**Preliminary Regulatory Impact Analysis and
Initial Regulatory Flexibility Analysis**

Proposed Rule

**Bovine Spongiform Encephalopathy; Minimal-Risk Regions; Importation of Live
Bovines and Products Derived from Bovines
(Docket No. APHIS 2006-0041)**

**U.S. Department of Agriculture
Animal and Plant Health Inspection Service**

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Summary

Bovine spongiform encephalopathy (BSE) is a progressive, fatal neurological disorder of cattle, bison, and certain other bovidae. It is spread through bovine consumption of feed that contains the infective agent. There is no treatment or vaccine available for BSE. Included in Title 9 of the Code of Federal Regulations (CFR), Parts 93-96, are regulations that prohibit the importation of ruminants and most ruminant products (meat and certain other products and byproducts) from regions where BSE exists and regions that present an undue risk of introducing BSE into the United States because of import requirements less restrictive than those that would be acceptable for import into the United States or because of inadequate surveillance.

On January 4, 2005, the United States Department of Agriculture, Animal and Plant Health Inspection Service (USDA APHIS or the Agency) published a final rule entitled "Bovine Spongiform Encephalopathy; Minimal-Risk Regions and Importation of Commodities," referred to as the BSE minimal-risk regions rule. It established a category of regions that present a minimal risk of introducing BSE into the United States through importation, under certain conditions, of live ruminants and ruminant products and byproducts from such regions, and named Canada as a BSE minimal-risk region. This proposed rule would amend the BSE minimal-risk regions rule.

The Proposed Rule and this Analysis

The purpose of the proposed rule is to remove certain restrictions on the importation of certain bovine commodities from BSE minimal-risk regions. APHIS has determined that the restrictions are not warranted by scientific research and evidence, and that they are unnecessary to prevent the introduction and dissemination of BSE into the United States from such regions. We are proposing to allow the following commodities to be imported from Canada under

specified conditions (in addition to commodities currently allowed to be imported from BSE minimal-risk regions):

- Live bovines that were born on or after March 1, 1999;

- Bovine small intestines, minus the distal ileum;

- Bovine casings; and

- Bovine blood and blood products.

The risk assessment for the proposed rule analyzes the likelihood that importing these commodities from Canada would introduce and disseminate BSE into the U.S. cattle population. The likelihood of release (introduction of the disease agent), the likelihood of exposure for susceptible animals given release, and the magnitude of consequences given release and exposure are evaluated either quantitatively or qualitatively. The risk estimation that combines these components concludes that the BSE risk posed by the proposed rule would be negligible.

This preliminary regulatory impact analysis addresses expected economic effects of allowing resumption of imports from Canada of the above commodities. Expected benefits and costs are examined in accordance with Executive Order 12866. Expected economic impacts for small entities are also considered, as required by the Regulatory Flexibility Act. Effects for Canadian and other foreign entities are not addressed in this analysis. However, the Agency expects reestablished access to U.S. markets to benefit Canadian producers and suppliers of commodities included in the proposed rule and, for at least one commodity, cull cattle/processing beef, result in partial displacement of processing beef imports from other sources.

Analytical Approach

We expect the proposed rule to have effects for several different categories of commodities, and benefits to exceed costs overall. Using projected baseline data for the United

States and projected imports from Canada with and without the rule, we compute impacts for four commodity categories: cull cattle/processing beef would be the commodity primarily affected, due to the resumption of cull cattle imports from Canada; feeder cattle, fed cattle, and fed beef would be affected secondarily, as Canada's slaughter mix adjusts to reestablished exports of culled cows, bulls, and stags to the United States.

The demand for cull cattle is derived from the demand for processing beef, and only a small portion of the U.S. supply of processing beef would come from imported Canadian cull cattle. Therefore, cull cattle and processing beef are combined into a single commodity category. Processing beef refers to lean, boneless beef that is mixed with trimmings from grain-fed cattle to produce ground beef, thereby complementing the domestic production of fed beef. Demand for processing beef is high, as reflected in robust ground beef sales. Despite higher domestic cull cattle slaughter in past months in response to drought conditions, U.S. production of processing beef is currently trending low because the industry is in the early stages of the expansion phase of the cattle cycle.

Historically, Canada has been a major trading partner of the United States in livestock and meat. In 2002, prior to the discovery of BSE in Canada, the United States imported 1.7 million live bovine from Canada, valued at more than $1.1 billion and accounting for more than 67 percent of U.S. total bovine imports. That same year, the United States imported from Canada 382,110 MT of bovine meat, also valued at $1.1 billion, which comprised about 44 percent of bovine meat imports from all sources. U.S.-Canadian cattle and beef trade changed dramatically following Canada's May 2003 BSE discovery. Canada's cattle population increased rapidly following the loss of export markets for its cattle and beef. Its excess cow

population and the strong U.S. demand for cull cattle/processing beef underlie imports of Canadian cull cattle expected to occur with this rule.

We evaluate welfare impacts of the proposed rule for cull cattle/processing beef, feeder cattle, fed cattle, and fed beef using a net trade, non-spatial partial equilibrium model. Present and annualized values of welfare gains and losses for the 5-year period, 2007-2011, are computed using 3 percent and 7 percent discount rates. The present and annualized values are expressed in 2006 and 2001 dollars. A complete description of the model is provided in: Forsythe, K.W. "An Economic Model for Routine Analysis of the Welfare Effects of Regulatory Changes." V3.00. U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services, Centers for Epidemiology and Animal Health, April 20, 2005 (draft). It can be found at

http://www.aphis.usda.gov/peer_review/content/printable_version/bas_model_econOnly_apr20.pdf.

For five other commodity categories—breeding cattle, vealers and slaughter calves, bison, bovine casings and small intestine products, and bovine blood and blood products—we do not quantitatively model expected effects of the proposed rule. For the first three of these categories, changes in import quantities projected under the proposed rule are very small, suggesting that impacts for U.S. entities would not be significant. For bovine casings, small intestine products, and blood and blood products, insufficient information about the commodities and quantities that would be imported and levels of U.S. production and consumption prevents us from modeling expected effects of the rule.

Price and Quantity Impacts for the Modeled Commodities

The proposed rule is expected to result in the resumption of cull cattle imports from Canada. In addition, declines in imports of feeder cattle, fed cattle, and fed beef are expected to occur as a result of the resumption of cull cattle imports affecting the slaughter mix in Canada. The baseline along with the projected changes are presented in table VIII. Relative prices highlight the different situations for the Canadian and U.S. cull cattle markets. For example, in September, 2006, the price of slaughter cows in Canada was only 70 percent of the comparable U.S. price.

Cull cattle/processing beef. With the rule, imports of cull cattle from Canada would result in price declines for processing beef. Over the period of analysis, the annual decrease in the price of processing beef, all things equal, is expected to average about 4.3 percent, ranging from declines of $5 per cwt (hundredweight, 100 pounds) in 2007, to $3 per cwt in 2009. In response to this price effect, wholesale demand for processing beef would increase by an average of about 114 million pounds per year over the period of analysis, and domestic supply would decrease by an annual average of about 131 million pounds.

Feeder cattle, fed cattle, and fed beef. Imports of feeder cattle, fed cattle, and fed beef are projected to decrease because of the rule. Of these commodities affected secondarily, the largest impacts would be for feeder cattle. We estimate that the price of feeder cattle would increase in 2007 by about 0.3 percent, from $733 to about $735 per head in 2006 dollars. Over the 5-year period of analysis, the annual increase in feeder cattle prices attributable to the proposed rule, all things equal, is expected to average about 0.6 percent, ranging from about $2.20 per head in 2007, to about $4.60 per head in 2010. In response to these price increases, there would be an average annual decrease in the demand for feeder cattle of about 152,000

head over the period of analysis, and an average annual increase in domestic supply of about 66,000 head.

For fed cattle, our analysis indicates that the price would increase by less than 0.1 percent in 2007. Over the 5-year period, the annual increase in fed cattle prices attributable to the proposed rule, all things equal, is expected to average less than 0.2 percent, ranging in 2006 dollars from 35 cents per head in 2007, to about $1.90 per head in 2009. We estimate that these small changes in price would cause the demand for fed cattle to decrease by an average of about 33,000 head per year and the domestic supply of fed cattle to increase by an average of 26,000 head per year.

Impacts of the proposed rule for fed beef are expected to be very small, with the price increasing in 2007 by less than 0.3 percent, or about 36 cents per cwt carcass weight equivalent from a base price of $142. Over the 5-year period of analysis, the increase in fed beef prices, all things equal, is expected to average less than 0.1 percent, with no effect projected for the last three years.

Clearly, the largest price effects would result from the resumption of cull cattle imports from Canada, an expected outcome matched by estimated welfare impacts.

<u>Welfare Effects for the Modeled Commodities</u>

In this analysis, consumption and production have commodity-specific definitions that differ from their commonly understood meanings. These definitions are central to interpreting the changes in welfare, and are shown in Table I. They imply that the proposed rule may have mixed effects for at least some entities in the affected industries.

Table I. Definitions of consumers and producers for the modeled commodity categories

Commodity Category	Consumers	Producers
Feeder cattle	Buyers of cattle for feedlot feeding in the United States	Sellers of U.S.-raised cattle for feedlot feeding in the United States
Fed cattle	Buyers of fed cattle for slaughter in the United States	Sellers of U.S.-sourced fed cattle for slaughter in the United States
Cull cattle/processing beef	U.S. buyers of processing beef at the wholesale level	Sellers of U.S.-produced processing beef at the wholesale level
Fed beef	U.S. buyers of fed beef at the wholesale level	Sellers of U.S.-produced fed beef at the wholesale level

Cull cattle/processing beef. Projected cull cattle imports from Canada are converted to their processing beef equivalent using projected carcass weights for cows, bulls, and stags, as shown in the note to Table II. Consumers (buyers of processing beef at the wholesale level) can be expected to benefit from welfare gains and producers (sellers of processing beef at the wholesale level) can be expected to bear welfare losses due to the cull cattle imports. The present value of the welfare changes in 2006 dollars when using a 3 percent discount rate would be $1.24 billion in consumer gains, $657 million in producer losses, for a net benefit of about $587 million. Annualized values over the five years, in 2006 dollars when using a 3 percent discount rate, would be consumer gains of $271 million, producer losses of $143 million, and net benefits of $128 million.

Table II. Cull cattle/processing beef: present and annualized values of welfare changes with the proposed rule, 2007-2011

| Present Value | Discount Rate | Changes in Welfare | | |
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	$1,243,147	-$656,540	$586,607
	7%	$1,120,778	-$590,070	$530,708
2001 Dollars	3%	$1,080,856	-$570,814	$510,043
	7%	$974,488	-$513,038	$461,450
Annualized Value				
2006 Dollars	3%	$271,447	-$143,358	$128,089
	7%	$273,347	-$143,912	$129,435
2001 Dollars	3%	$236,010	-$124,640	$111,370
	7%	$237,669	-$125,125	$112,544

Note: Consumers are U.S. buyers of processing beef at the wholesale level; producers are sellers of U.S.-produced processing beef at the wholesale level. Cull cattle imports from Canada in thousand head are converted to processing beef in million pounds carcass weight equivalent by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909 (Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch).

Welfare changes for the cull cattle/processing beef category dominate the modeled effects. The relatively large impacts are not unexpected, given that this is the one modeled commodity category for which imports from Canada would be newly reestablished. The numbers of cull cattle that would be imported with the rule, projected to average 545,000 cows and 66,000 bulls and stags per year, 2007-2011, are much larger than the projected average annual declines in feeder cattle (218,000 head) and fed cattle (59,000 head).

Feeder cattle, fed cattle, and fed beef. Fewer feeder cattle and fed cattle and less fed beef are projected to be imported from Canada with the rule than would enter without the rule, and the model indicates for these commodities gains in producer welfare (higher prices and less competition from Canadian suppliers) and losses in consumer welfare (higher prices and fewer feeder, fed cattle, and less fed beef available for purchase). Of these three commodities, the

largest impact would be for feeder cattle, with estimated producer welfare gains of $494 million,

consumer welfare losses of $518 million, for a net loss of $24 million (2006 dollars, discounted

at 3 percent).

Combined welfare effects.   Effects of the proposed rule for cull cattle/processing beef,

feeder cattle, fed cattle, and fed beef are summed in Table III.

Table III. Present and annualized values of combined welfare changes for the modeled
commodities with the proposed rule, 2007-2011

Present Value	Discount Rate	Changes in Welfare[1]		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	$444,740	$111,662	$556,401
	7%	$407,740	$96,136	$503,876
2001 Dollars	3%	$386,246	$97,526	$483,775
	7%	$302,447	$133,266	$435,714
Annualized Value				
2006 Dollars	3%	$97,110	$24,384	$121,494
	7%	$99,452	$23,457	$122,908
2001 Dollars	3%	$84,339	$21,296	$105,634
	7%	$86,339	$20,514	$106,851

[1] Combined welfare changes for cull cattle/processing beef, feeder cattle, fed cattle, and fed beef.

The analysis tells us that the present value of the combined welfare changes in 2006

dollars when using a 3 percent discount rate, for example, would be $445 million in consumer

gains, $112 million in producer gains, for a total welfare benefit of $556 million. Annualized

values over the five years, in 2006 dollars when using a 3 percent discount rate, would be

consumer gains of $97 million and producer gains of $24 million, yielding benefits of over

$121 million.

Our analysis shows producer welfare changes to be negative in 2007 and positive in each

of the following four years, 2008-2011. In 2007, producer welfare losses for the cull

cattle/processing beef category would be larger than the combined producer welfare gains for the

other three commodities. For the years 2008-2011, the opposite would occur. This is largely due to the fact that, given Canada's excess cull cattle supply, the largest annual number of cull cattle would be imported in 2007, with imports diminishing thereafter. Table III shows positive changes in producer welfare because the discounted producer welfare gains in 2008-2011 would exceed producer welfare losses in 2007.

By far, the largest effects of the proposed rule would be due to resumption of Canadian cull cattle imports. As shown in Table IV, the present value of consumer welfare gains for the cull cattle/processing beef category outweighs the combined consumer welfare losses for the other three categories ($1.24 billion in consumer benefits, compared to $798 million in combined consumer losses, in 2006 dollars and discounted at 3 percent). Producer welfare losses attributable to resumption of cull cattle/processing beef imports are smaller in magnitude than the combined producer welfare gains for the other three categories ($657 million in producer losses, compared to over $768 million in combined producer gains).

We invite public comment on these estimates of welfare changes. In particular, we welcome informed opinion regarding the price elasticities we use in the analysis for cull cattle/processing beef (price elasticity of supply, 0.84; price elasticity of demand, -0.40) that result in the welfare gains for buyers of processing beef being so much larger than the welfare losses for sellers of processing beef.

Table IV. Present values of separate and combined welfare changes with the proposed rule for cull cattle/processing beef, feeder cattle, fed cattle, and fed beef, in 2006 dollars and discounted at 3 percent, 2007-2011

	Cull Cattle/ Processing Beef	Feeder Cattle	Fed cattle	Fed Beef	Combined
		(Thousand Dollars)			
Change in consumer welfare	$1,243,147	-$518,352	-$176,136	-$103,919	$444,740
Change in producer welfare	-$656,540	$494,483	$171,791	$101,928	$111,662
Net change	$586,607	-$23,870	-$4,345	-$1,991	$556,401

Displacement of Processing Beef Imports from Other Countries

The net impact of cull cattle imports from Canada would depend upon the extent to which they would displace (substitute for) processing beef imports from other countries. About 35 percent of cull cattle imports from Canada over the period of analysis are projected to displace processing imports from other countries and the remainder are projected to contribute to an increase in the U.S. supply of processing beef (respectively, 5-year averages of 132 million pounds and 245 million pounds, carcass weight equivalent). These projections are based on the expert opinion of staff of the USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch. We consider here the effects of extreme displacement possibilities, that is, if either none or all of the Canadian cull cattle imports were to displace processing beef imports from other countries.

Projected imports of cull cattle from Canada are shown in Table V, together with changes in the U.S. supply of processing beef under the three displacement scenarios: none of

the Canadian imports displacing imports from other countries, projected displacement, or all of the Canadian imports displacing imports from other countries. In the third scenario, we assume that the cull cattle imports from Canada would have no impact on the U.S. supply of processing beef.

Table VI compares the present and annualized values of welfare changes and average annual price changes for the cull cattle/processing beef category under the three displacement scenarios, in 2006 dollars. Discounting at 3 percent, the present value of net welfare benefits for the cull cattle/processing beef category would be about $927 million when no displacement is assumed to occur, compared to net benefits of about $587 million when projected levels of displacement occur, and zero benefits or costs when we assume all imported Canadian processing beef would displace imports from other countries. Annualized net values for the three scenarios, discounted at 3 percent, range from $203 million, to $128 million, to no impact. Over the 5-year period, annual declines in prices would average about $6 per cwt if no displacement were to occur, about $4 per cwt with projected levels of displacement, and there would be no price effect if all processing beef imports from Canada were to displace imports from other countries.

Table V. Projected imports of cull cattle from Canada with the proposed rule and changes in the U.S. supply of processing beef if (i) none of the cull cattle imported from Canada displace processing beef imported from other countries, (ii) projected displacement occurs, or (iii) all of the cull cattle imported from Canada displace processing beef imports from other countries, 2007-2011, in million pounds carcass weight equivalent

	2007	2008	2009	2010	2011
Projected cull cattle imports from Canada	458	403	333	343	346
Projected processing beef imports from Canada	0	0	0	0	0
Projected displacement of processing beef imports from other countries by processing beef imports from Canada	170	149	128	106	106
Change in U.S. supply if none of the processing beef imports from Canada displace imports from other countries	458	403	333	343	346
Change in U.S. supply of processing beef if projected displacement occurs	288	254	205	237	240
Change in U.S. supply if all of the processing beef imports from Canada displace imports from other countries	0	0	0	0	0

Note: Cull cattle (slaughter cows, bulls, and stags) are converted from thousand head to million pounds carcass weight equivalent by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909 (Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch).

Table VI. Present and annualized values of welfare changes and average annual price changes for cull cattle/processing beef if (i) none of the cull cattle imported from Canada displaces processing beef imported from other countries, (ii) projected displacement occurs, or (iii) all of the cull cattle imported from Canada displace processing beef imports from other countries, in 2006 dollars, 2007-2011

Discount Rate (Percent)	Amount of Imports from Canada assumed to Displace Imports from Other Countries[1]	Changes in Welfare (Thousand Dollars)		
		Consumer	Producer	Net
Present Value				
3	None	$1,928,548	-$1,001,140	$927,408
3	Projected	$1,243,147	-$656,540	$586,607
3	All	$0	$0	$0
7	None	$1,742,482	-$901,619	$840,864
7	Projected	$1,120,778	-$590,070	$530,708
7	All	$0	$0	$0
Annualized Value				
3	None	$421,107	-$218,603	$202,504
3	Projected	$271,447	-$143,358	$128,089
3	All	$0	$0	$0
7	None	$424,975	-$219,896	$205,079
7	Projected	$273,347	-$143,912	$129,435
7	All	$0	$0	$0

Average Annual Price Change and Percentage Price Change

	(Dollars per cwt)	(Percentage)
None	-$6.00	-6.57%
Projected	-$4.00	-4.26%
All	-$0	0%

Note: Prices are in carcass weight equivalent.
[1]Projected displacement quantities for the five years, 2007-2011, in million pounds carcass weight equivalent, are 170, 149, 128, 106, and 106. Displaced quantities for the five years, if all cull cattle imported from Canada were to displace processing beef imports from other countries, would be 458, 403, 333, 343, and 346 (Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch).

It is evident that the extent of import displacement would influence impacts of the proposed rule for the cull cattle/processing beef category. Table VII shows the significance of the displacement assumption for the combined welfare effects. The larger the quantity of processing beef imports from other countries that would be displaced, the smaller the net benefits. The difference between consumer gains and producer losses would exceed $897 million (discounted at 3 percent) if no displacement of processing beef imports from other countries were to occur. The present value of net benefits would be about $556 million with projected displacement, and there would be a net welfare loss of $30 million if all of the imported Canadian cull cattle were to displace imports from other countries. In the third scenario, the modeled effects of the rule would be due to changes in the supply of Canadian feeder cattle, fed cattle, and fed beef as a result of the cull cattle imports affecting the slaughter mix in Canada. In this case, consumer welfare losses for these commodities would exceed producer welfare gains, resulting in a net decline in welfare.

Table VII. Present and annualized values of combined welfare changes for the modeled commodities if (i) none of the processing beef imports from Canada displace imports from other countries, (ii) projected displacement occurs, or (iii) all of the processing beef imports from Canada displace imports from other countries, in 2006 dollars, 2007-2011

Discount Rate (Percent)	Amount of Imports from Canada assumed to Displace Imports from Other Countries	Changes in Welfare (Thousand Dollars)		
		Consumer	Producer	Net
Present Value				
3	None	$1,130,141	-$232,938	$897,202
3	Projected	$444,740	$111,662	$556,401
3	All	-$798,407	$768,202	-$30,206
7	None	$1,029,444	-$215,413	$814,032
7	Projected	$407,740	$96,136	$503,876
7	All	-$713,038	$686,206	-$26,832
Annualized Value				
3	None	$246,770	-$50,861	$195,909
3	Projected	$97,110	$24,384	$121,494
3	All	-174,337	167,742	-6,595
7	None	$251,080	-$52,527	$198,552
7	Projected	$99,452	$23,457	$122,908
7	All	-$173,895	$167,369	-$6,527

Multi-sector impacts. For a broader examination of impacts, we map interactions among the grain, animal, and animal products industries using a second model.[1] This model takes into account substitution among livestock products in response to relative price changes.

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[1] Three examples of studies based on this type of model are: Paarlberg, P.L. "Agricultural Export Subsidies and Intermediate Goods Trade," *American Journal of Agricultural Economics*. 77, 1(1995): 119 - 128. Paarlberg, P.L., J.G. Lee, and A.H. Seitzinger. "Potential Revenue Impact of an Outbreak of Foot-and-Mouth Disease in the United States," *Journal of the American Veterinary Medical Association*. 220, 7(April 1, 2002): 988 - 992. Sanyal, K.K. and R.W. Jones. "The Theory of Trade in Middle Products," *American Economic Review*. 72(1982): 16 - 31.

It incorporates foreign trade and yields expected price and revenue effects, but does not allow for computation of welfare changes.

Our results show for the combined livestock, feed, and grain sectors, an estimated decline in gross revenues with the proposed rule of less than one percent in 2007. For the beef and cattle sectors, the gross revenue declines are also less than one percent. The analysis indicates declines of less than one percent, as well, in cattle and beef prices in 2007.

As expected, these simulated impacts are small because they describe effects for aggregated commodity groupings (all cattle production and all beef production are grouped within single categories) and because of the linkages specified between the livestock production and processing sectors that allow for greater flexibility in adjusting to supply shocks. The larger effects reported above for cull cattle/processing beef are subsumed within a combined beef sector in this multi-sector model. These results support our expectation that broader impacts of the proposed rule would be limited.

Effects for Commodities not Modeled

Commodity categories not modeled that would be affected by the proposed rule are breeding cattle, vealers and slaughter calves, bison, bovine casings and small intestine products, and bovine blood and blood products.

Breeding cattle. We do not expect the resumption of dairy and beef breeding cattle imports from Canada to significantly affect the U.S. market for these animals. The number that would be imported under the proposed rule is small in comparison to projected cattle imports from Canada overall (4 percent) and even smaller in comparison to the number of replacement breeding heifers supplied on average by U.S. producers (0.5 percent). Breeding cattle imported from Canada would augment the U.S. breeding herd very slightly. Demand for these animals,

like the demand for breeding cattle generally, would derive from management decisions based on herd composition and expected future net returns, with price variations influencing secondarily the quantity of breeding cattle purchased.

Vealers and slaughter calves. The proposed rule is expected to have a small effect on the number of vealers and slaughter calves imported from Canada. A decline in imports is projected in each year of the period of analysis, compared to quantities that would be imported without the rule, as Canadian slaughter patterns adjust to reestablished export opportunities for cull cattle. Over the 5-year period, an average of 11,800 fewer vealers and slaughter calves are projected to be imported annually with the proposed rule than would be imported without the rule.

