 30-30 demand in California will exceed the entire U.S. production of alternative 30-30 rounds by 108%
- ✓ .308 demand in California is 14% of the entire U.S. production of alternative .308 rounds.
- ✓ .35 demand in California will exceed the entire U.S. production of alternative .35 rounds by 155%
- ✓ 30-06 demand in California is 24% of the entire U.S. production of alternative 30-06 rounds.

When looking at all ammunition, and using weighted averages to adjust for uneven production volumes across calibers and gauges, 5.3% of the total centerfire market is comprised of alternative ammunition. One half of one percent of rimfire is made of alternative materials, along with 24% of shotshells.

Manufacturers were asked if alternative rifle ammunition production could be increased to help fill increased demand from California. None of the major producers report being able to increase production, due to current high demand levels, backorders and costs associated with retooling and expanding capacity. Several specialty companies have the ability to increase production, but due to their small size, their increased output would only provide minimal increases overall:

Alternative rimfire: production could only increase less than 1%. Current consumption of .22 ammunition by California's hunters is 472% greater than the entire production potential in the U.S. Considering nearly all rimfire ammunition is .22 caliber, and rimfire is often the only logical and sometimes legal round to use for small game hunting, this shortage is likely to have the greatest impact on hunting participation and spending.

Alternative centerfire ammunition: the total percentage that could be comprised of alternative could increase from 5.3% to 11%. However, even with this increase in alternative production, California's demand for calibers such as .204, 8mm, .35, and 30-30, would still exceed global production capacity.

Participation, Economic and Conservation Funding Impacts from Traditional Restrictions:

To provide the data needed to estimate impacts on hunting participation, the state economy and conservation funding, two surveys were used. The first was the surveys of ammunition manufacturers described earlier. The second survey was of California hunters that estimated potential changes in hunting activity associated with higher retail prices for alternative ammunition.

Manufacturers representing 95% to 99% of all ammunition produced in the U.S. provided details. Recognizing the difficulty of providing specific pricing for various calibers, manufacturers were asked to provide an overall average wholesale price across all calibers separately for center-fire, rim-fire and shot-shell ammunition. The wholesale prices provided by manufacturers were then converted to retail prices which were then presented in the California hunters survey.

To estimate the relative elasticity of response by hunters to the price of alternative ammunition, we used three different price points for each type of ammunition (center-fire, rim-fire, shotshell). Table 1 shows the current price for traditional ammunition, plus the projected retail price for equivalent alternative ammunition along with two higher price points which were used in the consumer survey to gauge price elasticity.

Table 1. Estimated retail prices for existing traditional-based ammunition and projected alternative ammunition

	Centerfire	Rimfire	Shotshell
Current traditional	**$15.50**	**$8.50**	**$7.50**
Equivalent alternative	$44.00	$25.00	$29.00
Equivalent alternative +20%	$54.00	$30.00	$35.00
Equivalent alternative +50%	$67.00	$38.00	$44.00

Regarding the survey of California hunters, 309 people who hunted in California within the past 12 months were surveyed to learn about their level of activity, their use of different types of ammunition to hunt in California and the effect of higher prices for alternative ammunition on their continued participation in hunting. The sample was drawn using Statistical Surveys, Inc., a standard academic sampling source, which is an appropriate source given the survey was designed to estimate proportions of hunters with specific opinions, and was not designed to estimate total numbers or total spending. Three equal subsets of the hunter sample were randomly assigned to view one of the alternative pricing scenarios and asked the following question: "*If the cost of ammunition increased as shown above, would you continue to hunt?"*

The results in Table 2 show clearly that higher costs for ammunition would likely have an impact on hunting participation and that hunters are somewhat sensitive to price. At prices that

reflect the best estimate of ammunition manufacturers (not the alternative higher price points), at least 13.1% of hunters would discontinue hunting. An additional 10.1% are unsure whether they would continue to hunt. As the price of ammunition rises, the percentage of people who would continue to hunt falls, accordingly. Further, for hunters who responded that they would continue to hunt at the higher ammunition prices, we asked, "*How would your hunting participation change due to the increase in ammunition cost?*" Overall, approximately 30% of those respondents indicated that they would hunt less.

Table 2. Change in hunting participation under three different pricing scenarios for alternative ammunition.