For the 10-year period, 1994-2003, slaughter of vealers and calves in the United States averaged 1.3 million head per year. We expect annual U.S. vealer and calf slaughter during the period of analysis to be similar to this earlier average. On this basis, the average annual decrease in vealer and slaughter calf imports from Canada under the proposed rule would be equal to less than 1 percent of U.S. vealer and calf slaughter. Any effect on vealer and slaughter calf prices because of the smaller number expected to be imported under the proposed rule would not be significant.

Bison. Like the cattle industry, the commercial bison industry is comprised primarily of cow-calf operations that sell weaned calves to other operations for finishing and processing. Projected bison imports from Canada total 4,000 head in 2007, 3,150 head in 2008, and 2,500 head each year thereafter. Each year, 250 head of breeding bison are projected to be imported. The remainder would be mainly bison for immediate slaughter (2,500 head in 2007, 2,400 head in 2008, and 2,000 head in each of the following years), with a lesser number of feeders (1,250 head in 2007, 500 head in 2008, and 250 head in each year thereafter).

The 2,500 bison projected to be imported for immediate slaughter in 2007 would represent about 7 percent of the U.S. slaughter total in 2005. We assume most if not all of these slaughter bison (as well as the 1,250 head projected to be imported in 2007 for feeding) would be slaughtered at less than 30 months of age, that is, they would be of the same age as Canadian bison that are currently allowed to be imported. Thus, the only change in bison imports in 2007, as well as in subsequent years, under the proposed rule would be imports of 250 head of breeding bison.

Yearly imports from Canada of 250 head of breeding bison would augment the U.S. bison breeding herd only slightly. They would annually represent only about two-tenths of one percent of the U.S. bison breeding herd, assuming the composition of the national bison herd is similar to that of the national cattle herd, with breeding stock (cows, replacement heifers, and bulls) constituting about 56 percent of the animals.

As the market for bison meat becomes better established, the demand for breeding stock will continue to strengthen. The projected imports of breeding bison under the proposed rule would help meet this growing demand. However, they would constitute a very small addition to the U.S. breeding herd. Any effects on bison prices and the welfare of U.S. bison producers are expected to be insignificant.

Bovine casings and small intestine products. The proposed rule may affect the supply of bovine casings and small intestine products in the United States in three ways: by allowing importation of bovine casings from Canada; by allowing importation of Canadian bovine small intestines, minus the distal ileum, that are used to make certain casings and variety meats; and by reducing restrictions on live bovine imports from Canada and thereby changing the U.S. supply

of bovine products in general, including intestines and other material used to produce casings and variety meats.

We calculate that with the rule the annual supply of bovine casings and variety meats produced from small intestines would increase on average over the period of analysis by about 1.6 percent. The largest increase would occur in 2007, with production of 2.5 million pounds of additional small intestine for use as casings and variety meats. These supply projections presume a ready market for these products.

The proposed rule would allow importation from Canada of bovine small intestine minus the distal ileum that could then be processed into casings and variety meats in the United States. APHIS does not have information on the volume of bovine small intestine that may be imported from Canada because of the proposed rule. We welcome information that would enable us to evaluate effects on the U.S. supply of bovine small intestine of allowing their importation from Canada.

Current regulations prohibit the importation of bovine and other ruminant casings from BSE minimal-risk regions. The proposed rule would remove this prohibition, and therefore allow resumption of bovine casings imports from Canada. The Agency does not have information on levels of production or consumption of bovine casings in the United States, and trade data do not distinguish between bovine and ovine casings; import and export quantities and prices for bovine casings alone are unavailable from the U.S. Department of Commerce. We welcome information that the public may provide that would enable us to better understand the U.S. bovine casings industry and levels of historic trade in bovine casings between the United States, Canada, and the world.

Bovine blood and blood products. The proposed rule would allow resumption of imports of bovine blood and blood products from BSE minimal-risk regions, that is, of Canadian origin. The primary commodities affected would be products used in the manufacture of vaccines and drugs, of which fetal bovine serum (FBS) is the most important. It is the most widely used serum in the culturing of cells, tissues and organs.

Since the detection of BSE in Canada in 2003, imports of FBS from Canada have been restricted to either research samples of Canadian-origin FBS (limited to 1 liter per shipment), or FBS that is derived from animals that originate in the United States, Australia, Mexico, or Central America and is processed at a designated Canadian facility under USDA permit.

The proposed rule may affect the supply of FBS in the United States in two ways: by allowing Canadian-origin FBS imports for commercial purposes, and by reducing restrictions on bovine imports from Canada and thereby changing the U.S. supply of pregnant cows presented for slaughter. We approximate that the proposed rule would allow for the importation of up to 24,000 liters of FBS derived from Canadian cows. Had this amount been imported in 2005, it would have represented about 13 percent of U.S. imports of FBS from all sources. In addition, the increase in pregnant cow slaughter projected with the proposed rule may provide an additional 23,000 to 32,000 liters. Other than for these upper-bound approximations, we are unable to project the extent to which the U.S. supply of FBS may be affected by the proposed rule. The additional supplies would benefit U.S. establishments that use FBS in their manufacturing processes.

<u>Alternative to the Proposed Rule</u>

An alternative to the proposed rule considered by APHIS would be to allow resumption of live bovine imports from BSE minimal-risk regions without restriction by date of birth. In

other words, Canadian bovines could be imported for any destination or purpose without regard to their age.

Cattle imports from Canada. In Table VIII, projected imports under the alternative are compared to projected imports if no regulatory action were taken (baseline import quantities) and to projected imports under the proposed rule. The alternative would allow entry of bovines born before the date specified in the proposed rule as when a ruminant-to-ruminant feed ban in Canada was effectively enforced: March 1, 1999. For convenience, we refer to these animals as older cull cattle.

Under the proposed rule, cattle that are 8 years or older prior to March 1, 2007 would be prohibited. Each year thereafter, the prohibited older cull cattle would comprise a smaller age group: 9 years or older prior to March 1, 2008, 10 years or older prior to March 1, 2009, and so forth. Within a few years, the proposed rule's requirement that bovines be born on or after March 1, 1999, would not limit bovine imports from Canada; bovine imports allowed under the proposed rule and the alternative would be the same.

Table VIII. Projected imports of Canadian feeder cattle, fed cattle, cull cattle/processing beef, and fed beef: baseline, proposed rule, and alternative of no restriction by date of birth on live bovine imports, 2007-2011

	2007	2008	2009	2010	2011
Feeder cattle from Canada (thousand head)					
Baseline	302	371	425	440	441
Proposed Rule	189	175	167	178	179
Alternative	189	175	167	178	179
Fed cattle from Canada (thousand head)					
Baseline	742	731	729	755	756
Proposed Rule	728	673	644	685	688
Alternative	728	673	644	685	688
Cull cattle from Canada, net of imports assumed to displace processing beef imports from other countries (million pounds carcass weight equivalent)					
Baseline	0	0	0	0	0
Proposed Rule	288	254	205	237	240
Alternative	360	318	205	237	240
Fed beef from Canada (million pounds carcass weight equivalent)					
Baseline	446	425	420	419	419
Proposed Rule	371	390	420	419	419
Alternative	371	390	420	419	419

Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch.
Note: For the cull cattle/processing beef category, cull cattle imports are converted from thousand head to million pounds carcass weight equivalent for 2007-2011 by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909.

Projected imports of Canadian feeder cattle, fed cattle, and fed beef are the same under the proposed rule and under the alternative. In both cases, feeder and fed cattle imports would be fewer than would enter without the rule, and fed beef imports would be less in the first two years of the period of analysis. The only difference between imports under the proposed rule and under the alternative is with respect to cull cattle imports projected for 2007 and 2008. Under the alternative, imports of cull cattle are projected in these two years to be one-fourth greater, net of displaced processing beef imports, than they would be under the proposed rule. The older cull cattle that would be imported under the alternative would total 168,000 cows and 20,000 bulls and stags in 2007, and 147,000 cows and 18,000 bulls and stags in 2008. These older cull cattle would yield 72 million pounds and 64 million pounds of processing beef, carcass weight equivalent, for the two years.

Table IX shows the present and annualized values of welfare changes under the alternative for the cull cattle/processing beef category. The present value of the welfare changes (2006 dollars, 3 percent discount rate) would be $1.4 billion in consumer gains, $731 million in producer losses, for a net benefit of about $667 million. Annualized values over the five years would be consumer gains of $305 million, producer losses of $160 million, and net benefits of $146 million.

Table IX. Alternative of no restriction by date of birth on live bovine imports: present and annualized values of welfare changes for cull cattle/processing beef, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	$1,397,680	-$730,800	$666,880
	7%	$1,267,061	-$660,333	$606,728
2001 Dollars	3%	$1,215,348	-$635,446	$579,902
	7%	$1,101,796	-$574,189	$527,606
Annualized Value				
2006 Dollars	3%	$305,190	-$159,573	$145,617
	7%	$309,025	-$161,049	$147,976
2001 Dollars	3%	$265,377	-$138,752	$126,624
	7%	$268,718	-$140,039	$128,678

Note: Consumers are U.S. buyers of processing beef at the wholesale level; producers are sellers of U.S.-produced processing beef at the wholesale level. Cull cattle imports from Canada in thousand head are converted to processing beef in million pounds carcass weight equivalent by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909.

To exemplify the differences in welfare effects between the alternative and the proposed rule for the cull cattle/processing beef category, we compare in Table X their present and annualized values in 2006 dollars when discounted at 3 percent. Compared to effects under the proposed rule, consumer welfare gains under the alternative would be 12.4 percent larger, producer welfare losses would be 11.3 percent larger, and net benefits would be 13.7 percent larger. The annual decrease in processing beef prices under the alternative over the 5-year period, all things equal, is computed to average $4.80 per cwt, compared to an average annual decrease of $4.00 under the proposed rule.

Table X. Present and annualized values of welfare changes for cull cattle/processing beef, with the alternative and with the proposed rule, 3 percent discount rate, 2006 dollars, 2007-2011

		Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
Present Value	Alternative	$1,397,680	-$730,800	$666,880
	Proposed Rule	$1,243,147	-$656,540	$586,607
	Difference	$154,533	-$74,260	$80,273
Annualized Value	Alternative	$305,190	-$159,573	$145,617
	Proposed Rule	$271,447	-$143,358	$128,089
	Difference	$33,743	-$16,215	$17,528
Difference as a percentage of welfare changes with the proposed rule		12.4%	11.3%	13.7%

When we compare present and annualized values of combined welfare changes under the alternative and under the proposed rule, we find that the net welfare benefits would be 15 to 16 percent larger under the alternative than would be realized under the proposed rule. For example, the annualized net benefit (2006 dollars, 3 percent rate of discount) would be $140 million under the alternative, compared to $121 million under the proposed rule. Impacts under the alternative and under the proposed rule would also differ for some of the commodities not modeled. For example, we would expect the supply of bovine casings to be larger with the alternative, due to larger projected slaughter numbers.

BSE risk. As described in the risk assessment for the proposed rule, transmission of BSE requires that bovines ingest feed that contains the infectious agent. Feed contamination results from the incorporation of ingredients that contain certain ruminant protein derived from infected animals. Standard rendering processes do not completely inactivate the BSE agent. Therefore, rendered protein such as meat-and-bone meal derived from infected animals may remain

contaminated. Prohibitions on the use of ruminant protein in ruminant feed are imposed by the Food and Drug Administration to mitigate the risk of BSE transmission.

The World Organization for Animal Health establishes standards for the international trade in animals and animal products. It recommends that cattle be imported from a region that has reported an indigenous case of BSE only if the cattle selected for export were born after the date from which a ban on the feeding of ruminants with meat-and-bone meal and greaves (the residue left after animal fat or tallow has been rendered) derived from ruminants had been effectively enforced.

On August 4, 1997, Canada issued regulations prohibiting the use of mammalian protein in ruminant feeds. Implementation of the feed ban was a gradual process, with producers, feed mills, retailers, and feed manufacturers given grace periods before they were required to be in full compliance with the regulations. It is believed that this implementation period may have lasted six months, making February 1998 a more realistic date on which the ban can be considered to have gone into effect.

The likelihood that Canadian cattle born after February 1998 would be exposed to the BSE agent continues to decrease over time. APHIS considers that a period of one year following the full implementation of the feed ban allows sufficient time for the measures taken by Canada to have their desired effect. Therefore, APHIS concludes that cattle born on or after March 1, 1999 are unlikely to have been exposed to the BSE agent via feed and can be imported into the United States for any purpose with a low risk that they will be infected with the BSE agent.

We do not have a quantitative estimate of the additional risk posed by importation of Canadian cattle born before March 1, 1999. The importance of a feed ban as a risk mitigation measure is demonstrated in science and experience, and is incorporated into the World

Organization for Animal Health feed ban recommendation. As reported in the risk assessment for the proposed rule, the precipitous decline in BSE cases in the United Kingdom after 1987 is directly attributable to implementation of a ban that year on using ruminant meat-and-bone meal in ruminant feed. We conclude that there may be some degree of increased risk of BSE introduction under the alternative, compared to the minimal risk posed by the proposed rule, because of the greater likelihood of the older cull cattle having been exposed to infectivity. While our analysis indicates larger net welfare benefits may be realized under the alternative of no restriction by date of birth on live bovine imports, the proposed rule is preferable because it would pose a lower risk of BSE introduction into the United States and would be consistent with demonstrated science and experience of the World Organization for Animal Health.

Expected Impacts Assuming Resumption of Processing Beef Imports from Canada

Current regulations require that imported Canadian cattle be slaughtered at less than 30 months of age and that imported Canadian beef come from cattle slaughtered at less than 30 months of age. Our analysis assumes no imports of processing beef from Canada. As a second scenario, we consider effects if imports of Canadian beef from cattle slaughtered at 30 months or older were to resume at the same time that the proposed rule is finalized.

Importation of ruminant products and byproducts was included in the BSE minimal-risk regions final rule, and this proposed rule would not change regulations regarding the importation of beef from Canada. However, in March 2005, APHIS published amendments to that final rule to delay until further notice the applicability of provisions of the rule pertaining to bovine meat, meat byproducts, whole and half carcasses, and certain other bovine products. This partial delay of applicability of the BSE minimal-risk regions rule prohibits importing these products when derived from bovines 30 months of age or older when slaughtered.

As discussed, the United States is a large importer of processing beef, with Australia, New Zealand, and Uruguay currently our primary suppliers. Over the period of analysis, total processing beef imports are projected to provide about 45 percent of U.S. consumption of processing beef (decreasing from 49 percent in 2007 to 42 percent in 2011). We assume annual imports of Canadian processing beef, 2007-2011, would average 240 million pounds carcass weight equivalent, of which about two-thirds would displace processing beef imports from other countries and about one-third would represent a net increase in U.S. supply. It is further assumed under this scenario that the Canadian cull cattle imported would not displace processing beef imports from other countries. The import quantities and extent of displacement are projections made by staff of the USDA Economic Research Service (ERS), Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch, based on their expert opinion and reference to the "USDA Agricultural Baseline Projections to 2015," United States Department of Agriculture, Interagency Agricultural Projections Committee, Baseline Report OCE-2006-1, February 2006. The net addition of processing beef from Canada would be equivalent to 2.8 percent of projected baseline imports (without the rule) over the period of analysis, or 1.3 percent of U.S. supply. When the processing beef produced from projected cull cattle imports from Canada is included, the increase in the U.S. supply of processing beef under this scenario would be equivalent to 4.3 percent of projected imports without the proposed rule.

Projected imports of cull cattle and processing beef from Canada under this scenario are compared in Table XI to projected imports of cull cattle alone used to evaluate the proposed rule. Results of the analysis show the price of processing beef decreasing in 2007 by 6.3 percent under this scenario, from $99 to about $93 per cwt carcass weight equivalent in 2006 dollars. Over the period of analysis, the annual decrease in processing beef prices because of

the proposed rule, all things equal, is expected to average about 5 percent, ranging from about

$6.20 per cwt in 2007, to about $3.80 per cwt in 2009.

Table XI. Scenario comparison of quantities of (i) cull cattle alone and (ii) cull cattle and processing beef projected to be imported from Canada, net of displaced processing beef imports from other countries, 2007-2011, in million pounds of processing beef, carcass weight equivalent

Year	Cull Cattle Only	Cull Cattle and Processing Beef
2007	288	339
2008	254	299
2009	205	242
2010	237	279
2011	240	282

Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch.

Notes: Cull cattle are converted to processing beef by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909. All of the quantities that follow are expressed in million pounds of processing beef, carcass weight equivalent. For the cull cattle imports only scenario, the quantities are based on projected imports of slaughter cows, bulls, and stags, and are equivalent to: 2007, 458; 2008, 403; 2009, 333; 2010, 343; and 2011, 346. These quantities are reduced by the following projected displaced processing beef imports from other countries: 2007, 170; 2008, 149; 2009, 128; 2010, 106; and 2011, 106. For the scenario that assumes importation from Canada of both cull cattle and processing beef, quantities of cull cattle imported are: 2007, 214; 2008, 199; 2009, 192; 2010, 204; and 2011, 207. Projected processing beef imports are: 2007, 325; 2008, 275; 2009, 200; 2010, 200; and 2011, 200. Combined cull cattle and processing beef imports are 2007, 539; 2008, 474; 2009, 392; 2010, 404; and 2011, 407. These quantities are reduced by the following projected displaced processing beef imports from other countries: 2007, 200; 2008, 175; 2009, 150; 2010, 125; and 2011, 125.

As shown in Table XII, the present value of the welfare changes in 2006 dollars when using a 3 percent discount rate would be $1.47 billion in consumer gains, $770 million in producer losses, for a net benefit of about $695 million. Annualized values over the five years, in 2006 dollars when using a 3 percent discount rate, would be consumer gains of $320 million, producer losses of $168 million, and net benefits of $152 million.

Table XII. Cull cattle/processing beef: present and annualized values of welfare changes assuming cull cattle imports and processing beef imports from Canada would resume at the same time, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	$1,465,829	-$770,389	$695,440
	7%	$1,321,580	-$692,393	$629,187
2001 Dollars	3%	$1,274,467	-$669,797	$604,670
	7%	$1,149,081	-$602,002	$547,078
Annualized Value				
2006 Dollars	3%	$320,071	-$168,218	$151,853
	7%	$322,321	-$168,868	$153,453
2001 Dollars	3%	$278,286	-$146,253	$132,033
	7%	$280,250	-$146,823	$133,427

Compared to impacts for the cull cattle/processing beef category when only cull cattle would enter, this scenario would result in consumer welfare gains larger by 17.9 percent, producer welfare losses larger by 17.3 percent, and net benefits larger by 18.6 percent.

Combined effects under this scenario for cull cattle/processing beef, feeder cattle, fed cattle, and fed beef are shown in Table XIII.

Table XIII. Present and annualized values of combined welfare changes for the modeled commodities, assuming cull cattle imports and processing beef imports from Canada would resume at the same time, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	$669,191	$2,387	$671,578
	7%	$610,108	-$2,145	$607,963
2001 Dollars	3%	$581,395	$2,519	$583,917
	7%	$529,956	-$1,342	$528,614
Annualized Value				
2006 Dollars	3%	$146,122	$523	$146,643
	7%	$148,808	-$513	$148,294
2001 Dollars	3%	$126,951	$551	$127,501
	7%	$129,252	-$327	$128,923

Removal of the delay of applicability, thereby allowing importation of Canadian beef from cattle slaughtered at 30 months or older, is a decision that will be taken at the discretion of the Secretary of the U.S. Department of Agriculture.

Expected Impacts for Small Entities

We have prepared an initial regulatory flexibility analysis that indicates that industries expected to be affected by the proposed rule are composed largely of small entities. Industries that may be affected, as categorized by the North American Industry Classification System, are Beef Cattle Ranching and Farming (NAICS 112111), Dairy Cattle and Milk Production (NAICS 112120), All Other Animal Production (NAICS 112990), Cattle Feedlots (NAICS 112112), Animal (except Poultry) Slaughtering (NAICS 311611), Meat Processed from Carcasses (NAICS 311612), Meat and Meat Product Merchant Wholesalers (NAICS 424470), Supermarkets and Other Grocery (except Convenience) Stores (NAICS 445110), Meat Markets

(NAICS 445210), In-Vitro Diagnostic Substance Manufacturing (NAICS 325413), and Biological Product (except Diagnostic) Manufacturing (NAICS 325414).

Average effects for small entities would be small. As examples, we approximate that gross receipts for small-entity beef and dairy operations would increase, respectively, by $160 (0.6 percent of annual revenue) and $133 (less than 0.1 percent of annual revenue), due to the rule's projected impact on feeder cattle prices. We approximate that small-entity feedlots may incur a revenue loss of about $5,040 (less than 0.3 percent of annual revenue), due to the rule's expected effects on feeder cattle and fed cattle prices. Small-entity meat packing and processing establishments may benefit marginally with the rule, with estimated price increases for fed beef in 2007 and 2008 representing an increase in annual revenue of less than 0.2 percent. Effects of the proposed rule for packers and processors that utilize processing beef would be larger, due to the resumption of cull cattle imports from Canada. Annual prices of processing beef are expected to fall by an average of $4 per cwt over the period of analysis. The price declines would benefit establishments that use processing beef to produce ground beef for the wholesale market. Conversely, establishments that sell processing beef would be negatively affected by the expected price declines.

Currently, bovines imported from Canada are restricted to animals that are slaughtered at less than 30 months of age. Bovines not imported for immediate slaughter must be moved from the port of entry to a feedlot in a sealed means of conveyance and from the feedlot to a recognized slaughtering establishment again in a sealed means of conveyance. The animals may not be moved to more than one feedlot. Under the proposed rule, these movement restrictions would no longer be imposed. Canadian bovines imported other than for immediate slaughter could be moved any number of times to any destinations in unsealed means of conveyance.

Under the proposed rule, feeder bovines imported from BSE minimal-risk regions would not need to be accompanied by APHIS Form VS 17-130, which currently is used to identify the feedlot of destination. (The individual responsible for the movement of an imported animal and the individual identification of the animal would still be required information on the accompanying health certificate.) Also under the proposed rule, bovines of Canadian origin moved from a U.S. feedlot to a slaughtering establishment would not need to be accompanied by APHIS Form VS 1-27.

Removal of these movement and paperwork requirements would benefit buyers and sellers of Canadian-origin bovines. Many of the beneficiaries are likely to be small entities, given their predominance among cattle and dairy operations and feedlot establishments. Affected businesses would be able to take advantage of a broader range of transactional opportunities than under current regulations. For example, the sale of a young steer first for backgrounding, then for confined feeding at one or more facilities, and finally for slaughter may enable the original and subsequent owners of the animal to better maximize returns compared to current marketing possibilities. While we are not able to quantify impacts of removing current movement restrictions on Canadian cattle imports, we expect their removal would benefit the cattle industry across-the-board.

The Agency has found no significant alternatives to the proposed rule that would continue to protect against the introduction and dissemination of BSE into the United States while removing unnecessary prohibitions on the importation of certain commodities from Canada. Without the proposed rule, restrictions on U.S. importation of certain Canadian bovine commodities that are without scientific merit would continue. With the proposed rule,

importation of these Canadian commodities would be allowed to resume under certain conditions and the risk of introduction of BSE into the United States would remain minimal.

Contents

**Preliminary Regulatory Impact Analysis and
Initial Regulatory Flexibility Analysis**

Proposed Rule

**Bovine Spongiform Encephalopathy; Minimal-Risk Regions; Importation of Live
Bovines and Products Derived from Bovines
(Docket No. APHIS 2006-0041)**

October 27, 2006

1. Introduction

Bovine spongiform encephalopathy (BSE) is a progressive, fatal neurological disorder of

cattle, bison, and certain other bovidae. It is spread through bovine consumption of feed that

contains the infective agent. There is no treatment or vaccine available for BSE. Included in

Title 9 of the Code of Federal Regulations (CFR), Parts 93-96, are regulations that prohibit the

importation of ruminants and most ruminant products (meat and certain other products and

byproducts) from regions where BSE exists and regions that present an undue risk of introducing

BSE into the United States because of import requirements less restrictive than those that would

be acceptable for import into the United States or because of inadequate surveillance.

On January 4, 2005, the United States Department of Agriculture, Animal and Plant

Health Inspection Service (USDA APHIS or the Agency) published a final rule entitled "Bovine

Spongiform Encephalopathy; Minimal-Risk Regions and Importation of Commodities," referred

to as the BSE minimal-risk regions rule.[2] It established a category of regions that present a

minimal risk of introducing BSE into the United States through importation, under certain

conditions, of live ruminants and ruminant products and byproducts from such regions, and

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[2] "Bovine Spongiform Encephalophy; Minimal-Risk Regions and Importation of Commodities;" Final Rule.
Federal Register, Vol. 70, No. 2; January 4, 2005, 460-553.
http://www.access.gpo.gov/su_docs/fedreg/a050104c.html

named Canada as a BSE minimal-risk region.[3] This proposed rule would amend the BSE

minimal-risk regions rule.

The Proposed Rule and this Analysis

The purpose of the proposed rule is to remove certain restrictions on the importation of

certain bovine commodities from BSE minimal-risk regions. APHIS has determined that the

restrictions are not warranted by scientific research and evidence, and that they are unnecessary

to prevent the introduction and dissemination of BSE into the United States from such regions.

We are proposing to allow the following commodities to be imported from Canada under

specified conditions (in addition to commodities currently allowed to be imported from BSE

minimal-risk regions):

- Live bovines that were born on or after March 1, 1999;

- Bovine small intestines, minus the distal ileum;

- Bovine casings; and

- Bovine blood and blood products.

The risk assessment for the proposed rule analyzes the likelihood that importing these

commodities from Canada would introduce and disseminate BSE into the U.S. cattle

population.[4] The likelihood of release (introduction of the disease agent), the likelihood of

exposure for susceptible animals given release, and the magnitude of consequences given release

and exposure are evaluated either quantitatively or qualitatively. The risk estimation that

combines these components concludes that the BSE risk posed by the proposed rule would be

negligible.

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[3] Canada had been added to the list of countries where BSE exists in May 2003. "Change of Disease Status of
Canada Because of BSE;" Interim Rule. *Federal Register*, Vol. 68, No.103; May 29, 2003, 31939-31940).
http://www.access.gpo.gov/su_docs/fedreg/a030529c.html
[4] APHIS, Veterinary Services. "Assessment of Bovine Spongiform Encephalopathy (BSE) risks associated with the
importation of certain commodities from BSE minimal risk regions (Canada)," October 27, 2006.

This preliminary regulatory impact analysis addresses expected economic effects of allowing resumption of imports from Canada of the above commodities. Expected benefits and costs are examined in accordance with Executive Order 12866.[5] Expected economic impacts for small entities are also considered, as required by the Regulatory Flexibility Act.[6] We expect benefits to exceed costs overall. Effects for Canadian and other foreign entities are not addressed in this analysis. However, the Agency expects reestablished access to U.S. markets to benefit Canadian producers and suppliers of commodities included in the proposed rule and, for at least one commodity category, cull cattle/processing beef, result in partial displacement of processing beef imports from other sources.

Organization of this Document

Six sections follow in this preliminary analysis of expected economic impacts of the rule. In section 2, we describe our approach to the analysis and identify the primary and secondary commodities that would be affected, including certain commodities that are currently allowed entry from Canada. We discuss the methods used to analyze expected impacts of the rule. For commodities that are quantitatively modeled (cull cattle/processing beef, feeder cattle, fed cattle, and fed beef), we describe the model and baseline parameters, and set forth projected quantities that would be imported from Canada with and without the proposed rule. For other commodities (breeding cattle, vealers and slaughter calves, bison, bovine casings and small intestine products, and bovine blood and blood products), we explain why the impacts are evaluated less rigorously.

In section 3, we present expected price and quantity effects and welfare impacts of the proposed rule for the modeled commodities. For cull cattle/processing beef, we consider effects

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[5] http://www.whitehouse.gov/omb/inforeg/eo12866.pdf
[6] http://www.sba.gov/advo/laws/regflex.html

under different assumptions regarding the extent to which cull cattle imports from Canada may displace processing beef imports from other countries.

We address in section 4 the expected effects of the proposed rule for the commodities not modeled. The discussion of likely impacts is largely qualitative using available data.

In section 5, as an alternative to the proposed rule, we consider effects of allowing importation of Canadian bovines with no restriction by date of birth. In other words, they could be imported for any destination or purpose without regard to age.

In section 6, we examine expected impacts assuming processing beef imports from Canada would resume at the same time that this rule is finalized. We compare the estimated effects to those that would occur if only cull cattle imports from Canada were reestablished.

An initial regulatory flexibility analysis is presented in section 7. We address expected impacts of the proposed rule for small entities, including effects of proposed changes in compliance requirements.

We conclude this Introduction with an overview of the U.S. and Canadian markets for cull cattle and processing beef.

The U.S. and Canadian Markets for Cull Cattle/Processing Beef

The cattle and beef industries in the United States and Canada have a long history of trade. In 2002, prior to the discovery of BSE in Canada, the United States imported 1.7 million live bovine from Canada, valued at more than $1.1 billion and accounting for more than 67 percent of U.S. total bovine imports. That same year, the United States imported from Canada 382,110 MT of bovine meat, also valued at $1.1 billion, which comprised about 44 percent of

bovine meat imports from all sources.[7] The trade in live bovine is principally characterized by the slaughter (and to a lesser extent, feeding) of Canadian cattle at U.S. facilities.

The primary impact of this rule would be the resumption of U.S. imports of Canadian cull cattle, that is, cows, bulls, and stags sold for slaughter. Their supply prior to May 2003 was relatively small compared to feeder cattle and fed cattle imports, representing about 25 percent of all cattle imports from Canada, 1998 through 2002. Nonetheless, the importation of Canadian cull cattle that would be allowed by this rule would help to meet the strong U.S. demand for processing beef.

The demand for cull cattle is derived from the demand for processing beef, and only a small portion of the U.S. supply of processing beef would come from imported Canadian cull cattle. Therefore, cull cattle and processing beef are combined into a single commodity category. Processing beef refers to lean, boneless beef that is mixed with trimmings from grain-fed cattle to produce ground beef, thereby complementing the domestic production of fed beef.[8] Demand for processing beef is high, as reflected in robust ground beef sales. Despite higher domestic cull cattle slaughter in past months in response to drought conditions, U.S. production of processing beef is trending low because the industry is in the early stages of the expansion phase of the cattle cycle.

The United States is a large importer of processing beef, with Australia, New Zealand, and Uruguay our major sources. Over the five years, 1998 through 2002, the United States annually imported an average of 3 billion pounds of all types of beef and veal, with processing beef accounting for approximately two-thirds of that total, and domestic production of processing beef averaged about 3.75 billion pounds. During this same period, cull cattle imports

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[7] Source: Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics. http://www.fas.usda.gov/ustrade/
[8] Processing beef should not be confused with processed beef, that is, cooked, canned, or preserved meat. By this terminology, some processing beef is used for processed products.

from Canada, when converted to their processing beef equivalent, totaled about 185 million pounds,[9] or about 8 percent of average annual U.S. imports and about 3 percent of average annual supply.

U.S.-Canadian cattle and beef trade changed dramatically following Canada's May 2003 BSE discovery. Canada's cattle population increased rapidly following the loss of export markets for its cattle and beef. There was a record total of over 14.6 million head of Canadian cattle on January 1, 2004, which was exceeded by a new record of 15.1 million head on January 1, 2005.[10] The previous peak in Canadian cattle inventories had occurred in 1975. The Canadian cattle population remains the second largest on record, despite the partial reestablishment of export markets for cattle and beef.

On January 1, 2006, the Canadian cattle inventory was 14.8 million head, a decline of about 2 percent from the previous year. However, Canada's cow population remained essentially the same during this period, decreasing only marginally from a record 6.36 million head on January 1, 2005, to 6.33 million head on January 1, 2006. Canadian cow slaughter has increased with the resumption of U.S. imports of cattle for slaughter at less than 30 months of age, but the cow population remains large. On July 1, 2006, Canada's producers were holding 690,300 cull cows, or 11 percent of the cow inventory.

Canadian slaughter capacity increased following the opening of the U.S. market to beef from cattle slaughtered at less than 30 months of age. Resumption in July 2005 of imports of Canadian feeder and fed cattle for slaughter at less than 30 months of age resulted in underutilization of the expanded slaughter capacity. Some of the Canadian plants shifted to cow

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[9] This approximation is based on the carcass weight equivalent conversion rates for 2007 used in this analysis: cows, 576 pounds per animal; bulls and stags, 888 pounds per animal. We recognize that these rates may overestimate the carcass weight equivalent of the cull cattle from this time period due to the long-term trend toward heavier weights.
[10] Canadian cattle inventory statistics in this and the following paragraph are from http://www.statcan.ca/english/freepub/23-012-XIE/23-012-XIE2005002.pdf

slaughter, others reduced hours of operation or closed. In the second half of 2005, Canadian cow slaughter began to increase and continued to do so in 2006. This trend of expanding cow slaughter would likely continue in 2007, if the United States were to remain closed to imports of Canadian cull cattle.

In the United States, the cattle inventory was 97.1 million head on January 1, 2006, up 2 percent from a year earlier.[11] This is the second year of the current expansion for the nation's herd. The last cyclical peak of 103.5 million head was recorded on January 1, 1996. Notwithstanding cyclical expansion, cow slaughter has been large in 2006 due to an extended drought. If weather and forage conditions return to normal in 2007, cow slaughter is expected to return to the cyclical low levels of 2004 and 2005.

Relative prices highlight the different situations for the Canadian and U.S. cull cow markets. The September 2006 price of Cutter and Utility slaughter cows in Ontario, Canada, averaged $35.19 per cwt, compared to an average of $50.25 per cwt for Utility cows in Sioux Falls, South Dakota.[12] Under the proposed rule, U.S. packers would likely outbid Canadian packers, and the cattle trade would again include slaughter of Canadian cull cattle at U.S. plants. However, Canadian plants would compete strongly for a declining supply, with the rise in Canadian prices toward U.S. levels slowing the movement of cull cattle to the United States. Canadian cattle inventories are expected to return to pre-May 2003 levels over the next couple of years under the proposed rule. Canada's excess cow population and the strong U.S. demand for cull cattle/processing beef underlie projected imports of Canadian cull cattle under the proposed rule.

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[11] http://usda.mannlib.cornell.edu/reports/nassr/livestock/pct-bb/
[12] USDA Agricultural Marketing Service, Market News. Prices in U.S. dollars. For the price of Canadian slaughter cows: http://www.ams.usda.gov/mnreports/WA_LS718.txt.

2. Analytical Approach, Baselines, and Projected Imports

The proposed rule would impact U.S. markets for several bovine commodities. Ideally, the rule's various effects would be considered as a whole by examining linkages among commodities and between the cattle and livestock industries and the rest of the U.S. economy in a general equilibrium framework. This approach would require economy-wide production, consumption, and price information, plus the capability to compute the proposed rule's various simultaneous effects—knowledge and resource requirements beyond those available to APHIS.

As a next-best course, we follow two methodologies: First, using a partial equilibrium model, we compute expected impacts for those commodities for which U.S. baselines and quantities that would be supplied by Canada have been projected. Second, for commodities for which baseline and import data are not projected or for which the effects of the rule clearly would be insignificant, we qualitatively assess likely impacts using available information.

We begin this section with a description of the model used to examine price, quantity, and welfare impacts of the proposed rule. We then present the baselines for the principal commodity that would be affected by the rule, cull cattle/processing beef, and for the commodities expected to be affected secondarily, feeder cattle, fed cattle, and fed beef. Projected changes in imports from Canada for the four commodities are set forth. The section concludes with a discussion of certain other commodities expected to be affected by the rule that are not modeled.

The BAS Model

A model called the Baseline Analysis System (BAS) model is used to compute principal welfare and price impacts of the proposed rule.[13] Beginning with baseline quantities and prices (conditions without the proposed rule), we use the model to derive price and welfare effects of the proposed rule, based on projected changes in imports from Canada (conditions with the proposed rule).

The BAS economic model was designed to meet a number of analytical needs. First, it was designed to provide estimates of the efficiency impacts of alternative policies, measured by changes in net social surplus (welfare impacts). Second, it was designed to provide estimates of the distributional effects of proposed policies; i.e., the effects on consumers, producers, and producer subgroups. Third, it was designed to utilize readily available data and parameters commonly presented in economic literature. And, finally, it was designed to be capable of producing results in a timely manner.

The BAS model is a net trade, non-spatial partial equilibrium model. Net trade is defined as the absolute value of the difference between exports and imports. Non-spatial means that price and quantity effects resulting from differences in market locations are not specified. Price and quantity effects derived using the model are assumed to be the average of effects across geographically separated markets. Partial equilibrium means that the model results are based on maintaining a commodity-price equilibrium in a limited portion of an overall economy. Commodities or economic sectors not explicitly included in the model are assumed to have a negligible influence on the results.

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[13] The BAS model is being peer reviewed as an Influential Scientific Information document, as called for by OMB's Peer Review Bulletin (*Federal Register*, January 14, 2005, 2664-2677), and in accordance with USDA's Peer Review Implementation Guidelines of June 2005,
http://www.ocio.usda.gov/qi_guide/doc/FINAL_Peer_Review_Guidelines.doc.

Welfare impacts refer to gains and losses to society as measured by changes in consumer and producer surplus. Consumer surplus is the difference between what a consumer pays for a unit of a good and the maximum amount that the consumer would be willing to pay for that unit. Producer surplus is the difference between the amount a producer is paid for a unit of a good and the minimum amount that the producer would accept to supply that unit.

The consumer and producer surplus equations in the model are derived based on the assumption that demand and supply functions are approximately linear near the initial equilibrium point. For small shifts, this assumption will result in reasonably accurate estimates of consumer and producer surplus change. Parallel shifts in the demand and supply functions are assumed. In addition to domestic demand and supply functions, an excess supply function is included in the model to evaluate changes in imports.

In this analysis, we compute effects of the expected changes in imports from Canada due to the proposed rule for the four modeled commodities: cull cattle/processing beef, feeder cattle, fed cattle, and fed beef. The resumption of cull cattle imports is expected to affect the slaughter mix in Canada. As part of this adjustment, we expect for example, that more cattle would remain in Canada for feeding and fewer feeder cattle would be imported under the proposed rule than under baseline conditions, that is, without the proposed rule. Importation of fewer feeder cattle from Canada, all things equal, would cause the price of feeder cattle in the United States to rise. The BAS model is used to compute the expected increase in price because of the proposed rule, and because of the price rise, the decrease in the quantity of feeder cattle demanded by U.S. feedlots and the increase in the quantity of feeder cattle supplied by U.S. producers. The model yields welfare changes, in this example in terms of expected losses for U.S. buyers and expected gains for U.S. sellers of cattle for feeding. In section 3, we report expected impacts for the

modeled commodities, individually and combined, recognizing that the combined effects are simply a summation of the separate partial equilibrium results and do not take into account possible market dynamics.

The BAS economic model is based on methodology described in the following studies: Ebel, E.D., R.H. Hornbaker, and C.H. Nelson, "Welfare Effects of the National Pseudorabies Eradication Program." *Amer. J. Agr. Econ.* 74(August 1992):638-45; Forsythe, K.W., and B.A. Corso, "Welfare Effects of the National Pseudorabies Eradication Program: Comment." *Amer. J. Agr. Econ.* 76(November 1994):968-71; and Lichtenberg, E., D. D. Parker, and D. Zilberman, "Marginal Analysis of Welfare Cost of Environmental Policies: The Case of Pesticide Regulation." *Amer. J. Agr. Econ.* 70(November 1988):867-74.

A complete description of the model is provided in: Forsythe, K.W. "An Economic Model for Routine Analysis of the Welfare Effects of Regulatory Changes." V3.00. U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services, Centers for Epidemiology and Animal Health. April 20, 2005 (draft).[14] The model is currently undergoing peer review. The peer review plan is available at http://www.aphis.usda.gov/peer_review/content/printable_version/PeerReviewPlanBAS_Model1 22006.pdf

Consistent with requirements of the Office of Management and Budget for benefit-cost analysis as described in Circular A-4, Regulatory Analysis,[15] we use the BAS model to examine benefits and costs over a 5-year period, 2007-2011. The benefits and costs are computed as present and annualized values discounted at 3 and 7 percent. Results of the analysis are reported

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[14] http://www.aphis.usda.gov/peer_review/content/printable_version/bas_model_econOnly_apr20.pdf.
[15] http://www.whitehouse.gov/omb/circulars/a004/a-4.html

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in 2006 and 2001 dollars. Circular A-4 provides guidance for agencies on the analysis of economically significant rulemakings as defined by Executive Order 12866.

Baselines for the Modeled Commodities

The BAS model requires specification of U.S. baseline quantities (production, consumption, imports, and exports), baseline prices, and own-price elasticities of supply and demand for each year of the period of analysis, 2007-2011. Consumption is assumed to equal production plus imports minus exports (net of beginning and ending cold storage stocks for processing and fed beef). Baseline quantities and prices have been projected by staff of the USDA Economic Research Service (ERS), Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch, based on their expert opinion and reference to the "USDA Agricultural Baseline Projections to 2015," United States Department of Agriculture, Interagency Agricultural Projections Committee, Baseline Report OCE-2006-1, February 2006. http://www.usda.gov/oce/commodity/ag_baseline.htm. The price elasticities are based on consultation with Animal Products, Grains, and Oil Seeds Branch staff.

Four categories of commodities are formally modeled: the commodity category expected to be principally impacted by the proposed rule, cull cattle/processing beef; and commodities for which we expect there to be secondary effects, feeder cattle, fed cattle, and fed beef. Cull cattle are cows, bulls, and stags sold for slaughter. They are generally breeding stock for which the present slaughter value exceeds their expected future net value as breeding animals (plus future slaughter value), and are the source of processing beef. Feeder cattle are weaned steers and heifers (about 9 months of age) and yearlings (mostly 12 to 15 months of age) that are fed at a feedlot for several months before slaughter. This category also includes cattle called stockers that are grazed (backgrounded) on pasture for several months before being transported for

confined feeding. Fed cattle are steers and heifers that have been grain-fed at feedlots, with most ready for slaughter at between 16 and 24 months of age. Fed beef refers to meat derived from fed cattle.

Primary Commodity: Cull Cattle/Processing Beef. Cull cattle and processing beef are combined into a single commodity category, with quantities expressed in million pounds of processing beef, carcass weight equivalent. The demand for cull cattle is derived from the demand for processing beef, and only a small portion of the U.S. supply of processing beef would come from imported Canadian cull cattle. Canada historically has been our only foreign source of cull cattle, and the expected imports under the proposed rule would impact the U.S. market for processing beef. The United States imports nearly half of its supply of processing beef, which is mainly used in the production of ground beef. Some of the cull cattle that would be imported from Canada under this rule would substitute for processing beef that otherwise would be imported from other countries; the rest of the imported cull cattle would represent a net increase in the nation's processing beef supplies. The quantity of additional processing beef that would be supplied by the projected cull cattle imports from Canada is expected to be small relative to our global imports of this commodity.

Table 1 shows the baseline quantities, prices, and elasticities for cull cattle/processing beef. No cull cattle or processing beef are imports from Canada are included in the baseline. As indicated, U.S. processing beef imports are significant, but are expected to decline over the period of analysis, from 49 percent of consumption in 2007, to 42 percent in 2011.

Table 1. Baseline data for cull cattle/processing beef, 2007-2011, with quantities in million pounds carcass weight equivalent

	2007	2008	2009	2010	2011
Consumption	6,539	6,667	6,780	6,804	6,774
Production	3,314	3,509	3,728	3,898	3,943
Imports	3,225	3,157	3,052	2,906	2,831
Exports	0	0	0	0	0
Price ($ per cwt in 2006 dollars)	$99	$94	$91	$92	$91
Price elasticity of supply	0.84	0.84	0.84	0.84	0.84
Price elasticity of demand	-0.40	-0.40	-0.40	-0.40	-0.40

Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch. Based on "USDA Agricultural Baseline Projections to 2015," United States Department of Agriculture, Interagency Agricultural Projections Committee, Baseline Report OCE-2006-1, February 2006. http://www.usda.gov/oce/commodity/ag_baseline.htm

Notes: Consumption is defined as processing beef purchased by U.S. entities at the wholesale level. Production is defined as U.S.-produced processing beef sold at the wholesale level. Quantities of U.S.-produced processing beef are based on cull cow, bull, and stag slaughter projections, as shown in Appendix Table 2. Imports and exports are quantities of processing beef imported and exported by the United States. Projected processing beef prices in this table are real prices expressed in 2006 dollars per cwt. They are nominal processing beef prices that have been deflated using Consumer Price Index projections (Appendix Table 1). The nominal prices are based on [notes to Table 1, continued] 90 percent lean prices derived by multiplying projected Boning Utility Cow, Sioux Falls, prices per cwt (2007, $53.61; 2008, $52.52; 2009, $52.22; 2010, $53.65; and 2011, $54.76) by a factor of 2.56 (ERS Livestock, Dairy, and Poultry Outlook/Agricultural Marketing Service). The 90 percent lean prices are converted to carcass weight equivalent prices by dividing by a factor of 1.36.

Secondary Commodities: Feeder Cattle, Fed Cattle, and Fed Beef. Resumption of cull cattle imports from Canada would affect other cattle imports by influencing the number of younger cattle fed and slaughtered in Canada. Feeding and slaughter of fed cattle can be expected to increase in Canada, and quantities of Canadian feeder cattle, fed cattle, and fed beef imported by the United States would decline. The baselines shown in Tables 2, 3, and 4 are used in the analysis to evaluate the impact of these decreased imports.

The baseline for feeder cattle includes imports from Canada of 302,000 in 2007, 371,000 in 2008, 425,000 in 2009, 440,000 in 2010, and 441,000 in 2011 (Appendix Table 3). The baseline for fed cattle includes imports from Canada of 742,000 in 2007, 731,000 in 2008, 729,000 in 2009, 755,000 in 2010, and 756,000 in 2011 (Appendix Table 3). The baseline for

fed beef includes imports from Canada, in million pounds carcass weight equivalent, of 446 in 2007, 425 in 2008, 420 in 2009, 419 in 2010, and 419 in 2011 (Appendix Table 4).

Table 2. Baseline data for feeder cattle, 2007-2011, with quantities in thousand head

	2007	2008	2009	2010	2011
Consumption	29,546	29,828	29,362	29,309	29,564
Production	28,421	28,650	28,139	28,068	28,279
Imports	1,375	1,428	1,473	1,491	1,535
Exports	250	250	250	250	250
Price ($ per head in 2006 dollars)	$733	$687	$652	$646	$634
Price elasticity of supply	0.40	0.40	0.40	0.40	0.40
Price elasticity of demand	-0.88	-0.88	-0.88	-0.88	-0.88

Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch. Based on "USDA Agricultural Baseline Projections to 2015," United States Department of Agriculture, Interagency Agricultural Projections Committee, Baseline Report OCE-2006-1, February 2006. http://www.usda.gov/oce/commodity/ag_baseline.htm
Notes: Consumption is defined as cattle purchased for U.S. feedlot feeding. Production is defined as U.S.-raised cattle sold for U.S. feedlot feeding. Imports and exports are quantities of cattle imported and exported by the United States for feedlot feeding. Imports include stockers from Mexico, although they are not considered direct substitutes for feeder cattle imported from Canada. Projected feeder cattle prices in this table are real prices expressed in 2006 dollars. They are nominal feeder cattle prices that have been deflated using Consumer Price Index projections (Appendix Table 1). The nominal prices are based on a 750-pound animal and the following projections of Oklahoma City prices per cwt for 750-800 pound steers: 2007, $100.09; 2008, $96.16; 2009, $93.31; 2010, $94.86; and 2011, $95.77 (ERS Livestock, Dairy, and Poultry Outlook/Agricultural Marketing Service).