	Pricing Scenario		
	Equivalent Alternative	**Equivalent Alternative +20%**	**Equivalent Alternative +50%**
Continue to hunt	76.8%	70.3%	66.0%
Discontinue hunting	13.1%	17.8%	19.8%
Don't know	10.1%	11.9%	14.2%

In addition to the loss of sportsmen in the field, the reduced hunting activity that would likely result from higher ammunition prices has broader economic effects on the California economy. As described in the NSSF report, "Hunting in America: An Economic Force for Conservation", hunters in California make a significant contribution to the California economy. In 2011, over 394,000 hunters made direct expenditures of $1.1 billion dollars. Of that amount, $726.7 million was spent on hunting trips and hunting equipment.[3] Based on increased license sales, we estimate that there were 413,500 California hunters in 2013 who spent $788.9 million.

A reduction in the number of hunters due to higher ammunition costs as described in Table 2 would result in less spending on hunting trips and equipment. Table 3 details the number of hunters that would leave the sport due to higher ammunition costs along with their associated hunting activity and spending.

Table 3. Lost hunters, participation and related spending under three different pricing scenarios for alternative ammunition.

Alternative Pricing Scenario	**Lost Hunters**	**Lost Hunting Days**	**Lost Direct Spending**
Equivalent Alternative	51,676	881,711	$103,345,979
Equivalent Alternative +20%	70,216	1,198,050	$140,424,307
Equivalent Alternative +50%	78,105	1,332,662	$156,202,319

[3] The remainder of the expenditures include auxiliary equipment (camping equipment, hunting clothing, books, etc.) and special equipment (boats and motorized vehicles, cabins, real estate, etc.).

As detailed in the NSSF report, the direct spending by hunters has a greater effect across the California economy due the multiplier effect of their expenditures. Table 4 shows the economic effect of the higher costs of alternative ammunition in terms of incomes, jobs and tax revenues that are associated with the hunters who stop participating in the sport. Reduction in total output in the state's economy would range from $196.4 million to $296.8 million, depending on the actual increase in the retail price of alternative ammunition. Related to that are salaries and wages ($68.7 million to $103.8 million), jobs (1,868 to 2,824) and tens of millions of dollars in local, state and federal taxes.

Table 4. Total economic effect of the higher costs of alternative ammunition on the California economy, including multiplier effects.

Alternative Pricing Scenario	Total Output	Salaries and Wages	Jobs	State and Local Taxes	Federal Taxes
Equivalent Alternative	$196,367,879	$68,656,877	1,868	$13,875,414	$15,788,047
Equivalent Alternative +20%	$266,820,477	$93,289,497	2,539	$18,853,615	$21,452,461
Equivalent Alternative +50%	$296,800,306	$103,771,463	2,824	$20,971,999	$23,862,850

The measures shown in Tables 3 and 4 represent economic activity associated with the hunters who may leave the sport due to higher ammunition prices. In addition to lost spending on travel, equipment and services, those hunters would no longer purchase licenses or permits, and their exit from hunting would directly lead to reductions in California's share of federal Wildlife Restoration funds (WRF). These two funding mechanisms are the primary funding source for fish and wildlife restoration and management in California.

Table 5 shows the lost license revenue and WRF dollars. Assuming the minimum price of an annual hunting license ($46.44 license fee for residents; $161.49 license fee for nonresidents)[4] multiplied by the expected loss of 51,676 hunters, the Department would lose at least $2.7 million in license revenue annually. Considering the State annually receives approximately $23.7 million in hunting license revenues[5], this represents an 11% reduction. Based on an analysis of the 2013 Wildlife Restoration Fund apportionment data released by the U.S. Fish and Wildlife Service in 2014, we estimate that each hunter in California accounted for approximately $13.45 of federal revenue to the Department. The loss of 51,676 hunters due to higher ammunition prices could result in the loss of approximately $695,000 in federal WRF funds, or about 5.7% of California's annual WRF funding.[6]

[4] Per price information as presented on California Department of Fish and Wildlife website.
[5] Per USFWS annual state license sales data, released February 2014, covering calendar year 2012 receipts.
[6] Annual apportionments per state are based on a formula that take into account each state's land area and number of certified license holders.

Table 5. Total economic effect of the higher costs of alternative ammunition on the California economy, including multiplier effects.

Alternative Pricing Scenario	Lost License Revenue	Lost Wildlife Restoration Funds
Equivalent Alternative	$2,656,342	$695,038
Equivalent Alternative +20%	$3,609,381	$944,403
Equivalent Alternative +50%	$4,014,929	$1,050,516