Table 3. Baseline data for fed cattle, 2007-2011, with quantities in thousand head

	2007	2008	2009	2010	2011
Consumption	27,848	28,306	28,943	28,857	28,874
Production	27,106	27,575	28,214	28,102	28,118
Imports	742	731	729	755	756
Exports	0	0	0	0	0
Price ($ per head in 2006 dollars)	$945	$910	$899	$898	$887
Price elasticity of supply	0.62	0.62	0.62	0.62	0.62
Price elasticity of demand	-0.76	-0.76	-0.76	-0.76	-0.76

Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch. Based on "USDA Agricultural Baseline Projections to 2015," United States Department of Agriculture, Interagency Agricultural Projections Committee, Baseline Report OCE-2006-1, February 2006. http://www.usda.gov/oce/commodity/ag_baseline.htm
Notes: Consumption is defined as fed cattle purchased for U.S. slaughter. Production is defined as U.S.-sourced fed cattle sold for U.S. slaughter. Imports and exports are quantities of fed cattle imported and exported by the United States for slaughter. Projected fed cattle prices in this table are real prices expressed in 2006 dollars. They are nominal fed cattle prices that have been deflated using Consumer Price Index projections (Appendix Table 1). The nominal prices are based on projected average carcass weights (pounds) for the five years of 777, 781, 791, 795, and 800, divided by an average dressing percentage of 0.63, and multiplied by the following projections of Nebraska, Direct, 1100-1300 pounds fed steer prices per cwt: 2007, $78.50; 2008, $77.06; 2009, $76.91; 2010, $78.32; and 2011, $79.10 (ERS Livestock, Dairy, and Poultry Outlook/Agricultural Marketing Service).

Table 4. Baseline data for fed beef, 2007-2011, with quantities in million pounds carcass weight equivalent

	2007	2008	2009	2010	2011
Consumption	21,220	21,624	22,346	22,248	22,238
Production	21,573	22,080	22,894	22,941	23,099
Imports	446	425	420	419	419
Exports	800	880	968	1113	1280
Price ($ per cwt in 2006 dollars)	$142	$135	$131	$133	$132
Price elasticity of supply	0.84	0.84	0.84	0.84	0.84
Price elasticity of demand	-0.60	-0.60	-0.60	-0.60	-0.60

Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch. Based on "USDA Agricultural Baseline Projections to 2015," United States Department of Agriculture, Interagency Agricultural Projections Committee, Baseline Report OCE-2006-1, February 2006. http://www.usda.gov/oce/commodity/ag_baseline.htm
Notes: Consumption is defined as fed beef purchased by U.S. entities at the wholesale level. Production is defined as U.S.-produced fed beef sold at the wholesale level. Quantities of fed beef produced are equal to quantities of fed cattle consumed (Table 2), converted from thousand head to million pounds carcass weight equivalent by multiplying by the following yield ratios: 2007, 0.777; 2008, 0.781; 2009, 0.791; 2010, 0.795; and 2011, 0.800. Imports and exports are quantities of fed beef imported and exported by the United States. Projected [notes to Table 4, continued] fed beef prices in this table are real prices expressed in 2006 dollars per cwt. They are nominal fed beef prices that have been deflated using Consumer Price Index projections (Appendix Table 1). The nominal prices are based on projected choice boxed beef prices per cwt carcass weight equivalent (ERS Livestock, Dairy, and Poultry Outlook/Agricultural Marketing Service).

Projected Imports from Canada for the Modeled Commodities

Expected changes in the supply from Canada (imports with the rule minus imports without the rule) for the modeled commodities are shown in Table 5. These quantities are based on import projections for live cattle as shown in Appendix Table 3. The projected changes in

cattle imports with the proposed rule are expected to vary over the period of analysis and from one type of cattle to the next. The projected changes in beef imports are found in Appendix Table 4. As shown, imports of processing beef from other countries would decline because of displacement by a share of the cull cattle imported from Canada. We convert cull cattle imports from Canada in thousand head to processing beef in million pounds carcass weight equivalent, using projected carcass weights for cows and bulls/stags as described in the notes to Table 5.

Feeder cattle and fed cattle imports are expected to decrease, that is, there would be fewer feeder and slaughter steers and heifers imported with the rule than without the rule. Declines in feeder and fed cattle imports are projected because of the changes in the slaughter mix and export options that the proposed rule would provide to Canadian producers. Resumption of cull cattle exports to the United States would result in increased Canadian slaughter of younger, fed cattle, and the retention and diversion to Canadian establishments of cattle that would otherwise be sold for U.S. feeding.

The changes in imports from Canada projected under the proposed rule, with imports of cull cattle resuming and imports of feeder cattle, fed cattle, and fed beef declining, underscore the expectation that some industries and even entities may both benefit and be harmed by the proposed rule. An increase in a commodity's price because of the proposed rule may cause a welfare loss for a buying entity (for example, an increase in the price of feeder cattle purchased by a feedlot operator), while a price increase for a different commodity may be a source of gain for that same entity (an increase in the price of fed steers and heifers sold by the feedlot operator). We evaluate these impacts in section 3, separately and combined.

Table 5. Changes in imports of feeder cattle, fed cattle, cull cattle/processing beef, and fed beef projected with the proposed rule, 2007-2011

	2007	2008	2009	2010	2011
Feeder cattle from Canada (thousand head)	-113	-196	-258	-262	-262
Fed cattle from Canada (thousand head)	-14	-58	-85	-70	-68
Cull cattle/processing beef (million pounds carcass weight equivalent)					
From Canada	458	403	333	343	346
From Other Countries	-170	-149	-128	-106	-106
Net	288	254	205	237	240
Fed beef from Canada (million pounds carcass weight equivalent)	-75	-35	0	0	0

Source: USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch, based on quantities shown in Appendix Tables 3 and 4.
Notes: Changes in feeder cattle imports from Canada are taken from Appendix Table 3. Changes in fed cattle imports from Canada are composed of slaughter steers and heifers (Appendix Table 3). Changes in cull cattle/processing beef imports from Canada are based on imports of slaughter cows, bulls, and stags (Appendix Table 3), converted from thousand head to million pounds carcass weight equivalent by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909. Changes in processing beef imports from other countries are taken from Appendix Table 4. Changes in fed beef imports from Canada are taken from Appendix Table 4.

Commodities not Modeled

Five other commodity categories are not modeled: breeding cattle, vealers and slaughter calves, bison, bovine casings and small intestine products, and bovine blood and blood products. Breeding cattle include dairy and beef heifers, cows, and bulls. Vealers and slaughter calves include cattle from less than 1 month old up to 8 months, with most between 4 and 5 months of age. Bison refers to both breeding and slaughter bison. Bovine casings are

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intestines, stomachs, esophagi, and urinary bladders from cattle and possibly other bovines that are used to encase processed meats in foods such as sausage. Bovine blood and blood products comprise a number of commodities that include ones used in the preparation of vaccines and drugs, the most important of which is fetal bovine serum.

We use available data to describe expected effects of the proposed rule for these commodities that are not modeled. For bovine casings, small intestine products, and blood and blood products, in particular, our findings are constrained by a scarcity of information. We acknowledge these data deficiencies and invite the public to submit comments that would enable us to more fully evaluate impacts in the regulatory impact analysis for the final rule.

We do not quantitatively model expected effects for breeding cattle, vealers and slaughter calves, bison, bovine casings and small intestine products, and bovine blood and blood products. Changes in import quantities projected under the proposed rule for breeding cattle, vealers and slaughter calves, and bison are very small, suggesting that impacts for U.S. entities would not be significant. For bovine casings and small intestine products and bovine blood and blood products, insufficient information about the commodities and quantities that would be imported and levels of U.S. production and consumption prevents us from modeling expected effects of the rule.

Breeding cattle. To illustrate the relatively small number of breeding cattle that would be imported from Canada, we compare the projected imports to past imports and recent U.S. beef and dairy replacement numbers. We also note that the decision to purchase a breeding animal is largely influenced by the animal's expected productivity and the herd's breeding requirements.

Vealers and slaughter calves. We expect market effects of the proposed rule for vealers and slaughter calves to be insignificant, given the small change in the number projected to be imported from Canada with the rule.

Bison. The net effect of the proposed rule for bison would be to allow importation of Canadian breeding bison to resume, since bison destined for feeding or slaughter (and slaughtered at less than 30 months of age) may already be imported under the BSE minimal-risk regions rule. We compare the small number of Canadian breeding bison projected to be imported to an approximation of the U.S. breeding bison population.

Bovine casings and small intestine products. The proposed rule may affect the U.S. supply of bovine casings and small intestine products directly through resumption of imports from Canada, and indirectly, through changes in U.S. cattle slaughter numbers and the reestablished importation of Canadian bovine small intestines, minus the distal ileum. We present our incomplete understanding of the U.S. market for bovine casings, and request public input in order to improve the analysis of this commodity category for the final rule.

Bovine blood and blood products. Fetal bovine serum is the most important blood product that would be affected by the proposed rule, and the only one for which we have production, consumption, and trade data. This information is much generalized, and we again invite public comment that would enable us to conduct a more complete analysis for the final rule.

3. Expected Impacts of the Proposed Rule for the Modeled Commodities

In this section, we report the results of the analysis for cull cattle/processing beef, feeder cattle, fed cattle, and fed beef. We describe first the price and quantity effects for each of the commodities in terms of average yearly changes over the period of analysis. We then present the welfare impacts, separately and combined. We compare impacts when the displacement of processing beef imports from other countries is assumed to be larger or smaller than the projected levels. Lastly, we consider effects of the rule on the grain production, animal production, and animal products processing industries using a multi-sector model.

Price and Quantity Effects

Cull cattle/processing beef. Results of the analysis show the price of processing beef decreasing in 2007 by 5.3 percent as a result of the proposed rule, from $99 to about $94 per cwt (hundredweight, or 100 pounds) carcass weight equivalent in 2006 dollars (Table 1 and Appendix Table 5). Over the period of analysis, the annual decrease in the price of processing beef, all things equal, is expected to average about 4.3 percent, ranging from declines of $5 per cwt in 2007, to $3 per cwt in 2009.

In response to this price effect, wholesale demand for processing beef would increase by an average of about 114 million pounds per year over the period of analysis, and domestic supply would decrease by an annual average of about 131 million pounds.

Feeder cattle, fed cattle, and fed beef. With the proposed rule, we estimate that the price of feeder cattle would increase in 2007 by about 0.3 percent, from $733 to about $735 per head in 2006 dollars (Table 2 and Appendix Table 6). Over the 5-year period of analysis, the annual increase in feeder cattle prices attributable to the proposed rule, all things equal, is expected to average about 0.6 percent, ranging from about $2.20 per head in 2007, to about

$4.60 per head in 2010. In response to these price increases, there would be an average annual

decrease in the demand for feeder cattle of about 152 thousand head over the period of analysis,

and an average annual increase in domestic supply of about 66 thousand head.

For fed cattle, our analysis indicates that the price would increase by less than 0.1 percent

in 2007 (Appendix Table 7). Over the 5-year period, the annual increase in fed cattle prices

attributable to the proposed rule, all things equal, is expected to average less than 0.2 percent,

ranging in 2006 dollars from 35 cents per head in 2007, to about $1.90 per head in 2009. We

estimate that these small changes in price would cause the demand for fed cattle to decrease by

an average of about 33,000 head per year and the domestic supply of fed cattle to increase by an

average of 26,000 head per year.

Impacts of the proposed rule for fed beef are expected to be very small, with the price

increasing in 2007 by less than 0.3 percent, or about 36 cents per cwt carcass weight equivalent

from a base price of $142 (Table 4 and Appendix Table 8). Over the 5-year period of analysis,

the increase in fed beef prices, all things equal, is expected to average less than 0.1 percent,

with no effect projected for the last three years.

Clearly, the largest price effects would result from the resumption of cull cattle imports,

an expected outcome matched by estimated welfare impacts.

Welfare Effects

Present and annualized values of welfare gains and losses for the 5-year period, 2007-

2011, are computed using 3 percent and 7 percent discount rates. The present and annualized

values are expressed in 2006 and 2001 dollars. As indicated in the notes to Tables 1, 2, 3, and

4, consumption and production have commodity-specific definitions that differ from their

commonly understood meanings. These same definitions hold for the changes in consumer and

producer welfare for the separate commodity categories. As reference, we repeat the

definitions in Table 6, since they are central to interpreting the changes in welfare. As

mentioned, these consumer and producer definitions imply that the proposed rule may have

mixed effects for at least some entities in the affected industries.

Table 6. Definitions of consumers and producers for the modeled commodity
categories

Commodity Category	Consumers	Producers
Feeder cattle	Buyers of cattle for feedlot feeding in the United States	Sellers of U.S.-raised cattle for feedlot feeding in the United States
Fed cattle	Buyers of fed cattle for slaughter in the United States	Sellers of U.S.-sourced fed cattle for slaughter in the United States
Cull cattle/processing beef	U.S. buyers of processing beef at the wholesale level	Sellers of U.S.-produced processing beef at the wholesale level
Fed beef	U.S. buyers of fed beef at the wholesale level	Sellers of U.S.-produced fed beef at the wholesale level

Cull cattle/processing beef. Projected cull cattle imports from Canada are converted to

their processing beef equivalent using projected carcass weights for cows, bulls, and stags, as

shown in the notes to Table 7. Consumers (buyers of processing beef at the wholesale level) can

be expected to benefit from welfare gains and producers (sellers of processing beef at the

wholesale level) can be expected to bear welfare losses due to the cull cattle imports. The

present value of the welfare changes in 2006 dollars when using a 3 percent discount rate would

be $1.24 billion in consumer gains, $657 million in producer losses, for a net benefit of about

$587 million. Annualized values over the five years, in 2006 dollars when using a 3 percent discount rate, would be consumer gains of $271 million, producer losses of $143 million, and net benefits of $128 million.

Table 7. Cull cattle/processing beef: present and annualized values of welfare changes with the proposed rule, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	$1,243,147	-$656,540	$586,607
	7%	$1,120,778	-$590,070	$530,708
2001 Dollars	3%	$1,080,856	-$570,814	$510,043
	7%	$974,488	-$513,038	$461,450
Annualized Value				
2006 Dollars	3%	$271,447	-$143,358	$128,089
	7%	$273,347	-$143,912	$129,435
2001 Dollars	3%	$236,010	-$124,640	$111,370
	7%	$237,669	-$125,125	$112,544

Note: The present and annualized values are taken from Appendix Table 5. Consumers are U.S. buyers of processing beef at the wholesale level; producers are sellers of U.S.-produced processing beef at the wholesale level. Cull cattle imports from Canada in thousand head (quantities of slaughter cows, bulls, and stags in Appendix Table 3) are converted to processing beef in million pounds carcass weight equivalent by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909 (Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch).

Welfare changes for the cull cattle/processing beef category dominate the modeled effects. The relatively large impacts are not unexpected, given that this is the one modeled commodity category for which imports from Canada would be newly reestablished. As shown in Appendix Table 3, the numbers of cull cattle that would be imported with the rule, projected to average 545,000 cows and 66,000 bulls and stags per year, 2007-2011, are much larger than the projected average annual declines in feeder cattle (218,000 head) and fed cattle (59,000 head).

Another reason the welfare effects computed for the cull cattle/processing beef category are large is because of the inelastic demand (-0.40), compared to the price elasticities of demand

for the other modeled commodities (feeder cattle, -0.88; fed cattle, -0.76; fed beef, -0.60). We evaluate the significance of processing beef's more inelastic demand by considering welfare changes for the cull cattle/processing beef category when a price elasticity of demand of -0.60 is used, that is, the same elasticity as for fed beef. The welfare effects, in 2006 dollars, are shown in Appendix Table 9. All impacts—consumer gains, producer losses, net benefits, and price declines—are reduced by nearly one-fifth when a price elasticity of demand of -0.60 is used in place of -0.40. The more inelastic demand, that is, buyers' lower responsiveness to changes in price, is an important determinant of the magnitude of welfare and price changes for the cull cattle/processing beef category.[16] We welcome information that the public may provide that would either support or challenge the elasticities used in analyzing effects for the modeled commodity categories.

Feeder cattle, fed cattle, and fed beef. The welfare changes for feeder cattle are shown in Table 8. Fewer feeder cattle are projected to be imported from Canada with the rule than would enter without the rule, so the model indicates gains in producer welfare (higher prices and less competition from Canadian suppliers) and losses in consumer welfare (higher prices and fewer feeder cattle available for purchase).

The feeder cattle analysis tells us that the present value of the welfare changes in 2006 dollars when using a 3 percent discount rate, for example, would be $494 million in producer gains, $518 million in consumer losses, for a net loss of $24 million. Annualized values over the five years, in 2006 dollars when using a 3 percent discount rate, would be producer gains of $108 million, consumer losses of $113 million, and net losses of $5 million.

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[16] We note that the price elasticity of supply used for cull cattle/processing beef is the same as that for fed beef (0.84), and is more elastic than the supply elasticities for fed cattle (0.62) and feeder cattle (0.40). Assuming a more inelastic supply also would result in larger welfare and price effects for the cull cattle/processing beef category.

Table 8. Feeder cattle: present and annualized values of welfare changes with the proposed rule, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	-$518,352	$494,483	-$23,870
	7%	-$458,949	$437,840	-$21,109
2001 Dollars	3%	-$450,706	$429,954	-$20,752
	7%	-$450,706	$429,954	-$20,752
Annualized Value				
2006 Dollars	3%	--113,184	$107,973	-$5,212
	7%	-$111,933	$106,785	-$5,148
2001 Dollars	3%	-$98,414	$93,883	-$4,531
	7%	-$97,349	$92,873	-$4,477

Note: The present and annualized values are taken from Appendix Table 6. Consumers are buyers of cattle for feedlot feeding in the United States; producers are sellers of U.S.-raised cattle for feedlot feeding in the United States.

Welfare changes expected for fed cattle are shown in Table 9. As with feeder cattle, fewer animals are expected to be imported with the proposed rule than without the rule. Once again producers (sellers of fed cattle for slaughter) would benefit from welfare gains and consumers (buyers of fed cattle for slaughter) would bear welfare losses.

The fed cattle analysis indicates that the present value of the welfare changes in 2006 dollars when using a 3 percent discount rate would be $172 million in producer gains, $176 million in consumer losses, for a net loss of $4 million. Annualized values over the five years, in 2006 dollars when using a 3 percent discount rate, would be producer gains of $37 million, consumer losses of $38 million, and net losses of $1 million.

Table 9. Fed cattle: present and annualized values of welfare changes with the proposed rule, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	-$176,136	$171,791	-$4,345
	7%	-$155,180	$151,352	-$3,828
2001 Dollars	3%	-$153,131	$149,353	-$3,777
	7%	-$134,939	$131,610	-$3,328
Annualized Value				
2006 Dollars	3%	-$38,460	$37,512	-$948
	7%	-$37,839	$36,923	-$917
2001 Dollars	3%	-$33,437	$32,612	-$825
	7%	-$32,910	$32,099	-$812

Notes to Table 9: The present and annualized values are taken from Appendix Table 7. Consumers are buyers of fed cattle for slaughter in the United States; producers are sellers of U.S.-sourced fed cattle for slaughter in the United States.

In Table 10, the welfare changes for fed beef are shown. The proposed rule is projected to result in decreased imports of Canadian fed beef in 2007 and 2008, and then have no effect on fed beef imports in the last three years of the period of analysis. The present value of the welfare changes in 2006 dollars when using a 3 percent discount rate, for example, would be $102 million in producer gains, $104 million in consumer losses, for a net loss of $2 million. Annualized values over the five years, in 2006 dollars when using a 3 percent discount rate, would be producer gains of $22 million, consumer losses of less than $23 million, and net losses of less than $500,000.

Table 10. Fed beef: present and annualized values of welfare changes with the proposed rule, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	-$103,919	$101,928	-$1,991
	7%	-$98,909	$97,014	-$1,895
2001 Dollars	3%	-$90,773	$89,033	-$1,739
	7%	-$86,396	$84,740	-$1,656
Annualized Value				
2006 Dollars	3%	-$22,691	$22,257	-$435
	7%	-$24,123	$23,661	-$462
2001 Dollars	3%	-$19,820	$19,441	-$380
	7%	-$21,071	$20,667	-$404

Note: The present and annualized values are taken from Appendix Table 8. Consumers are U.S. buyers of fed beef at the wholesale level; producers are sellers of U.S.-produced fed beef at the wholesale level.

Combined effects. Effects of the proposed rule for cull cattle/processing beef, feeder cattle, fed cattle, and fed beef are summed in Table 11.

Table 11. Present and annualized values of combined welfare changes for the modeled commodities with the proposed rule, 2007-2011

Present Value	Discount Rate	Changes in Welfare[1]		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	$444,740	$111,662	$556,401
	7%	$407,740	$96,136	$503,876
2001 Dollars	3%	$386,246	$97,526	$483,775
	7%	$302,447	$133,266	$435,714
Annualized Value				
2006 Dollars	3%	$97,110	$24,384	$121,494
	7%	$99,452	$23,457	$122,908
2001 Dollars	3%	$84,339	$21,296	$105,634
	7%	$86,339	$20,514	$106,851

[1] Combined welfare changes for feeder cattle, fed cattle, cull cattle/processing beef, and fed beef.
Note: The present and annualized values are taken from Appendix Table 10.

The analysis tells us that the present value of the welfare changes in 2006 dollars when using a 3 percent discount rate, for example, would be $445 million in consumer gains, $112 million in producer gains, for a total welfare benefit of $556 million. Annualized values over the five years, in 2006 dollars when using a 3 percent discount rate, would be consumer gains of $97 million and producer gains of $24 million, yielding benefits of over $121 million.

By far, the largest effects of the proposed rule would be due to resumption of Canadian cull cattle imports, which would be largest in 2007 and then diminish in subsequent years (Appendix Table 3). As shown in Table 12, the present value of consumer welfare gains for the cull cattle/processing beef category outweighs the combined consumer welfare losses for the other three categories ($1.24 billion in consumer benefits, compared to $798 million in combined consumer losses, in 2006 dollars and discounted at 3 percent). Producer welfare losses attributable to resumption of cull cattle/processing beef imports are smaller in magnitude than the combined producer welfare gains for the other three categories ($657 million in producer losses, compared to over $768 million in combined producer gains).

Table 12. Present values of separate and combined welfare changes with the proposed rule for cull cattle/processing beef, feeder cattle, fed cattle, and fed beef, in 2006 dollars and discounted at 3 percent, 2007-2011

	Cull Cattle/ Processing Beef	Feeder Cattle	Fed cattle	Fed Beef	Combined
		(Thousand Dollars)			
Change in consumer welfare	$1,243,147	-$518,352	-$176,136	-$103,919	$444,740
Change in producer welfare	-$656,540	$494,483	$171,791	$101,928	$111,662
Net change	$586,607	-$23,870	-$4,345	-$1,991	$556,401

Note: Welfare effects are taken from Tables 5, 6, 7, and 8.

We invite public comment on these estimates of welfare changes. In particular, we welcome informed opinion regarding the price elasticities we use in the analysis for cull cattle/processing beef (price elasticity of supply, 0.84; price elasticity of demand, -0.40) that result in the welfare gains for buyers of processing beef being so much larger than the welfare losses for sellers of processing beef.

Appendix Table 10 indicates that producer welfare changes would be negative in 2007 and positive in each of the following four years, 2008-2011. In 2007, producer welfare losses for the cull cattle/processing beef category would be larger than the combined producer welfare gains for the other three commodity categories. For the years 2008-2011, the opposite would occur. Table 11 shows positive changes in producer welfare because welfare gains in 2008-2011 would exceed welfare losses in 2007.

Displacement of Processing Beef Imports from Other Countries

The net impact of cull cattle imports from Canada would depend upon the extent to which they would displace (substitute for) processing beef imports from other countries. About 35 percent of cull cattle imports from Canada over the period of analysis are projected to displace processing imports from other countries and the remainder are projected to contribute to an increase in the U.S. supply of processing beef (respectively, 5-year averages of 132 million pounds and 245 million pounds carcass weight equivalent, Table 5). These projections are based on the expert opinion of staff of the USDA Economic Research Service , Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch. We consider here the effects of extreme displacement possibilities, that is, if either none or all of the Canadian cull cattle imports were to displace processing beef imports from other countries.

Projected imports of cull cattle from Canada are shown in Table 13, together with changes in the U.S. supply of processing beef under the three displacement scenarios: none of the Canadian imports displacing imports from other countries, projected displacement, or all of the Canadian imports displacing imports from other countries. In the third scenario, we assume that the cull cattle imports from Canada would have no impact on the U.S. supply of processing beef.

Table 14 compares the present and annualized values of welfare changes and average annual price changes for the cull cattle/processing beef category under the three displacement scenarios, in 2006 dollars. Discounting at 3 percent, the present value of net welfare benefits for the cull cattle/processing beef category would be about $927 million when no displacement is assumed to occur, compared to net benefits of about $587 million when projected levels of displacement occur, and zero benefits or costs when we assume all imported Canadian processing beef would displace imports from other countries. Annualized net values for the three scenarios, discounted at 3 percent, range from $203 million, to $128 million, to no impact. Over the 5-year period, annual declines in prices would average about $6 per cwt if no displacement were to occur, about $4 per cwt with projected levels of displacement, and there would be no price effect if all processing beef imports from Canada were to displace imports from other countries.

Table 13. Projected imports of cull cattle from Canada with the proposed rule and changes in the U.S. supply of processing beef if (i) none of the cull cattle imported from Canada displace processing beef imported from other countries, (ii) projected displacement occurs, or (iii) all of the cull cattle imported from Canada displace processing beef imports from other countries, 2007-2011, in million pounds carcass weight equivalent

	2007	2008	2009	2010	2011
Projected cull cattle imports from Canada	458	403	333	343	346
Projected processing beef imports from Canada	0	0	0	0	0
Projected displacement of processing beef imports from other countries by processing beef imports from Canada	170	149	128	106	106
Change in U.S. supply if none of the processing beef imports from Canada displace imports from other countries	458	403	333	343	346
Change in U.S. supply of processing beef if projected displacement occurs	288	254	205	237	240
Change in U.S. supply if all of the processing beef imports from Canada displace imports from other countries	0	0	0	0	0

Note: Projected imports of cull cattle are shown in Appendix Table 3. Cull cattle (slaughter cows, bulls, and stags) are converted from thousand head to million pounds carcass weight equivalent by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909 (Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch).

Table 14. Present and annualized values of welfare changes and average annual price changes for cull cattle/processing beef if (i) none of the cull cattle imported from Canada displaces processing beef imported from other countries, (ii) projected displacement occurs, or (iii) all of the cull cattle imported from Canada displace processing beef imports from other countries, in 2006 dollars, 2007-2011

Discount Rate (Percent)	Amount of Imports from Canada assumed to Displace Imports from Other Countries[1]	Changes in Welfare (Thousand Dollars)		
		Consumer	Producer	Net
Present Value				
3	None	$1,928,548	-$1,001,140	$927,408
3	Projected	$1,243,147	-$656,540	$586,607
3	All	$0	$0	$0
7	None	$1,742,482	-$901,619	$840,864
7	Projected	$1,120,778	-$590,070	$530,708
7	All	$0	$0	$0
Annualized Value				
3	None	$421,107	-$218,603	$202,504
3	Projected	$271,447	-$143,358	$128,089
3	All	$0	$0	$0
7	None	$424,975	-$219,896	$205,079
7	Projected	$273,347	-$143,912	$129,435
7	All	$0	$0	$0

Average Annual Price Change and Percentage Price Change

	(Dollars per cwt)	(Percentage)
None	-$6.00	-6.57%
Projected	-$4.00	-4.26%
All	-$0	0%

Note: Annual welfare and price changes for the first two displacement scenarios are shown in Appendix Tables 5 and 11. Prices are in carcass weight equivalent.
[1]Projected displacement quantities for the five years, 2007-2011, in million pounds carcass weight equivalent, are 170, 149, 128, 106, and 106. Displaced quantities for the five years, if all cull cattle imported from Canada were to displace processing beef imports from other countries, would be 458, 403, 333, 343, and 346 (Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch).

It is evident that the extent of import displacement would influence impacts of the proposed rule for the cull cattle/processing beef category. Table 15 shows the significance of the displacement assumption for the combined welfare effects. The larger the quantity of processing beef imports from other countries that would be displaced, the smaller the net benefits. The difference between consumer gains and producer losses would exceed $897 million (discounted at 3 percent) if no displacement of processing beef imports from other countries were to occur. The present value of net benefits would be about $556 million with projected displacement, and about a net welfare loss of $30 million if all of the imported Canadian cull cattle were to displace imports from other countries. In the third scenario, the modeled effects of the rule would be due to changes in the supply of Canadian feeder cattle, fed cattle, and fed beef as a result of the cull cattle imports affecting the slaughter mix in Canada. In this case, consumer welfare losses for these commodities would exceed producer welfare gains, resulting in a net decline in welfare.

Table 15. Present and annualized values of combined welfare changes for the modeled commodities if (i) none of the processing beef imports from Canada displace imports from other countries, (ii) projected displacement occurs, or (iii) all of the processing beef imports from Canada displace imports from other countries, in 2006 dollars, 2007-2011

Discount Rate (Percent)	Amount of Imports from Canada assumed to Displace Imports from Other Countries	Changes in Welfare (Thousand Dollars)		
		Consumer	Producer	Net
Present Value				
3	None	$1,130,141	-$232,938	$897,202
3	Projected	$444,740	$111,662	$556,401
3	All	-$798,407	$768,202	-$30,206
7	None	$1,029,444	-$215,413	$814,032
7	Projected	$407,740	$96,136	$503,876
7	All	-$713,038	$686,206	-$26,832
Annualized Value				
3	None	$246,770	-$50,861	$195,909
3	Projected	$97,110	$24,384	$121,494
3	All	-174,337	167,742	-6,595
7	None	$251,080	-$52,527	$198,552
7	Projected	$99,452	$23,457	$122,908
7	All	-$173,895	$167,369	-$6,527

Note: Values are computed by substituting the welfare effects for the cull cattle/processing beef category shown in Table 14 for the effects shown in Table 7, and then recalculating the combined effects shown in Table 11.

Multi-sector Impacts

Our simple use of the BAS model (without delineation of commodity inputs and substitutes) is appropriate because effects of the rule are expected to be largely commodity-specific. Nonetheless, we present here multi-sector impacts computed using a second partial

equilibrium model.[17] Like the BAS model, it incorporates foreign trade and yields expected

price effects. This model also simulates changes in revenue. Unlike the BAS model, it does not

allow for computation of welfare changes.

The multi-sector model maps interactions among the grain, animal, and animal products

industries. Its mathematical relationships describe the use of feeds to produce cattle, swine,

sheep, and poultry, and the subsequent production of beef, milk, pork, lamb meat, poultry meat,

and eggs. Five crops, wheat, coarse grains, soybeans, rice, and forage, are included in the model.

The model takes into account substitution among livestock products in response to relative price

changes. Effects of changes in the supply or demand for the inputs or products of a particular

sector can be traced to the other sectors.

Our results show for the combined livestock, feed, and grain sectors, an estimated decline

in gross revenues with the proposed rule of less than one percent in 2007. For the beef and cattle

sectors, the gross revenue declines are also less than one percent. The analysis indicates declines

of less than one percent, as well, in cattle and beef prices in 2007.

As expected, these simulated impacts are small because they describe effects for

aggregated commodity groupings (all cattle production and all beef production are grouped

within single categories) and because of the linkages specified between the livestock production

and processing sectors that allow for greater flexibility in adjusting to supply shocks. The larger

effects for cull cattle/processing beef computed using the BAS model are subsumed within a

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[17] Three examples of studies based on this type of model are: Paarlberg, P.L. "Agricultural Export Subsidies and Intermediate Goods Trade," *American Journal of Agricultural Economics*. 77, 1(1995): 119 - 128. Paarlberg, P.L., J.G. Lee, and A.H. Seitzinger. "Potential Revenue Impact of an Outbreak of Foot-and-Mouth Disease in the United States," *Journal of the American Veterinary Medical Association*. 220, 7(April 1, 2002): 988 - 992. Sanyal, K.K. and R.W. Jones.   "The Theory of Trade in Middle Products," *American Economic Review*. 72(1982): 16 - 31.

combined beef sector in this multi-sector model. These results support our expectation that

broader impacts of the proposed rule would be limited.

4. Expected Impacts for Commodities not Modeled

In this section we evaluate expected effects of the rule for the commodity categories not modeled: breeding cattle, vealers and slaughter calves, bison, bovine casings and small intestine products, and bovine blood and blood products.

Breeding Cattle

Breeding cattle are expected to comprise only about 4 percent of the cattle imported from Canada under the proposed rule (Table 16). In contrast to the feeder and slaughter cattle markets, the demand for breeding cattle depends on considerations of herd composition and future productivity. While variations in the price of breeding stock influence the quantity demanded, their purchase is ultimately an investment decision based on expected net returns over several years. In turn, an individual cow-calf producer's prospects are related to whether herds in general are expanding or contracting as reflected by the nation's cattle cycle. A dairy farmer needing a replacement heifer is unlikely to wait long for a more favorable price before making the purchase.

Table 16. Average annual cattle imports from Canada, 1992-2002, and projected with the rule, 2007-2011

	Average Annual Imports 1992-2002	Percentage of Imports 1992-2002	Percentage of Breeding Cattle Imports 1992-2002	Projected Average Annual Imports 2007-2011	Projected Percentage of Imports 2007-2011	Projected Percentage of Breeding Cattle Imports 2007-2011
	(Head)			(Head)		
Breeding						
Dairy Heifers/Cows	44,500	3.6%	86.4%	46,800	3.6%	85.7%
Beef Heifers/Cows	4,300	0.3%	8.3%	4,800	0.4%	8.8%
Bulls	2,800	0.2%	5.3%	3,000	0.2%	5.5%
Breeding Total	51,600	4.1%	100.0%	54,600	4.2%	100.0%
Slaughter	1,028,400	82.2%		1,053,200	81.9%	
Stocker/Feeder	171,000	13.7%		177,600	13.8%	
Total	1,251,000	100.0%		1,285,400	100.0%	

Sources: For 1992-2002 averages, Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics. http://www.fas.usda.gov/ustrade/. For 2007-2011 projected averages, Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch.

Projected imports of breeding cattle from Canada over the 5-year period, 2007-2011, closely match historic levels, as shown in Table 16. About 86 percent of the breeding cattle that would be imported under the proposed rule are expected to be dairy cows and heifers. (Between 1992 and 2002, dairy cows and heifers comprised from 78 to 92 percent of annual breeding cattle imports from Canada.) About 9 percent of breeding cattle imports are expected to be beef cows and heifers, and bulls (dairy and beef) would comprise the remaining 5 percent.

Breeding cattle imports in 2007 are projected to number 58,000 head (Appendix Table 3). This quantity would be about 10 percent more than in subsequent years of the analysis, with the larger number in 2007 attributable to the inventory build-up since May 2003. The lowest level of breeding cattle imports is projected to occur in 2009 (51,000 head). Once the U.S. and Canadian livestock markets return to historic trading patterns, we expect imports of Canadian breeding stock to generally range between 54,000 and 56,000 head per year for the foreseeable future.

From 1992 to 2002, U.S. producers annually raised about 5.9 million beef replacement heifers and about 4.1 million dairy replacement heifers (Table 17). The average number of Canadian breeding cattle imported during that period (including bulls) totaled only 0.5 percent of these combined quantities, a percentage that would be even smaller if domestic cows and bulls that were purchased as replacement animals were included in the comparison. The breeding cattle imports from Canada during this period represented about 0.8 percent of dairy heifer replacements and 0.1 percent of beef heifer replacements.

In sum, we do not expect the resumption of breeding cattle imports from Canada to significantly affect the U.S. market for these animals. The number that would be imported under

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the proposed rule is small in comparison to projected cattle imports from Canada overall (4 percent) and even smaller in comparison to the number of replacement breeding heifers supplied

Table 17. Breeding cattle: average annual imports from Canada and average annual U.S. heifer replacements, 1992-2002

	Average Annual Imports from Canada (Head)	Average Annual U.S. Heifer Replacements (Head)	Imports from Canada as a Percentage of U.S. Heifer Replacements
Dairy Heifers/Cows	44,500	5,886,000	0.8%
Beef Heifers/Cows	4,300	4,079,000	0.1%
Bulls	2,800	N/A	
Total	51,600	9,965,000	0.5%

Sources: Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics. http://www.fas.usda.gov/ustrade/; and National Agricultural Statistics Service (NASS), United States Department of Agriculture, U.S. and All States Data – Cattle and Calves. http://www.nass.usda.gov/

on average by U.S. producers (0.5 percent). Breeding cattle imported from Canada would augment the U.S. breeding herd very slightly. Demand for these animals, like the demand for breeding cattle generally, would derive from management decisions based on herd composition and expected future returns, with price variations influencing secondarily the quantity of breeding cattle purchased. Our expectation that impacts for U.S. entities of resumption of breeding cattle imports from Canada would be minor is supported by a recent study that concluded that prior to the May 2003 discovery of BSE in Canada, imports of Canadian dairy cattle had insignificant effects on the U.S. cow herd, dairy heifer prices, and milk prices.[18]

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[18] Al Mussell, Graeme Hedley, Don Ault, and David Bullock, "Role and Impact of Renewed Canada – US Trade in Dairy Heifers and Dairy Breeding Stock," George Morris Centre, Informa Economics, February 2006. http://www.informaecon.com/

<u>Vealers and Slaughter Calves</u>

Young cattle sold for meat are divided into vealers and slaughter calves, based on their type of feeding and age.[19] Vealers that have subsisted largely on milk usually are less than three months of age. Animals that have been raised on milk replacer rations are usually older. Calves are usually between 3 and 8 months of age, have subsisted partially or entirely on feeds other than milk or milk replacers for a substantial period of time, and have developed the physical characteristics associated with maturity beyond the vealer stage.

The proposed rule is expected to have a small effect on the number of vealers and slaughter calves imported from Canada. A decline in imports is projected in each year of the period of analysis, when compared to quantities that would be imported without the rule (Appendix Table 3), as Canadian slaughter patterns adjust to reestablished export opportunities for cull cattle. These annual declines with the proposed rule range from a decrease of 4,000 head projected for 2007, to declines of 15,000 head projected for 2009 and 2010. Over the 5-year period of analysis, an average of 11,800 fewer vealers and slaughter calves are projected to be imported annually with the proposed rule than would be imported without the rule.

For the 10-year period, 1994-2003, slaughter of vealers and calves in the United States averaged 1,297,000 head per year.[20] We expect annual U.S. vealer and calf slaughter during the period of analysis to be similar. On this basis, the average annual decrease in vealer and slaughter calf imports from Canada under the proposed rule would be equal to less than 1 percent of U.S. vealer and calf slaughter (11,800/1,297,000 = 0.009). Any effect on vealer and slaughter calf prices because of the smaller number expected to be imported would not be significant.

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[19] USDA Agricultural Marketing Service, United States Standards for Vealers and Slaughter Calves, http://www.ams.usda.gov/lsg/stand/standards/sl-v&c.pdf. Information on vealers and slaughter calves in this paragraph is taken from this source.
[20] ERS Red Meat Yearbook, http://www.ers.usda.gov/data/sdp/view.asp?f=livestock/94006/

Bison

The current bison industry in North America has a relatively young history, emerging in the 1960s and expanding rapidly in the 1980s and 1990s.[21] In the late 1990s, prices for bison climbed rapidly as new operations competed for breeding stock to build their herds. By 1998, bison prices had reached such levels that many producers could not afford new stock. At the same time, there was an imbalance in demand for bison meat; the more expensive tenderloins and strip steaks were in demand by restaurants, but there was relatively little demand for the less expensive roasts and ground meat. In 1999, the industry entered a 4-year decline, with bison prices falling dramatically at the same time that producers faced a sustained period of drought. Beginning in 2003, the industry has once again entered a period of growth and profitability.

Like the cattle industry, the commercial bison industry is comprised primarily of cow-calf operations that sell weaned calves to other operations for finishing and processing. A smaller number of producers specialize in raising breeding stock. The 2002 Census of Agriculture reported a total of 4,132 bison producers in the United States, who owned 231,950 head of bison. The 2002 Census also reported that 1,734 producers (42 percent) sold 57,210 head of bison (25 percent of inventory). There are approximately 230,000 bison on 1,900 farms in Canada.[22]

Bison are raised in every state, with production concentrated in the High Plains. South Dakota and North Dakota have the largest bison populations, with 40,168 and 30,856 head, respectively, in 2002. Besides the Dakotas, Colorado, Minnesota, Montana, Nebraska,

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[21] Much of the information presented on the bison industry is taken from the Web-site of the National Bison Association, http://www.bisoncentral.com/
[22] http://www.agr.gc.ca/redmeat/documents/factsheet05.pdf

Oklahoma, and Wyoming each contained bison populations of more than 12,000 animals in 2002. North Dakota also boasts the largest bison slaughter plant in the country.[23]

U.S. bison imports from Canada, 1996-2005, are shown in Table 18. Annual imports increased from 1,149 head in 1996 to 4,490 head in 1999, reflecting the industry's expansion during that time. Imports fell to an average of 2,400 per year in 2001 and 2002, and were then prohibited due to the May 2003 BSE discovery. In 2002, bison imports from Canada represented about 1 percent of the U.S. bison inventory.

In July 2005, promulgation of the BSE minimal-risk regions rule lifted restrictions on bison imported and slaughtered at less than 30 months of age. There were 3,513 bison imported from Canada by the end of 2005. This increase in 2005 imports over recent annual import levels (and higher-than-average monthly imports in 2006) are at least partly attributable to the accumulation of slaughter bison in Canada during the U.S. ban on ruminant imports.

Annual data on U.S. bison slaughter are only available since 2000. As shown in Table 18, the number of bison slaughtered doubled between 2000 and 2005, and has averaged about 33,500 head for the past three years.

We expect imports of Canadian bison to continue to be high in 2007 and 2008, as producers draw down additional inventory of slaughter bison. Projected imports total 4,000 head in 2007, 3,150 head in 2008, and 2,500 head each year thereafter. Each year, 250 head of breeding bison are projected to be imported. The remainder would be mainly bison for immediate slaughter (2,500 head in 2007, 2,400 head in 2008, and 2,000 head in each of the following years), with a lesser number of feeders (1,250 head in 2007, 500 head in 2008, and 250 head in each year thereafter).

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[23] James G. Robb, Livestock Marketing Information Center, personal communication.

Table 18. Bison imports from Canada, 1996-2005, U.S. bison inventory, 2002, and U.S. bison slaughter, 2000-2005, number of head

Year	Imports from Canada	U.S. Bison Inventory	U.S. Bison Slaughter
1996	1,149	---	---
1997	2,011	---	---
1998	2,737	---	---
1999	4,490	---	---
2000	3,913	---	17,674
2001	2,485	---	19,483
2002	2,306	231,950	25,340
2003	991	---	34,804
2004	0	---	30,135
2005	3,513	---	35,649

Sources: Imports from Canada: U.S. Bureau of the Census; U.S. inventory: USDA NASS 2002 Census of Agriculture; U.S. federally inspected slaughter: USDA NASS, "Livestock Slaughter," annual summary issues.

The 2,500 bison projected to be imported for immediate slaughter in 2007 would represent about 7 percent of the U.S. bison slaughter total in 2005. We assume most if not all of these slaughter bison (as well as the 1,250 head projected to be imported in 2007 for feeding) would be slaughtered at less than 30 months of age, that is, they would be of the same age as Canadian bison that are currently allowed to be imported. Thus, the only change in bison imports in 2007, as well as in subsequent years, under the proposed rule would be imports of 250 head of breeding bison.

Yearly imports from Canada of 250 head of breeding bison would augment the U.S. bison breeding herd only slightly. They would annually represent only about two-tenths of one percent of U.S. breeding bison, assuming the composition of the national bison herd is similar to

that of the national cattle herd, with breeding stock (cows, replacement heifers, and bulls) constituting about 56 percent of the animals.[24]

As the market for bison meat becomes better established, the demand for breeding stock will continue to strengthen. The projected imports of breeding bison under the proposed rule would help meet this growing demand. However, they would constitute a very small addition to the U.S. breeding herd. Any effects on bison prices and the welfare of U.S. bison producers are expected to be insignificant.

Bovine Casings and Small Intestine Products

The proposed rule may affect the U.S. supply of bovine casings and small intestine products in three ways: by allowing importation of bovine casings from Canada; by allowing importation of Canadian bovine small intestines, minus the distal ileum, that are used to make certain casings and variety meats; and by reducing restrictions on live bovine imports from Canada and thereby changing the U.S. supply of bovine products in general, including intestines and other material used to produce casings and variety meats.[25] We have been unable to acquire much of the information that would be necessary to assess expected effects of the proposed rule on the U.S. casings and variety meats industries. Our intent in this section is to present our current understanding of possible impacts of the rule, identify data gaps, and request that knowledgeable parties submit information in comment on the proposed rule that would enable us to prepare a more complete analysis for the final rule.

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[24] January 1, 2006, cattle inventory: out of a total of 97,101,500 head, there were 42,311,400 cows and heifers that calved, 10,182,500 replacement heifers, and 2,262,800 bulls 500 pounds and over (http://www.nass.usda.gov:8080/QuickStats/PullData_US). The combined breeding cattle stock totaled 54,756,700 head, or 56.4 percent of the national herd. Annual imports of 250 head of breeding bison / (232,000 [2002 U.S. bison inventory] x 0.564) = 0.2 percent of the approximated U.S. breeding bison population.

[25] Variety meats, a catch-all term, refers primarily to the organs, feet, and tails of slaughtered livestock. The proposed rule would result in an increase in the U.S. supply of bovine byproducts in general, due to reestablished imports of Canadian cull cattle exceeding projected declines in imports of Canadian feeder and fed cattle. We include in this discussion the expected increase in the U.S. supply of small intestine-derived casings and variety meats so as to complete our consideration of sources of impact for this commodity category.

U.S. supply of bovine small intestines. Animal casings are defined in the CFR as intestines, stomachs, esophagi, and urinary bladders from cattle, sheep, swine, or goats that are used to encase processed meats in foods such as sausage.[26] The three most widely used types of bovine casings are beef bung caps, beef rounds, and beef middles.[27] They come from different parts of the animal's intestinal tract and, because of differing diameters and perhaps other characteristics, are used in the production of different types of sausages.

Beef rounds are derived from the small intestine and their name refers to the intestine's round or ring shape. The bovine small intestine is also used in the preparation of certain variety meats. For most of 2004 and 2005, U.S. supplies of beef rounds and small intestine-derived variety meats were constrained by BSE-related restrictions on the use of the small intestine for human food, as described here.

Following detection of BSE in an imported dairy cow in Washington State in December 2003, the Secretaries of USDA and Health and Human Services announced a series of regulatory actions and policy changes to strengthen protections against the spread of BSE in U.S. cattle and against human exposure to the BSE agent. On January 12, 2004, USDA's Food Safety and Inspection Service (FSIS) issued three interim final rules, one of which was aimed at minimizing human exposure to BSE specified risk materials (SRMs). This rule designated certain materials from cattle as SRMs, declared that SRMs are inedible, and prohibited the use of these materials for human food.[28] Among the materials identified as SRMs was the distal ileum of the small intestine. To ensure effective removal of the distal ileum, FSIS required that the entire small intestine be removed and disposed of as inedible.

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[26] 9CFR 96.1. http://www.gpoaccess.gov/cfr/index.html
[27] International Natural Sausage Casing Association, http://www.insca.org/
[28] 9 CFR 310.22(a) and 9 CFR 310.22(b). http://www.gpoaccess.gov/cfr/index.html

On July 14, 2004, the Food and Drug Administration (FDA) issued an interim final rule that extended the FSIS measures to FDA-regulated human food and cosmetics.[29] FDA designated the distal ileum of the small intestine from cattle as an SRM, and, as had FSIS, prohibited the use of the entire small intestine for human food.

In September 2005, FSIS and FDA published amendments to their interim final rules that became effective October 7, 2005. The FSIS amendment permits beef small intestine, excluding the distal ileum, to be used for human food. The FDA amendment permits the manufacture and use of beef casings derived from beef small intestine, excluding the distal ileum, for human food and cosmetics.[30]

One source of information on the supply of small intestine for U.S. bovine casings and variety meats production is the Preliminary Regulatory Impact Analysis (PRIA) that was prepared for the interim final rules issued by FSIS on January 12, 2004.[31] FSIS determined that the quantity of bovine small intestine produced in the United States in 2002 (and that would have been excluded by the interim final rule from the human food supply) was about 160 million pounds, including the distal ileum.[32] The PRIA approximated that of the 160 million pounds of small intestine, about 102 million pounds were used to produce casings and about 58 million

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[29] "Prohibited cattle materials; use" *Federal Register*, Vol. 69, No. 134; July 14, 2004, 42255-42274. http://www.access.gpo.gov/su_docs/fedreg/a040714c.html

[30] Meat and poultry inspection: "Specified risk materials use for human food, prohibition; and non-ambulatory disabled cattle," disposition requirements, 53043-53050; Food and cosmetics: "Cattle materials," prohibited use, 53063-53069; *Federal Register*, Vol. 70, No. 172; September 7, 2005. http://www.access.gpo.gov/su_docs/fedreg/a050907c.html

[31] "Preliminary Analysis of Interim Final Rules and an Interpretive Rule to Prevent the BSE Agent from Entering the U.S. Food Supply," http://www.fsis.usda.gov/Frame/FrameRedirect.asp?main=http://www.fsis.usda.gov/OPPDE/rdad/FRPubs/Docs_03-025IF.htm. The PRIA examined expected economic effects of the interim rule's requirement that the entire small intestine be removed and disposed of as inedible.

[32] The computations used to arrive at this approximated quantity included an average weight of the small intestine including the distal ileum (11 pounds for a 1,250-pound bovine) multiplied by the number of slaughtered cattle from which the small intestine would be taken for human food (14,535,000 head). This number of cattle was based on an FSIS 2002 survey and slaughterhouse site visits.

pounds were used in the production of variety meats. In fact, these numbers were overstated by about 15 percent because of tissue condemnations for disease and contamination.[33] In addition, the distal ileum comprises about 10 percent of the small intestine, according to industry sources.[34] Adjusting for the condemnations and removal of the distal ileum, about 76.5 million pounds and 43.5 million pounds of bovine small intestine, respectively, are approximated to have been used in 2002 to produce beef rounds and variety meats in the United States, or about 120 million pounds total.

To approximate the change in the U.S. supply of bovine small intestine used for casings and variety meats production under the proposed rule, we assume the relationship between the quantity of bovine small intestine used and the number of cattle slaughtered over the period of analysis, 2007-2011, would be similar to the relationship described in the PRIA for 2002. In 2002, there were 35,735,000 head of cattle slaughtered in the United States.[35] The 120 million pounds of bovine small intestine minus the distal ileum approximated as having been used that year to produce casings and variety meats yields a ratio of 3.4 pounds per head of cattle slaughtered (including cattle from which the small intestine was not used).

Increases in U.S. slaughter projected with the proposed rule are shown in Table 19. Using the ratio 3.4 pounds per animal slaughtered, we calculate that with the rule the annual supply of bovine casings and variety meats produced from small intestines would increase on average over the period of analysis by about 1.6 percent. The largest increase would occur in 2007, with production of 2.5 million pounds of additional small intestine for use as casings and variety meats. These supply projections presume a ready market for these products.

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[33] James Wilkus, FSIS, personal communication.
[34] Ibid.
[35] USDA ERS, Red Meat Yearbook, http://www.ers.usda.gov/data/sdp/view.asp?f=livestock/94006/

With the rule, the supply of bovine bladders and of other parts of the bovine intestinal tract may increase by similarly small percentages. We do not have a basis for approximating the additional quantities of bung caps and middles that may be produced, but as with the supply of beef rounds and small intestine-derived variety meats, we expect that the amounts would be relatively small.

Table 19. Annual increases in U.S. production of bovine small intestine used to produce casings and variety meats, 2007-2011, based on changes in fed and cull cattle imports projected under the proposed rule

Year	Cattle Slaughter (Thousand Head)			Approximated Increase in the Supply of Small Intestine Used for Casings and Variety Meats (pounds)	Percentage Increase in the Supply of Small Intestine Used for Casings and Variety Meats
	Baseline	With the Rule	Change		
2007	33,315	34,052	737	2,505,800	2.2%
2008	34,069	34,668	599	2,036,600	1.8%
2009	35,022	35,477	455	1,547,000	1.3%
2010	35,184	35,668	484	1,645,600	1.4%
2011	35,228	35,714	486	1,652,400	1.4%

Notes: Cattle slaughter baseline numbers are taken from Table 2 for fed cattle and from Appendix Table 2 for cull cattle. Cattle slaughtered with the rule include the net change in imports from Canada (excluding vealers and slaughter calves), as shown in Appendix Table 3. This calculation does not take into account possible changes in the supply of U.S.-sourced slaughter cattle because of price changes attributable to the rule, and also ignores effects of changes in feeder cattle imports on subsequent slaughter totals. Based on 2002 data compiled by FSIS, the total quantity of bovine small intestine used to produce casings and variety meats divided by the total number of cattle slaughtered yields 3.4 pounds of small intestine minus the distal ileum per animal slaughtered. We assume that this same ratio would hold during the period of analysis.

Finally, the U.S. supply of bovine intestines used to produce casings and variety meats may be affected by the importation of Canadian bovine small intestines under the proposed rule. Among commodities currently allowed to be imported from Canada, as a region presenting a minimal risk of introducing BSE into the United States, are bovine meat, meat byproducts, and meat food products that meet certain conditions.[36] One of the import conditions is the

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[36] "Bovine Spongiform Encephalophy; Minimal-Risk Regions and Importation of Commodities;" Final Rule. *Federal Register*, Vol. 70, No. 2; January 4, 2005, 460-553. http://www.access.gpo.gov/su_docs/fedreg/a050104c.html

requirement that the SRMs and small intestine be removed at slaughter.[37] The proposed rule

would allow importation of bovine small intestine minus the distal ileum that could then be

processed into casings and variety meats in the United States. APHIS does not have information

on the potential volume of bovine small intestine for making casings and variety meats that may

be imported from Canada because of the proposed rule. We welcome information that would

enable us to evaluate effects on the U.S. supply of bovine small intestine of allowing their

importation from Canada.

Bovine casings from Canada. The importation of bovine and other ruminant casings,

except stomachs, is prohibited if the casings originated in or were processed in any region listed

in 9 CFR 94.18(a).[38] The proposed rule would allow the importation of bovine casings from

minimal-risk regions, and would therefore allow their entry from Canada to resume.[39]

The Agency does not have information on levels of production or consumption of bovine

casings in the United States, and trade data for bovine and ovine casings cannot be

disaggregated. U.S. imports and exports of bovine casings are classified in the Harmonized

Tariff Schedule under HS 0504.00.0040, as non-hog guts, bladders, and stomachs of animals

prepared for use as sausage casings. The trade data do not distinguish between bovine and ovine

casings; import and export quantities and prices for bovine casings alone are not available.[40]

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[37] Other conditions are that meat, meat byproducts, and meat food products must be derived from bovines that have
been subject to a ruminant feed ban and for which an air-injected stunning process was not used at slaughter.
[38] 9 CFR 96.1(b). The one exception is sheep casings from BSE minimal-risk regions, if the sheep are less than 12
months of age at slaughter and had been subject to a ruminant feed ban. Part 94.18(a) lists regions where BSE
exists; regions that, because of import requirements less restrictive than those that would be acceptable for import
into the United States and/or because of inadequate surveillance, present an undue risk of introducing BSE into the
United States; and BSE minimal-risk regions. http://www.gpoaccess.gov/cfr/index.html
[39] Bovine casings produced from the small intestine minus the distal ileum (as well as other types of bovine casings)
would be allowed to be imported from certified establishments in Canada listed by FSIS in 9 CFR 327.2(b) as
eligible to export meat products to the United States. http://www.gpoaccess.gov/cfr/index.html
[40] Venita Powell, U.S. Department of Commerce, personal communication.

Considering the combined trade in bovine and ovine casings, we find that over the 10-year period, 1995-2004, U.S. annual imports ranged from approximately 3,160 MT to 4,240 MT (average: about 3,500 MT), with values ranging from $18.5 million to $33.5 million (average: $24 million). U.S. imports from Canada of bovine and ovine casings over the 4-year period, 1995-1998, averaged 231 MT, and were valued at about $1.7 million (7 percent of U.S. imports of bovine and ovine casings for that period). Over the following four years, 1999-2002, there was a significant decline in non-hog casings imports from Canada. The annual quantity averaged about 99 MT (3 percent of U.S. imports of bovine and ovine casings) and had an average value of about $220,000 (1 percent of U.S. imports of bovine and ovine casings). With the BSE discoveries, bovine and ovine casings imports from Canada declined further, to 22 MT in 2003 and only 2 MT in 2004. In 2005, there were no reported imports of non-hog casings from Canada.

With regard to bovine and ovine exports by the United States, annual quantities over the 10-year period, 1995-2004, ranged from about 2,630 MT to about 7,470 MT (average: about 4,360 MT), with annual values ranging from $14.8 million to $29.6 million (average: $22.8 million). Over this same 10-year period, U.S. bovine and ovine casings exports to Canada averaged about 478 MT (11 percent of exports of bovine and ovine casings), valued at $4.9 million (21 percent of exports of bovine and ovine casings). In 2005, non-hog casings exports to Canada totaled 258 MT and were valued at $2.7 million.

We reiterate that we do not have information on the quantities of bovine casings produced and consumed in the United States. Nor do we have information on the bovine share of U.S. trade in bovine and ovine casings. We welcome information that the public may provide

that would enable us to better understand the U.S. bovine casings industry and levels of historic trade in bovine casings between the United States, Canada, and the world.

In summary, the rule is expected to have an impact on the U.S. casings and variety meats industries by affecting the supply of bovine intestines used to make these products and, for the casings industry, by allowing resumption of imports of bovine casings from Canada. We expect the change in the supply of bovine intestines to be small. With the rule, we approximate that the annual increase in the supply of bovine small intestines from U.S. slaughter used to make beef rounds and small intestine-derived variety meats would range between 0.6 and 1.0 percent over the 5-year period of analysis, that is, between approximately 740,000 pounds and 1.1 million pounds. We are prevented from conducting a more complete analysis by the lack of specific information on U.S. production, consumption, and trade of bovine casings.

Bovine Blood and Blood Products

Imports of bovine blood and blood products from Canada were prohibited following the May 2003 BSE discovery. The proposed rule would allow these imports to resume. The primary commodities affected would be products used in the manufacture of vaccines and drugs.

We have been unable to acquire much of the information that would be necessary to assess effects of the proposed rule for U.S. drug and vaccine manufacturers. As with the discussion of effects for bovine casings, we present our limited understanding of possible impacts of the proposed rule and request public comment that would enable us to prepare a more complete analysis for the final rule.

Blood and blood products can be divided into two main groups: whole blood and products derived from blood that are composed of cells; and plasma-derived products including

serum, clotting factors, immunoglobulins and albumin.[41] Plasma is the cell-free portion of the

blood. Serum is plasma with fibrinogen and clotting factors removed.

A range of blood products theoretically could be used in preparing drugs and vaccines,

but only fetal bovine serum (FBS), derived from blood plasma from bovine fetuses, and bovine

serum albumin derived from adult and calf serum are used in significant amounts.[42] Fetal bovine

serum and sometimes bovine serum albumin are used in tissue culture media and to produce

pharmaceuticals and biologics. FBS is the most important blood-derived material in human and

animal vaccine and drug manufacture, and is therefore our focus.

Since the detection of BSE in Canada in 2003, imports of FBS from Canada have been

restricted to either research samples of Canadian-origin FBS (limited to 1 liter per shipment), or

FBS that is derived from animals that originate in the United States, Australia, Mexico, or

Central America and is processed at a designated Canadian facility under USDA permit.

Research samples are restricted to in vitro testing and evaluation, and must be destroyed

following such work.

Demand for FBS continues to expand. While exact numbers are not available, one source

using industry information placed world production and consumption of FBS at 500,000 liters in

1994, and at 700,000 liters in 2004. This same source indicated that in 2004 the United States

and Canada combined produced 300,000 liters and consumed 425,000 liters.[43]

U.S. imports of FBS have grown considerably in the last five years. In 2005, the United

States imported approximately 180,000 liters of FBS valued at $46.8 million. This is down from

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[41] Farshid, M., R.E. Taffs, D. Scott, D.M. Asher, and K. Brorson. (2005). "The clearance of viruses and transmissible spongiform encephalopathy agents from biologicals." *Current Opinion in Biotechnology*. 16: 561-567. http://www.current-opinion.com/jbio/about.htm?jcode=jbio

[42] Fetal bovine serum is also called fetal calf serum.

[43] Biotrade, Inc. "Fetal Bovine Serum: Proposal to allow importation from South America," Proposal submitted to USDA/APHIS, 2005.

$63.2 million in 2004, but up from $16.8 million in 2001. More than 78 percent of FBS imports in 2005 were from Australia, Mexico and New Zealand (Table 20).

The proposed rule may affect the supply of FBS in the United States in two ways: by allowing the importation of Canadian-origin FBS for commercial purposes, and by reducing restrictions on bovine imports from Canada and thereby changing the U.S. supply of pregnant cows presented for slaughter.

Table 20. Source and value of U.S. imports of fetal bovine serum, 2001-2005

Source	2001	2002	2003	2004	2005
			(Million Dollars)		
Australia	9.1	8.2	13.9	37.6	25.9
Mexico	0.1	3.9	6.6	11.1	7.5
Canada	3.7	1.9	1.3	5.4	6.3
Central America	2	3.4	4.3	4.5	3.8
New Zealand	1.1	3	7.3	4.5	3.2
Other	0.8	0.5	0.1	0.2	0.1
TOTAL	16.8	20.9	33.5	63.2	46.8

Source: Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics, as reported by Global Trade Information Services.

From 1996 through 2005, cow slaughter averaged 5.8 million head in the United States, and 0.5 million head in Canada.[44] Based on combined U.S. and Canadian FBS production of 300,000 liters and assuming a consistent relationship between FBS production and cow slaughter yields an annual level of Canadian FBS production of about 24,000 liters.[45] This amount represents potential imports of FBS derived from Canadian cows.   Had this amount been imported in 2005, it would have represented about 13 percent of U.S. imports of FBS from all sources.[46]

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[44] Foreign Agricultural Service, USDA. http://www.fas.usda.gov/ National Agricultural Statistics Service, USDA. http://www.nass.usda.gov/
[45] 300,000 liters of FBS from 6.3 million slaughtered cows yields 0.048 liters of FBS per cow slaughtered. 500,000 cows slaughtered in Canada * 0.048 liters per cow = 24,000 liters.
[46] 24,000 liters / 180,000 liters of U.S. imports of FBS = 13 percent.

In addition, because the proposed rule is projected to increase annual U.S. cow slaughter by between 481,000 and 670,000 head over the period of analysis (see Appendix Table 3), we expect that FBS production in the United States would also increase. Again assuming a consistent relationship between cow slaughter and FBS production, an increase in annual domestic production of FBS of between 23,000 and 32,000 liters may occur.[47]

Other than for these upper-bound approximations, we are unable to project the extent to which the U.S. supply of FBS may be affected by the proposed rule. FBS quality varies, and is defined in relation to the performance of the specific cell line being cultured.[48] A given source may provide FBS useful for one purpose and not another. Nonetheless, resumption of FBS imports from Canada, directly as serum and indirectly through increased U.S. pregnant cow slaughter, is expected to benefit FBS users.

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[47] 481,000 cows slaughtered * 0.048 liters per cow = 23,088 liters; 670,000 cows slaughtered * 0.048 liters per cow = 32,160 liters.
[48] Biotrade, Inc. "Fetal Bovine Serum: Proposal to allow importation from South America," Proposal submitted to USDA/APHIS, 2005.

5. Expected Impacts of an Alternative to the Rule

An alternative to the proposed rule considered by APHIS would be to allow resumption of live bovine imports from BSE minimal-risk regions with no restriction by date of birth. In other words, Canadian bovines could be imported for any destination or purpose without regard to their age. Regulations governing their importation would be similar to those that existed prior to Canada's May 2003 BSE discovery, but with the addition of current and proposed BSE-related requirements other than a maximum age restriction. These regulations include requirements that imported cattle be permanently marked as to country of origin and that they be individually identified to allow an animal to be traced back to its premises of origin.

Cattle Imports from Canada

In Table 21, projected imports under the alternative are compared to projected imports if no regulatory action were taken (baseline import quantities) and to projected imports under the proposed rule.[49] The alternative would allow entry of bovines born before the date specified in the proposed rule as when a ruminant-to-ruminant feed ban in Canada was effectively enforced: March 1, 1999. For convenience, we refer to these animals as older cull cattle.

Under the proposed rule, cattle that are 8 years or older prior to March 1, 2007 would be prohibited. Each year thereafter, the prohibited older cull cattle would comprise a smaller age group: 9 years or older prior to March 1, 2008, 10 years or older prior to March 1, 2009, and so forth. Within a few years, the proposed rule's requirement that bovines be born on or after March 1, 1999, would not limit bovine imports from Canada; bovine imports allowed under the proposed rule and the alternative would be the same.

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[49] We assume the quantities of bison that would be imported under the proposed rule and under this alternative would be much the same.

Table 21. Projected imports of Canadian feeder cattle, fed cattle, cull cattle/processing beef, and fed beef: baseline, proposed rule, and alternative of no restriction by date of birth on live bovine imports, 2007-2011

	2007	2008	2009	2010	2011
Feeder cattle from Canada (thousand head)					
Baseline	302	371	425	440	441
Proposed Rule	189	175	167	178	179
Alternative	189	175	167	178	179
Fed cattle from Canada (thousand head)					
Baseline	742	731	729	755	756
Proposed Rule	728	673	644	685	688
Alternative	728	673	644	685	688
Cull cattle from Canada, net of imports assumed to displace processing beef imports from other countries (million pounds carcass weight equivalent)					
Baseline	0	0	0	0	0
Proposed Rule	288	254	205	237	240
Alternative	360	318	205	237	240
Fed beef from Canada (million pounds carcass weight equivalent)					
Baseline	446	425	420	419	419
Proposed Rule	371	390	420	419	419
Alternative	371	390	420	419	419

Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch.
Note: For the cull cattle/processing beef category, cull cattle imports are converted from thousand head to million pounds carcass weight equivalent for 2007-2011 by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909.

Projected imports of Canadian feeder cattle, fed cattle, and fed beef are the same under

the proposed rule and under the alternative. In both cases, feeder and fed cattle imports would be

fewer than would enter without the rule, and fed beef imports would be less in the first two years of the period of analysis. The only difference between imports under the proposed rule and under the alternative is with respect to cull cattle imports projected for 2007 and 2008. Under the alternative, imports of cull cattle are projected in these two years to be one-fourth greater, net of displaced processing beef imports, than they would be under the proposed rule. The older cull cattle that would be imported under the alternative would total 168,000 cows and 20,000 bulls and stags in 2007, and 147,000 cows and 18,000 bulls and stags in 2008. These older cull cattle would yield 72 million pounds and 64 million pounds of processing beef, carcass weight equivalent, for the two years.

Price and welfare effects under the alternative would differ from effects under the proposed rule only for the cull cattle/processing beef category. These effects, assuming projected displacement of processing beef imports from other countries by cull cattle imports from Canada as shown in Table 5, are presented in Appendix Table 12.

Table 22 shows the present and annualized values of welfare changes under the alternative for the cull cattle/processing beef category. The present value of the welfare changes (2006 dollars, 3 percent discount rate) would be $1.4 billion in consumer gains, $731 million in producer losses, for a net benefit of about $667 million. Annualized values over the five years would be consumer gains of $305 million, producer losses of $160 million, and net benefits of $146 million.

Table 22. Alternative of no restriction by date of birth on live bovine imports: present and annualized values of welfare changes for cull cattle/processing beef, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	$1,397,680	-$730,800	$666,880
	7%	$1,267,061	-$660,333	$606,728
2001 Dollars	3%	$1,215,348	-$635,446	$579,902
	7%	$1,101,796	-$574,189	$527,606
Annualized Value				
2006 Dollars	3%	$305,190	-$159,573	$145,617
	7%	$309,025	-$161,049	$147,976
2001 Dollars	3%	$265,377	-$138,752	$126,624
	7%	$268,718	-$140,039	$128,678

Note: The present and annualized values are taken from Appendix Table 12. Consumers are U.S. buyers of processing beef at the wholesale level; producers are sellers of U.S.-produced processing beef at the wholesale level. Cull cattle imports from Canada in thousand head (slaughter cows, bulls, and stags quantities in Appendix Table 3) are converted to processing beef in million pounds carcass weight equivalent by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909.

To exemplify the differences in welfare effects between the alternative and the proposed rule for the cull cattle/processing beef category, we compare in Table 23 their present and annualized values in 2006 dollars when discounted at 3 percent. Compared to effects under the proposed rule, consumer welfare gains under the alternative would be 12.4 percent larger, producer welfare losses would be 11.3 percent larger, and net benefits would be 13.7 percent larger. We note also small differences in price effects. The annual decrease in processing beef prices under the alternative over the 5-year period, all things equal, is computed to average $4.80 per cwt, compared to an average annual decrease of $4.00 under the proposed rule (Appendix Tables 5 and 12).

Combined welfare effects under the alternative for the modeled commodity categories are shown in Appendix Table 13. The present value of the welfare changes in 2006 dollars when

using a 3 percent discount rate, for example, would be $601 million in consumer gains, $42 million in producer gains, for a combined welfare benefit of $643 million. Annualized values over the five years, in 2006 dollars when using a 3 percent discount rate, would be consumer gains of $131 million, producer gains of $9 million, and net benefits of $140 million.

Table 23. Present and annualized values of welfare changes for cull cattle/processing beef, with the alternative and with the proposed rule, 3 percent discount rate, 2006 dollars, 2007-2011

		Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
Present Value	Alternative	$1,397,680	-$730,800	$666,880
	Proposed Rule	$1,243,147	-$656,540	$586,607
	Difference	$154,533	-$74,260	$80,273
Annualized Value	Alternative	$305,190	-$159,573	$145,617
	Proposed Rule	$271,447	-$143,358	$128,089
	Difference	$33,743	-$16,215	$17,528
Difference as a percentage of welfare changes with the proposed rule		12.4%	11.3%	13.7%

Note: The present and annualized values are taken from Tables 7 and 22.

In Table 24, we compare present and annualized values of combined welfare changes under the alternative and under the proposed rule. Net welfare benefits would be 15 to 16 percent larger under the alternative than would be realized under the proposed rule. For example, the annualized net benefit (2006 dollars, 3 percent rate of discount) would be $140 million under the alternative, compared to $121 million under the proposed rule.

Table 24. Present and annualized values of combined welfare changes for the modeled commodities, with the alternative and with the proposed rule, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars				
Alternative rule	3%	$601,042	$41,976	$643,018
Proposed rule	3%	$444,740	$111,662	$556,401
Difference	3%	$156,302	-$69,686	$86,617
Alternative rule	7%	$555,589	$29,915	$585,504
Proposed rule	7%	$407,740	$96,136	$503,876
Difference	7%	$147,849	-$66,221	$81,628
2001 Dollars				
Alternative rule	3%	$522,276	$36,870	$559,149
Proposed rule	3%	$386,246	$97,526	$483,775
Difference	3%	$136,030	-$60,656	$75,374
Alternative rule	7%	$482,671	$26,471	$509,142
Proposed rule	7%	$302,447	$133,266	$435,714
Difference	7%	$180,224	-$106,795	$73,428
Annualized Value				
2006 Dollars				
Alternative rule	3%	$131,241	$9,168	$140,407
Proposed rule	3%	$97,110	$24,384	$121,494
Difference	3%	$34,131	-$15,216	$18,913
Alternative rule	7%	$135,512	$7,306	$142,817
Proposed rule	7%	$99,452	$23,457	$122,908
Difference	7%	$36,060	-$16,151	$19,909
2001 Dollars				
Alternative rule	3%	$114,042	$8,052	$122,092
Proposed rule	3%	$84,339	$21,296	$105,634
Difference	3%	$29,703	-$13,244	$16,458
Alternative rule	7%	$117,720	$6,457	$124,174
Proposed rule	7%	$86,339	$20,514	$106,851
Difference	7%	$31,381	-$14,057	$17,323

Note: The present and annualized values for the proposed rule are taken from Appendix Table 10 and for the alternative to the rule from Appendix Table 13.

Impacts under the alternative and under the proposed rule would also differ for some of the commodities not modeled. For example, we would expect the supply of bovine casings to be larger with the alternative, due to larger projected slaughter numbers.

BSE Risk

As described in the risk assessment for the proposed rule, transmission of BSE requires that bovines ingest feed that contains the infectious agent.[50] Feed contamination results from the incorporation of ingredients that contain certain ruminant protein derived from infected animals. Standard rendering processes do not completely inactivate the BSE agent. Therefore, rendered protein such as meat-and-bone meal derived from infected animals may remain contaminated. Prohibitions on the use of ruminant protein in ruminant feed are imposed by the Food and Drug Administration to mitigate the risk of BSE transmission.

The World Organization for Animal Health establishes standards for the international trade in animals and animal products. It recommends that cattle be imported from a region that has reported an indigenous case of BSE only if the cattle selected for export were born after the date from which a ban on the feeding of ruminants with meat-and-bone meal and greaves (the residue left after animal fat or tallow has been rendered) derived from ruminants had been effectively enforced.[51]

On August 4, 1997, Canada issued regulations prohibiting the use of mammalian protein in ruminant feeds.[52] Implementation of the feed ban was a gradual process, with producers, feed mills, retailers, and feed manufacturers given grace periods before they were required to be in full compliance with the regulations. It is believed that this implementation period may have

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[50] APHIS, Veterinary Services. "Assessment of Bovine Spongiform Encephalopathy (BSE) risks associated with the importation of certain commodities from BSE minimal risk regions (Canada)," October 27, 2006.
[51] http://www.oie.int/eng/normes/Mcode/en_chapitre_2.3.13.htm
[52] The ban provided exceptions for milk, blood, gelatin, and protein derived solely from porcine or equine sources.

lasted six months, making February 1998 a more realistic date on which the ban can be considered to have gone into effect.

The likelihood that Canadian cattle born after February 1998 would be exposed to the BSE agent continues to decrease over time. APHIS considers that a period of one year following the full implementation of the feed ban allows sufficient time for the measures taken by Canada to have their desired effect. Therefore, APHIS concludes that cattle born on or after March 1, 1999 are unlikely to have been exposed to the BSE agent via feed and can be imported into the United States for any purpose with a low risk that they will be infected with the BSE agent.

We do not have a quantitative estimate of the additional risk posed by importation of Canadian cattle born before March 1, 1999. The importance of a feed ban as a risk mitigation measure is demonstrated in science and experience, and is incorporated into the World Organization for Animal Health feed ban recommendation. As reported in the risk assessment for the proposed rule, the precipitous decline in BSE cases in the United Kingdom after 1987 is directly attributable to implementation of a ban that year on using ruminant meat-and-bone meal in ruminant feed. We conclude that there may be some degree of increased risk of BSE introduction under the alternative, compared to the minimal risk posed by the proposed rule, because of the greater likelihood of the older cull cattle having been exposed to infectivity. While our analysis indicates larger net welfare benefits may be realized under the alternative of no restriction by date of birth on live bovine imports, the proposed rule is preferable because it would pose a lower risk of BSE introduction into the United States and would be consistent with demonstrated science and experience of the World Organization for Animal Health.

6. Expected Impacts Assuming Resumption of Processing Beef Imports from Canada

Current regulations require that imported Canadian cattle be slaughtered at less than 30 months of age and that imported Canadian beef come from cattle slaughtered at less than 30 months of age. Our analysis assumes no imports of processing beef from Canada. In this section, we consider effects if imports of Canadian beef from cattle slaughtered at 30 months or older were to resume at the same time that the proposed rule is finalized.

Importation of ruminant products and byproducts was included in the BSE minimal-risk regions final rule, and this proposed rule would not change regulations regarding the importation of beef from Canada.[53] However, in March 2005, APHIS published amendments to that final rule to delay until further notice the applicability of provisions of the rule pertaining to bovine meat, meat byproducts, whole and half carcasses, and certain other bovine products.[54] This partial delay of applicability of the BSE minimal-risk regions rule prohibits importing these products when derived from bovines 30 months of age or older when slaughtered.

Canadian boneless beef and certain other products derived from bovines slaughtered at less than 30 months of age had been allowed to be imported by permit since August 2003. In July 2005, the scope of allowed imports was broadened to include additional bovine meat and meat byproducts when the Ninth Circuit Court of Appeals reversed a preliminary injunction issued by the District Court for Montana that had prohibited implementation of the BSE minimal-risk regions rule.[55] However, bovine commodities that are imported must still come

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[53] "Bovine Spongiform Encephalophy; Minimal-Risk Regions and Importation of Commodities;" Final Rule. *Federal Register*, Vol. 70, No. 2; January 4, 2005, 460-553.
http://www.access.gpo.gov/su_docs/fedreg/a050104c.html

[54] "Bovine Spongiform encephalopathy; minimal-risk regions and commodities importation;" Partial delay of applicability. *Federal Register*, Vol. 70, No. 47; March 11, 2005, 12112-12113.
http://www.access.gpo.gov/su_docs/fedreg/a050311c.html

[55] http://www.ca9.uscourts.gov/ca9/newopinions.nsf/3A12983071711CF4882570490055E969/$file/0535264.pdf?openelement

only from Canadian animals slaughtered at less than 30 months of age, and they must be accompanied by certification that the age requirement is satisfied.

As discussed, the United States is a large importer of processing beef, with Australia, New Zealand, and Uruguay currently our primary suppliers. Over the period of analysis, total processing beef imports are projected to provide about 45 percent of U.S. consumption of processing beef (decreasing from 49 percent in 2007 to 42 percent in 2011). In this section, we assume annual imports of Canadian processing beef, 2007-2011, would average 240 million pounds carcass weight equivalent, of which about two-thirds would displace processing beef imports from other countries and about one-third would represent a net increase in U.S. supply. It is further assumed under this scenario that the Canadian cull cattle imported would not displace processing beef imports from other countries.

The import quantities and extent of displacement are projections made by staff of the USDA Economic Research Service (ERS), Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch, based on their expert opinion and reference to the "USDA Agricultural Baseline Projections to 2015," United States Department of Agriculture, Interagency Agricultural Projections Committee, Baseline Report OCE-2006-1, February 2006.

The net addition of processing beef from Canada would be equivalent to 2.8 percent of projected baseline imports (without the rule) over the period of analysis, or 1.3 percent of U.S. supply. When the processing beef produced from projected cull cattle imports from Canada is included, the increase in the U.S. supply of processing beef under this scenario would be equivalent to 4.3 percent of projected imports without the proposed rule.

<u>Price and Welfare Effects for Cull Cattle/Processing Beef</u>

Projected imports of cull cattle and processing beef from Canada under this scenario are compared in Table 25 to projected imports of cull cattle alone used to evaluate the proposed rule.

Table 25. Scenario comparison of quantities of (i) cull cattle alone and (ii) cull cattle and processing beef projected to be imported from Canada, net of displaced processing beef imports from other countries, 2007-2011, in million pounds of processing beef, carcass weight equivalent

Year	Cull Cattle Only	Cull Cattle and Processing Beef
2007	288	339
2008	254	299
2009	205	242
2010	237	279
2011	240	282

Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch.
Notes: Cull cattle are converted to processing beef by multiplying by the following carcass weights (pounds) for cows and bulls/stags, respectively: 2007, 576 and 888; 2008, 579 and 893; 2009, 583 and 899; 2010, 586 and 904; and 2011, 590 and 909. All of the quantities that follow are expressed in million pounds of processing beef, carcass weight equivalent. For the cull cattle imports only scenario, the quantities are based on projected imports of slaughter cows, bulls, and stags as shown in Appendix Table 3, and are equivalent to: 2007, 458; 2008, 403; 2009, 333; 2010, 343; and 2011, 346. These quantities are reduced by the following projected displaced processing beef imports from other countries: 2007, 170; 2008, 149; 2009, 128; 2010, 106; and 2011, 106. For the scenario that assumes importation from Canada of both cull cattle and processing beef, quantities of cull cattle imported are: 2007, 214; 2008, 199; 2009, 192; 2010, 204; and 2011, 207. Projected processing beef imports are: 2007, 325; 2008, 275; 2009, 200; 2010, 200; and 2011, 200. Combined cull cattle and processing beef imports are 2007, 539; 2008, 474; 2009, 392; 2010, 404; and 2011, 407. These quantities are reduced by the following projected displaced processing beef imports from other countries: 2007, 200; 2008, 175; 2009, 150; 2010, 125; and 2011, 125.

Results of the analysis show the price of processing beef decreasing in 2007 by 6.3 percent under this scenario, from $99 to about $93 per cwt carcass weight equivalent in 2006 dollars (Table 1 and Appendix Table 14). Over the period of analysis, the annual decrease in processing beef prices because of the proposed rule, all things equal, is expected to average about 5 percent, ranging from about $6.20 per cwt in 2007, to about $3.80 per cwt in 2009.

As shown in Table 26, the present value of the welfare changes in 2006 dollars when using a 3 percent discount rate would be $1.47 billion in consumer gains, $770 million in producer losses, for a net benefit of about $695 million. Annualized values over the five years, in 2006 dollars when using a 3 percent discount rate, would be consumer gains of $320 million, producer losses of $168 million, and net benefits of $152 million.

Table 26. Cull cattle/processing beef: present and annualized values of welfare changes assuming cull cattle imports and processing beef imports from Canada would resume at the same time, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	$1,465,829	-$770,389	$695,440
	7%	$1,321,580	-$692,393	$629,187
2001 Dollars	3%	$1,274,467	-$669,797	$604,670
	7%	$1,149,081	-$602,002	$547,078
Annualized Value				
2006 Dollars	3%	$320,071	-$168,218	$151,853
	7%	$322,321	-$168,868	$153,453
2001 Dollars	3%	$278,286	-$146,253	$132,033
	7%	$280,250	-$146,823	$133,427

Note: The present and annualized values are taken from Appendix Table 14.

Compared to impacts for the cull cattle/processing beef category when only cull cattle would enter (Table 7), this scenario would result in consumer welfare gains larger by 17.9 percent, producer welfare losses larger by 17.3 percent, and net benefits larger by 18.6 percent.

Combined Welfare Effects for the Modeled Commodities

Combined effects under this scenario for cull cattle/processing beef, feeder cattle, fed cattle, and fed beef are shown in Table 27.

Table 27. Present and annualized values of combined welfare changes for the modeled commodities, assuming cull cattle imports and processing beef imports from Canada would resume at the same time, 2007-2011

Present Value	Discount Rate	Changes in Welfare		
		Consumer	Producer	Net
		(Thousand Dollars)		
2006 Dollars	3%	$669,191	$2,387	$671,578
	7%	$610,108	-$2,145	$607,963
2001 Dollars	3%	$581,395	$2,519	$583,917
	7%	$529,956	-$1,342	$528,614
Annualized Value				
2006 Dollars	3%	$146,122	$523	$146,643
	7%	$148,808	-$513	$148,294
2001 Dollars	3%	$126,951	$551	$127,501
	7%	$129,252	-$327	$128,923

Note: The present and annualized values are taken from Appendix Table 15.

Removal of the delay of applicability, thereby allowing importation of Canadian beef from cattle slaughtered at 30 months or older, is a decision that will be taken at the discretion of the Secretary of the U.S. Department of Agriculture.

7. Initial Regulatory Flexibility Analysis

The Regulatory Flexibility Act requires agencies to evaluate the potential effects of their proposed and final rules on small businesses, small organizations and small governmental jurisdictions. Section 603 of the Act requires agencies to prepare and make available for public comment an initial regulatory flexibility analysis (IRFA) that describes expected impacts of a proposed rule on small entities. Section 603(b) of the Act specifies that an IRFA shall contain:

- A description of the reasons why action by the agency is being considered;

- A succinct statement of the objectives of, and legal basis for, the proposed rule;

- A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;

- A description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;

- An identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap or conflict with the proposed rule;

- A description of any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities.

Reasons for the Action

In the BSE minimal-risk regions rule, APHIS amended the CFR regarding the importation of animals and animal products by establishing a category of regions that present a minimal risk of introducing BSE into the United States through live ruminants and ruminant

products and byproducts. The Agency set conditions for the importation of certain live

ruminants and ruminant products and byproducts from such regions, and named Canada as a

BSE minimal-risk region.

APHIS proposes to remove certain restrictions on the importation of certain bovine

commodities from BSE minimal-risk regions. The Agency has determined that the restrictions

are unnecessary for maintaining a minimal risk of introduction of BSE into the United States

from such regions.

Objectives and Legal Basis

We are proposing to allow the following commodities to be imported from Canada under

specified conditions (in addition to commodities currently allowed to be imported from BSE

minimal-risk regions):

- Live bovines that were born on or after March 1, 1999;

- Bovine small intestines, minus the distal ileum;

- Bovine casings; and

- Bovine blood and blood products.

The legal basis for the rule can be found at 7 U.S.C. 450, 1622, 7701-7772, 8301-8317;

21 U.S.C. 136 and 136a; 31 U.S.C. 9701; 42 U.S.C. 4331 and 4332; and 7 CFR 2.22, 2.80,

371.4.

Small Entities that May Be Affected

We have described in this preliminary regulatory impact analysis expected effects of the

proposed rule for certain bovine commodities. Categories of commodities included in the

analysis are feeder cattle, fed cattle, cull cattle/processing beef, fed beef, breeding cattle, vealers

and slaughter calves, bison, bovine casings and small intestine products, and bovine blood and

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blood products. Small entities comprise the majority of the establishments engaged in the production, processing, or sale of these commodities, as shown in Table 25. These small entities number in the hundreds of thousands, with beef and dairy producers comprising the largest share.

Impacts of the proposed rule for small entities—even entities within the same industry—may be both positive and negative, because of the various commodities that may be affected. Overall, both consumers and producers area expected to benefit from the proposed rule (Table 11). We summarize here some of the principal expected impacts for the affected industries. We welcome information that the public may provide that would allow us to better understand possible effects and their magnitudes. Prices in the following discussion are in 2006 dollars and beef prices are expressed in hundredweight (cwt) carcass weight equivalent, unless indicated otherwise.

Beef and dairy producers. Cow-calf beef and dairy producers may be affected by resumption of breeding cattle imports from Canada under the proposed rule. As shown in Table 25, the small-entity definition for beef cattle and dairy producers is annual receipts of not more than $750,000. According to the 2002 Census of Agriculture, annual receipts for beef cattle producers averaged about $29,200 for those operations with reported sales, well below the small-entity threshold.[56] In the same year, annual receipts for dairy farmers averaged about $31,000 from the sale of cattle and calves and about $265,700 from the sale of milk and other dairy products.[57] Average receipts for dairy operations, while much larger than those for cow-calf beef producers, were still well below the small-entity threshold of $750,000 per year.

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[56] USDA, NASS. 2002 Census of Agriculture, Volume 1, Chapter 1, Table 16.
http://www.nass.usda.gov/Census_of_Agriculture/index.asp
[57] USDA, NASS. 2002 Census of Agriculture, Volume 1, Chapter 1, Table 17.
http://www.nass.usda.gov/Census_of_Agriculture/index.asp

Table 28. Small entity representation in industries that may be affected by the proposed rule

Industry (NAICS code)[1]	Small-entity Definition	Total Number of Establishments	Number of Small Entities	Percentage of Establishments that are Small Entities
Beef Cattle Ranching and Farming (112111)	≤ $750,000 annual receipts	657,015	> 655,757	> 99.8%
Dairy Cattle and Milk Production (112120)	≤ $750,000 annual receipts	75,645	>72,743	>96.2%
All Other Animal Production (112990)	≤ $750,000 annual receipts	1,734 [2]	Unknown	Unknown
Cattle Feedlots (112112)	≤ $2,000,000 annual receipts	88,199	Unknown	Unknown
Animal (except Poultry) Slaughtering (311611)	≤ 500 employees	1,728	1,689	97.7%
Meat Processed from Carcasses (311612)	≤ 500 employees	1,142	1,073	94.0%
Meat and Meat Product Merchant Wholesalers (424470)	≤ 100 employees	3,004	>2,425	>80.7%
Supermarkets and Other Grocery (except Convenience) Stores (445110)	≤ $25,000,000 annual receipts	62,934	>38,943	>61.9%
Meat Markets (445210)	≤ $6,500,000 annual receipts	6,467	>5,861	>90.6%
In-Vitro Diagnostic Substance Manufacturing (325413)	≤ 500 employees	175	145	82.9%
Biological Product (except Diagnostic) Manufacturing (325414)	≤ 500 employees	242	215	88.8%

Sources: U.S. Small Business Administration, Office of Advocacy, based on data provided by the U.S. Census Bureau, Statistics of U.S. Businesses; USDA NASS, 2002 Census of Agriculture, Volume 1, Chapter 1, Tables 16, 17, and 32; USDA NASS "Cattle on Feed," February 24, 2006.
[1] North American Industry Classification System. http://www.sba.gov/size/sizetable2002.html
[2] Bison producers with reported sales in 2002.

For Beef Cattle Ranching and Farming, Dairy Cattle and Milk Production, and Bison Production, number of establishments and number of small entities only include those establishments that reported sales in 2002. Numbers of establishments and small entities for dairy producers are based on dairy product sales. We are unable to approximate the number of small-entity bison producers. The average number of bison sold in 2002 by establishments with reported sales was about 33 head. Clearly, most bison production is by small entities. For Cattle Feedlots, data are unavailable on the number of establishments with annual receipts of not more than $2 million. Over 97 percent of feedlots (86,000 of 88,199) had capacities of fewer than 1,000 head in 2005, and the majority of these are likely to be small entities. For Meat and Meat Product Merchant Wholesalers, data are unavailable on the number of establishments with 100 or fewer employees; of the industry's 3,004 establishments, 2,425 had 20 or fewer employees. For Supermarkets and Other Grocery Stores, data are unavailable on the number of establishments with annual receipts of not more than $25 million; 61.9 percent of establishments had annual receipts of less than $10 million. For Meat Markets, data are not available on the number of establishments with annual receipts of not more than $6.5 million; 90.6 percent of establishments had annual receipts of less than $5 million.

As described in section 4, reestablished breeding cattle imports from Canada under the proposed rule are expected to be very small in comparison to the number of replacement breeding heifers supplied on average by U.S. producers (one-half of one percent). Breeding cattle imported from Canada would augment the U.S. breeding herd only slightly, providing buyers with an additional source of breeding stock while having a very minor effect on prices.

Beef cattle and dairy producers may be affected by the proposed rule in other ways. We project fewer feeder cattle imported from Canada with the rule than without the rule, implying less competition for those producers that sell cattle for feeding. The rule would also permit cattle to be imported from Canada as stockers for backgrounding on pasture. The resumption of stocker imports would benefit buyers of these younger, lighter animals, and result in additional competition for U.S. sellers of such cattle.

Our analysis indicates that over the period of analysis, 2007-2011, the annual increase in the price of cattle purchased by feedlots would average $3.88 per head, or about 0.6 percent (Appendix Table 6). To place this average percentage price increase in perspective, we consider the effect it would have on gross earnings of small-entity beef cow herds. Based on data from the 2002 Census of Agriculture, the average value of cattle and calves sold by small-entity beef

cow operations was about $26,600.[58] A price increase of 0.6 percent would correspond to an increase in annual revenue of about $160, assuming the number of cattle marketed remained unaffected by the change in price.[59]

For dairy enterprises that sell cattle for feeding, the rule will have an even smaller effect because most revenue (over 86 percent in 2002) is earned from the sale of milk and other dairy products.[60] The average per animal value of cattle and calves sold by small-entity diary cow operations in 2002 was about $453. A price increase of 0.6 percent would mean an increase in annual revenue for the average small-entity dairy operation of about $133, assuming no change in the number of cattle sold.[61] This gain would be less than 0.1 percent increase in average revenue.[62]

These examples abstract from the wide range in size of small-entity beef and dairy cattle herds, but do illustrate the small effect the rule is expected to have, on average, with respect to the feeder cattle market. Just as the price increase would result in a small welfare gain for producers selling feeder cattle, it also would represent a small welfare loss for small-entity feedlot operators buying feeder cattle.

Small-entity beef cattle and dairy producers would also be affected by imports of Canadian cull cattle: cows, bulls, and stags for slaughter at 30 months of age and older. Yearly imports of Canadian cull cattle, 2007-2011, are projected to average 545,000 cows and 66,000 bulls and stags (Appendix Table 3). These import quantities would equal about 10 percent and

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[58] USDA, NASS. 2002 Census of Agriculture, Volume 1, Chapter 1, Table 16. The $ 26,000 average is for operations with fewer than 1,000 head. http://www.nass.usda.gov/Census_of_Agriculture/index.asp
[59] ($26,600) (0.006) = $160.
[60] USDA, NASS, 2002 Census of Agriculture, Volume 1, Chapter 1, Table 17. For small-entity producers, revenue from cattle and calf sales totaled $1.7 billion and revenue from dairy product sales totaled $11.2 billion. http://www.nass.usda.gov/Census_of_Agriculture/index.asp
[61] In 2002, the average revenue from cattle sales for small-entity dairy operations was $22,197 ($453 per head multiplied by 49 head). ($22,197)(0.006) = $133.
[62] $133 divided by $175,912 (average income for small dairy farms from combined diary product and cattle sales) equals 0.08 percent.

12 percent, respectively, of average annual baseline cow and bull/stag slaughter in the United States projected for the same period (Appendix Table 2). All things equal, the increased supply of slaughter cattle would lead to a decline in their price, and consequent welfare losses for producers marketing cull cattle (and welfare gains for slaughtering establishments afforded the additional supply). Cull cattle sales are generally a less critical source of income for beef cattle and dairy producers than are sales of steers, heifers, and dairy products.

Effects of the proposed rule on imports of Canadian vealers and slaughter calves are not expected to measurably impact the welfare of producers that sell them. Over the 5-year period of analysis, an average of 11,800 fewer Canadian vealers and slaughter calves are projected to be imported annually under the proposed rule, a number equivalent to less than 1 percent of historical U.S. vealer and calf slaughter (see section 4).

Bison producers. We do not have information on the number of bison enterprises that are small entities. We believe that the composition of the bison industry is very much like that of the beef cattle industry, with the overwhelming majority of operations small entities. The 2002 Census of Agriculture reported a total of 4,132 bison producers in the United States, owning 231,950 head of bison. The Census also reported that 1,734 producers (42 percent) sold 57,210 head of bison (25 percent of inventory) that year.

Projected imports total 4,000 head in 2007, 3,150 head in 2008, and 2,500 head each year thereafter. Each year, 250 head of breeding bison are projected to be imported. The remainder would be mainly bison for immediate slaughter (2,500 head in 2007, 2,400 head in 2008, and 2,000 head in each of the following years), with a lesser number of feeders (1,250 head in 2007, 500 head in 2008, and 250 head in each year thereafter).

The 2,500 bison projected to be imported for immediate slaughter in 2007 would represent about 7 percent of the U.S. bison slaughter total in 2005. We assume most if not all of these slaughter bison (as well as the 1,250 head projected to be imported in 2007 for feeding) would be slaughtered at less than 30 months of age, that is, they would be of the same age as Canadian bison that are currently allowed to be imported. Thus, the only change in bison imports in 2007 and subsequent years under the proposed rule would be annual imports of 250 head of breeding bison. As described in section 4, the imported Canadian breeding bison would annually represent only about two-tenths of one percent of the U.S. breeding bison, assuming the composition of the national bison herd is similar to that of the national cattle herd.

Data on bison prices from the fall 2004 and spring 2005 show that 2-year-old breeding bulls were selling for about $2,000 each at auction, and prices for 2-year-old bred heifers averaged about $1,000 per animal.[63] Assuming Canadian breeding bison imports to be about 70 percent female and 30 percent male, the total value of annual imports would be about $325,000, based on the prices for the 2-year-olds.[64]

The bison industry is currently strengthening, and the imported Canadian breeding bison would help meet rising demand for breeding stock. However, they would constitute a very small addition to the U.S. breeding herd.

Feedlot establishments. We do not know the number of feedlots with annual receipts of not more than $2 million, the small-entity criterion. In 2005, over 97 percent of feedlots had capacities of fewer than 1,000 animals. Given an average projected price for fed cattle during the period of analysis of about $908 per head in 2006 dollars (Table 3), the average feedlot would need to feed and sell fewer than 2,200 head per year in order to qualify as a small entity.

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[63] http://www.bisoncentral.com/doc_lib/2005WebSaleResults.pdf
[64] Gender percentages approximated by USDA ERS. (175 females) ($1,000 per female) + (75 males) ($2,000 per male) = $325,000.

Assuming 2.5 inventory turns per year, only feedlots with capacities of at least 880 animals would be able to feed and sell 2,200 or more cattle per year. Reasonably, the majority of feedlots are most likely small establishments with inventory capacities of fewer than 880 animals.

Cattle imports from Canada under the proposed rule may have opposing effects for feedlot facilities. We project both fewer feeder cattle imports and fewer fed cattle imports with the rule than without the rule. All things equal, fewer feeder cattle would mean a smaller supply and higher purchase prices for feedlot operators; fewer fed cattle would mean a smaller supply and higher selling prices for these same operators.

The annual increase in feeder cattle prices, 2007-2011, would average $3.88 per head, or about 0.6 percent (Appendix Table 6). For this same period, the annual increase in fed cattle prices would average $1.36 per head, or less than 0.2 percent (Appendix Table 7). Thus, the proposed rule may result in a small net welfare loss for the average small-entity feedlot operator.[65]

The effect on the average annual revenue of a small feedlot would also be minor. Based on sales of 2,000 head over a one-year period (a throughput quantity at the high end for small-entity feedlots), the cost of feeder cattle purchased would increase by $7,760, and the gross return on fed cattle sold would increase by $2,720, for a net loss of $5,040.[66] This loss would be less than 0.3 percent of annual revenue.[67]

Slaughtering establishments. Livestock slaughter is a highly concentrated industry with a large percentage of the slaughter performed by a small percentage of establishments. In 2004,

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[65] The reader is reminded that these price changes are computed using separate partial equilibrium analyses that do not take into account supply and demand interactions between the feeder cattle and fed cattle markets.
[66] ($3.88 per head)(2,000 head) = $7,760. ($1.36 per head)(2,000 head) = $2,720. $7,760 - $2,720 = $5,040.
[67] Average price of fed cattle ($908 per head) multiplied by 2,000 animals equals $1,816,000. $2,900 divided by $1,816,000 equals 0.28 percent.

less than 7 percent of cattle slaughtering plants conducted nearly 90 percent of commercial slaughter.[68] As indicated in Table 28, most slaughtering establishments are small entities. The increase in fed cattle prices just cited, expected to average $1.36 per head over the five years, would affect the welfare of slaughtering establishments very marginally. However, those establishments that specialize in the slaughter of older cattle would be affected by the resumption of cull cattle imports from Canada. As noted in the discussion of expected effects for beef cattle and dairy producers, imports of Canadian cull cattle averaged over the five years, 2007-2011, are projected to equal about 10 percent and 12 percent, respectively, of average annual baseline cow and bull/stag slaughter in the United States for the same period. The additional supply of cull cattle is expected to benefit slaughtering establishments that primarily slaughter cull cattle and that, prior to May 2003, may have relied on imports from Canada for at least a part of their supply. Resumption of cull cattle imports would help address capacity underutilization that these establishments may have experienced because of import restrictions. We welcome information that the slaughter industry and public may provide that would help us to document the extent to which plants are underutilized and would benefit from the proposed rule.

Slaughtering establishments are expected to be negligibly affected by changes in imports of Canadian vealers and slaughter calves due to the proposed rule. As noted above, over the period of analysis an average of 11,800 fewer Canadian vealers and slaughter calves are projected to be imported annually under the proposed rule, a number equivalent to less than one percent of normal U.S. vealer and calf slaughter.

Meat packing and processing establishments. Most meat packing and processing establishments are small. Like livestock slaughter, the meat packing and processing industry is

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[68] http://www.gipsa.usda.gov/GIPSA/webapp?area=newsroom&subject=landing&topic=pub-stat Based on data for federally inspected slaughter plants. Forty-seven out of 689 reporting plants accounted for 89.8 percent of total commercial slaughter.

concentrated, with one-third of establishments engaged in boxed fed beef production in 2004 accounting for over 80 percent of total production.[69] The analysis indicates that increases in the price of fed beef due to declines in fed beef imports from Canada would be only $0.36 per cwt in 2007 and $0.15 per cwt in 2008 (Appendix Table 8). In the last three years of the analysis, the supply of fed beef from Canada is expected to be unaffected by the proposed rule. Based on projected fed beef prices ($142 per cwt in 2007 and $135 per cwt in 2008), the price increases would signify a gain for the average establishment of less than 0.2 percent of average revenue for 2007 and 2008 from the sale of fed beef, assuming no change in the quantity sold. Projected annual decreases in fed cattle imports from Canada would also result in very small price increases (averaging less than $1.40 per head over the 5-year period) that may impact the prices of carcasses purchased by packing and processing establishments.

Effects of the proposed rule for packers and processors that utilize processing beef would be larger, due to the resumption of cull cattle imports from Canada. Annual prices of processing beef are expected to fall by an average of $4 per cwt over the period of analysis. The price declines would benefit establishments that use processing beef to produce ground beef for the wholesale market. Conversely, establishments that sell processing beef would be negatively affected by the expected price declines.

Included within NAICS code 311612 are establishments that make sausage and similarly encased products. These businesses may be affected by the proposed rule's effects with respect to bovine casings. We have been unable to obtain information on the production, consumption, and trade in bovine casings by the United States. We also do not know the extent to which the rule would change the domestic supply of bovine casings, although we anticipate an increased

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[69] *Ibid.* Twenty-one out of 64 reporting plants accounted for 82.2 percent of total boxed fed beef production.

availability due to the rule's expected effects on slaughter numbers and imports of bovine casings and bovine small intestines from Canada.

FSIS has amended its rules that prohibit the use of specified risk materials for human food to permit beef small intestine, excluding the distal ileum, to be used for human food. [70] In that amended interim rule, it is stated that approximately 47 federally-inspected, primarily large establishments would be affected. FSIS was unable to determine how many of these establishments are small. The Agency invites public comment that would allow us to evaluate impacts for small-entity meat packing and processing establishments generally, and processors and users of bovine casings in particular.

Meat importers, exporters, and wholesalers. Most importers, exporters and wholesalers of beef are small entities. Effects of the proposed rule for these businesses would depend on the foreign and domestic markets in which they trade. Importers of processing beef from other countries could be faced with reduced sales because of partial displacement by imports from Canada. Processing beef prices may decline by less than 5 percent per year, on average, over the 5-year period (Appendix Table 5). The price declines would result in welfare losses for sellers of processing beef at the wholesale level (Table 7).

As has been described, we expect only very small changes in the domestic supply of fed beef as a result of the proposed rule. U.S. beef exporters should be little affected and U.S. access to foreign beef markets is not expected to be adversely impacted by the rule.

Grocery stores and meat markets. Most retail food establishments are small entities. As buyers at the wholesale level, retailers that market beef would benefit from the expected decline

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[70] Meat and poultry inspection: "Specified risk materials use for human food, prohibition; and non-ambulatory disabled cattle," disposition requirements; *Federal Register*, Vol. 70, No. 172; September 7, 2005, 53043-53050.
http://www.access.gpo.gov/su_docs/fedreg/a050907c.html

in the price of processing beef (which is mixed with fed beef trimmings to produce ground beef). Effects of the expected price decline on retail stores' revenues would vary, depending upon the relative importance of ground beef sales as a source of store receipts. The proposed rule's effect on the price of fed beef is expected to be negligible.

Manufacturers of substances that use bovine blood and blood products. The majority of businesses that use bovine blood and blood products in their manufacturing processes are small entities. The primary commodities affected would be products intended for medical and scientific use in vaccines and drugs, of which fetal bovine serum (FBS) is the most important. FBS is used in tissue culture media and to produce pharmaceuticals and biologics. Under the proposed rule, commercial imports of FBS of Canadian origin would be allowed to resume.

There is a large and growing demand for FBS. Annual production of FBS in the United States and Canada combined is about 300,000 liters, while consumption for the two countries is approximated at 425,000 liters. The proposed rule may affect the U.S. supply of FBS in two ways: by allowing its direct importation from Canada, and by reducing restrictions on bovine imports from Canada and thereby changing the U.S. supply of pregnant cows presented for slaughter.

As described in section 4, we approximate that the proposed rule may result in as much as 24,000 liters of Canadian-origin FBS becoming available for commercial import by the United States. Had this amount entered the United States in 2005, it would have represented about 13 percent of U.S. imports. Additional U.S. cow slaughter projected under the proposed rule may result in an increase in annual domestic production of FBS of between 23,000 and 32,000 liters. These additional supplies would benefit small-entity establishments that use fetal bovine serum in their manufacturing processes.

Reporting, Recordkeeping and Other Compliance Requirements

Currently, bovines imported from Canada are restricted to animals that are slaughtered at less than 30 months of age. Bovines not imported for immediate slaughter must be moved from the port of entry to a feedlot in a sealed means of conveyance and from the feedlot to a recognized slaughtering establishment again in a sealed means of conveyance. The animals may not be moved to more than one feedlot. Under the proposed rule, these movement restrictions would no longer be imposed. Canadian bovines imported other than for immediate slaughter could be moved any number of times to any destinations in unsealed means of conveyance.[71]

Under the proposed rule, feeder bovines imported from BSE minimal-risk regions would not need to be accompanied by APHIS Form VS 17-130, which currently is used to identify the feedlot of destination. (The individual responsible for the movement of an imported animal and the individual identification of the animal would still be required information on the accompanying health certificate.) Also under the proposed rule, bovines of Canadian origin moved from a U.S. feedlot to a slaughtering establishment would not need to be accompanied by APHIS Form VS 1-27.

Removal of these movement and paperwork requirements would benefit buyers and sellers of Canadian-origin bovines. Many of the beneficiaries are likely to be small entities, given their predominance among cattle and dairy operations and feedlot establishments. Affected businesses would be able to take advantage of a broader range of transactional opportunities than under current regulations. For example, the sale of a young steer first for backgrounding, then for confined feeding at one or more facilities, and finally for slaughter may enable the original and subsequent owners of the animal to better maximize returns compared to

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[71] Canadian bovines imported for immediate slaughter would still be required to be moved directly to slaughter in a sealed means of conveyance because they are not subject to the tuberculosis and brucellosis testing requirements applied to Canadian bovines that are imported other than for immediate slaughter.

current marketing possibilities. While we are not able to quantify impacts of removing current

movement restrictions on Canadian cattle imports, we expect their removal would benefit the

cattle industry across-the-board.

Duplicating, Overlapping, or Conflicting Federal Rules

APHIS has not identified any duplication, overlap, or conflict of the proposed rule with

other Federal rules.

Alternatives that would accomplish the Stated Objectives and Minimize Any Significant

Economic Impact on Small Entities

The Agency has found no significant alternatives to the proposed rule that would

continue to protect against the introduction and dissemination of BSE into the United States

while removing unnecessary prohibitions on the importation of certain commodities from

Canada. Without the proposed rule, restrictions on U.S. importation of certain Canadian bovine

commodities that are without scientific merit would continue. With the proposed rule,

importation of these Canadian commodities would be allowed to resume under certain conditions

and the risk of introduction of BSE into the United States would remain minimal.

Appendix Table 1. Nominal prices and prices in 2006 and 2001 dollars for feeder cattle, fed cattle, processing beef, and fed beef, 2007-2011

	2007	2008	2009	2010	2011
Nominal prices					
Feeder cattle ($ per head)	751	721	700	711	718
Fed cattle ($ per head)	968	955	966	988	1,004
Processing beef ($ per cwt)	101	99	98	101	103
Fed beef ($ per cwt)	145	142	141	146	149
2006 prices					
Feeder cattle ($ per head)	733	687	652	646	634
Fed cattle ($ per head)	945	910	899	898	887
Processing beef ($ per cwt)	99	94	91	92	91
Fed beef ($ per cwt)	142	135	131	133	132
2001 prices					
Feeder cattle ($ per head)	643	600	567	560	548
Fed cattle ($ per head)	828	795	783	779	766
Processing beef ($ per cwt)	86	82	79	80	79
Fed beef ($ per cwt)	124	118	114	115	114

Sources: Nominal prices provided by USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch, based on ERS Livestock, Dairy, and Poultry Outlook/Agricultural Marketing Service data. CPI rates taken from http://www.ers.usda.gov/data/macroeconomics/
Note: Nominal prices are deflated to 2006 and 2001 prices using annual Consumer Price Index historic and projected rates for the years 2002-2011, as follows: 1.59%, 2.32%, 2.61%, 3.02%, 2.50%, 2.40%, 2.30%, 2.20%, 2.24%, and 2.50%. Beef prices are per cwt (hundredweight, or 100 pounds) carcass weight equivalent.

Appendix Table 2. Beef cow, dairy cow, and bull and stag slaughter quantities and carcass weights per animal used to project U.S. processing beef production, 2007-2011

	2007	2008	2009	2010	2011
Beef cow slaughter (1,000 head)	2,377	2,660	2,957	3,205	3,236
Dairy cow slaughter (1,000 head)	2,561	2,553	2,539	2,523	2,508
Beef and dairy cow slaughter	4,938	5,213	5,496	5,728	5,744
Carcass weight per cow (pounds)	576	579	583	586	590
Sub-total, U.S. production from cow slaughter (1,000 pounds carcass weight equivalent)	2,844,288	3,018,327	3,204,168	3,356,608	3,388,960
Bull and stag slaughter (1,000 head)	529	550	583	599	610
Carcass weight per bull or stag (pounds)	888	893	899	904	909
Sub-total, U.S. production from bull and stag slaughter (1,000 pounds carcass weight equivalent)	469,752	491,150	524,117	541,496	554,490
Total U.S. processing beef production (1,000 pounds carcass weight equivalent)	3,314,040	3,509,477	3,728,285	3,898,104	3,943,450

Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch. Based on "USDA Agricultural Baseline Projections to 2015," United States Department of Agriculture, Interagency Agricultural Projections Committee, Baseline Report OCE-2006-1, February 2006. http://www.usda.gov/oce/commodity/ag_baseline.htm

Appendix Table 3. Bovine imports from Canada projected with and without the proposed rule, 2007-2011, in thousand head

	2007	2008	2009	2010	2011
With the Rule					
Breeding Cattle					
Dairy Cows and Heifers	50	46	44	47	47
Beef Cows and Heifers	5	5	4	5	5
Bulls	3	3	3	3	3
Subtotal	58	53	51	54	54
Slaughter Cattle					
Steers and Heifers	728	673	644	685	688
Cows	670	586	481	495	494
Bulls and Stags	81	71	59	59	60
Vealers and Light Calves	51	47	45	48	49
Subtotal	1,530	1,377	1,229	1,287	1,291
Stockers and Feeders	189	175	167	178	179
Total Cattle	1,777	1,605	1,447	1,519	1,524
Bison					
Breeding	0.25	0.25	0.25	0.25	0.25
For Slaughter	2.50	2.40	2.00	2.00	2.00
For Feeding	1.25	0.50	0.25	0.25	0.25
Total Bison	4.00	3.15	2.50	2.50	2.50
Without the Rule					
Slaughter Cattle					
Steers and heifers	742	731	729	755	756
Vealers and Light Calves	55	58	61	63	63
Subtotal	797	789	790	818	819
Feeders	302	371	425	440	441
Total Cattle	1,099	1,160	1,215	1,258	1,260
Bison					
For Slaughter	2.50	2.40	2.00	2.00	2.00
For Feeding	1.25	0.50	0.25	0.25	0.25
Total Bison	3.75	2.90	2.25	2.25	2.25

(continued)

Appendix Table 3. continued

	2007	2008	2009	2010	2011
Change in Imports with the Rule					
Breeding Cattle					
Dairy Cows and Heifers	50	46	44	47	47
Beef Cows and Heifers	5	5	4	5	5
Bulls	3	3	3	3	3
Subtotal	58	53	51	54	54
Slaughter Cattle					
Steers and Heifers	-14	-58	-85	-70	-68
Cows	670	586	481	495	494
Bulls and Stags	81	71	59	59	60
Vealers and Light Calves	-4	-11	-15	-15	-14
Subtotal	733	588	440	469	472
Stockers and Feeders	-113	-196	-258	-262	-262
Total Cattle	678	445	233	261	264
Bison					
Breeding	0.25	0.25	0.25	0.25	0.25
For Slaughter	0	0	0	0	0
For Feeding	0	0	0	0	0
Total Bison	0.25	0.25	0.25	0.25	0.25

Source: Expert opinion, USDA Economic Research Service, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch. Based on "USDA Agricultural Baseline Projections to 2015," United States Department of Agriculture, Interagency Agricultural Projections Committee, Baseline Report OCE-2006-1, February 2006.
http://www.usda.gov/oce/commodity/ag_baseline.htm
Note: Categories may not sum due to rounding.

Appendix Table 4. Processing beef and fed beef imports projected with and without the proposed rule, 2007-2011, in million pounds carcass weight equivalent

	2007	2008	2009	2010	2011
With the Rule					
Processing Beef					
From Canada	0	0	0	0	0
From Other Countries	3,055	3,008	2,924	2,800	2,725
Fed Beef from Canada	371	390	420	419	419
Without the Rule					
Processing Beef					
From Canada	0	0	0	0	0
From Other Countries	3,225	3,157	3,052	2,906	2,831
Fed Beef from Canada	446	425	420	419	419
Change in Imports with the Rule					
Processing Beef					
From Canada	0	0	0	0	0
From Other Countries	-170	-149	-128	-106	-106
Fed Beef from Canada	-75	-35	0	0	0

Source: Expert opinion, USDA ERS, Market and Trade Economics Division, Animal Products, Grains, and Oil Seeds Branch. Note that the decline in processing beef imports from other countries with the proposed rule would be due to displacement by processing beef derived from cull cattle imports from Canada.

Appendix Table 5. Cull cattle/processing beef: welfare and price changes with the proposed rule, assuming projected displacement of processing beef imports from other countries by imports from Canada, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual-ized Value
			Thousand Dollars				
Undiscounted Welfare Changes							
2006 Dollars							
Consumer Surplus	348,984	286,091	217,965	249,382	247,643	1,350,064	
Producer Surplus	-171,079	-146,391	-117,260	-139,396	-140,614	-714,740	
Net	177,904	139,700	100,705	109,985	107,029	635,324	
Discounted Welfare Changes (3%)							
2006 Dollars							
Consumer Surplus	338,819	269,668	199,469	221,572	213,619	1,243,147	271,447
Producer Surplus	-166,097	-137,987	-107,310	-123,852	-121,295	-656,540	-143,358
Net	172,723	131,681	92,159	97,720	92,324	586,607	128,089
2001 Dollars							
Consumer Surplus	294,328	235,242	173,165	192,672	185,449	1,080,856	236,010
Producer Surplus	-144,286	-120,372	-93,159	-107,697	-105,300	-570,814	-124,640
Net	150,042	114,870	80,007	84,974	80,150	510,043	111,370
Discounted Welfare Changes (7%)							
2006 Dollars							
Consumer Surplus	326,153	249,883	177,924	190,252	176,566	1,120,778	273,347
Producer Surplus	-159,887	-127,863	-95,719	-106,345	-100,256	-590,070	-143,912
Net	166,266	122,019	82,205	83,907	76,310	530,708	129,435
2001 Dollars							
Consumer Surplus	283,325	217,983	154,462	165,437	153,282	974,488	237,669
Producer Surplus	-138,892	-111,540	-83,097	-92,474	-87,035	-513,038	-125,125
Net	144,433	106,443	71,365	72,963	66,247	461,450	112,544
						5-Year Average	
Price Changes in 2006 Dollars (dollars per cwt)	-$5.00	-$4.00	-$3.00	-$4.00	-$4.00	-$4.00	
Percentage Price Changes	-5.33%	-4.52%	-3.51%	-3.95%	-3.99%	-4.26%	

Note: Welfare and price changes are computed using the BAS model, as described in section 2. Consumers are U.S. buyers of processing beef at the wholesale level. Producers are sellers of U.S.-produced processing beef at the wholesale level. Prices are in carcass weight equivalent. Welfare changes may not sum due to rounding.

Appendix Table 6. Feeder cattle: welfare and price changes with the proposed rule, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual-ized Value
			Thousand Dollars				
Undiscounted Welfare Changes							
2006 Dollars							
Consumer Surplus	-65,578	-106,550	-133,102	-133,945	-131,504	-570,678	
Producer Surplus	62,647	101,788	126,991	127,710	125,239	544,375	
Net	-2,930	-4,762	-6,111	-6,235	-6,265	-26,303	
Discounted Welfare Changes (3%)							
2006 Dollars							
Consumer Surplus	-63,667	-100,433	-121,807	-119,008	-113,436	-518,352	--113,184
Producer Surplus	60,823	95,945	116,215	113,469	108,032	494,483	107,973
Net	-2,845	-4,489	-5,593	-5,540	-5,404	-23,870	-5,212
2001 Dollars							
Consumer Surplus	-55,850	-87,715	-105,928	-103,165	-98,049	-450,706	-98,414
Producer Surplus	53,355	83,795	101,064	98,363	93,378	429,954	93,883
Net	-2,496	-3,920	-4,864	-4,802	-4,671	-20,752	-4,531
Discounted Welfare Changes (7%)							
2006 Dollars							
Consumer Surplus	-61,287	-93,065	-108,651	-102,186	-93,760	-458,949	-111,933
Producer Surplus	58,549	88,905	103,662	97,429	89,294	437,840	106,785
Net	-2,739	-4,159	-4,989	-4,756	-4,467	-21,109	-5,148
2001 Dollars							
Consumer Surplus	-55,850	-87,715	-105,928	-103,165	-98,049	-450,706	-97,349
Producer Surplus	53,355	83,795	101,064	98,363	93,378	429,954	92,873
Net	-2,496	-3,920	-4,864	-4,802	-4,671	-20,752	-4,477
						5-Year Average	
Price Changes in 2006 Dollars (dollars per head)	$2.22	$3.58	$4.55	$4.58	$4.46	$3.88	
Percentage Price Changes	0.30%	0.52%	0.70%	0.71%	0.70%	0.59%	

Note: Welfare and price changes are computed using the BAS model, as described in section 2. Consumers are buyers of cattle for feedlot feeding in the United States. Producers are sellers of U.S.-raised cattle for U.S. feedlot feeding. Welfare changes may not sum due to rounding.

Appendix Table 7. Fed cattle: welfare and price changes with the proposed rule, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual-ized Value
				Thousand Dollars			
Undiscounted Welfare Changes							
2006 Dollars							
Consumer Surplus	-9,702	-38,673	-55,961	-46,061	-44,198	-194,596	
Producer Surplus	9,446	37,714	54,633	44,911	43,093	189,796	
Net	-256	-960	-1,328	-1,150	-1,106	-4,800	
Discounted Welfare Changes (3%)							
2006 Dollars							
Consumer Surplus	-9,419	-36,453	-51,212	-40,925	-38,126	-176,136	-38,460
Producer Surplus	9,171	35,549	49,997	39,903	37,172	171,791	37,512
Net	-249	-905	-1,216	-1,022	-954	-4,345	-948
2001 Dollars							
Consumer Surplus	-8,253	-31,847	-44,604	-35,502	-32,925	-153,131	-33,437
Producer Surplus	8,035	31,056	43,545	34,615	32,101	149,353	32,612
Net	-218	-790	-1,059	-886	-824	-3,777	-825
Discounted Welfare Changes (7%)							
2006 Dollars							
Consumer Surplus	-9,067	-33,779	-45,681	-35,140	-31,513	-155,180	-37,839
Producer Surplus	8,828	32,941	44,597	34,263	30,724	151,352	36,923
Net	-239	-838	-1,084	-877	-789	-3,828	-917
2001 Dollars							
Consumer Surplus	-7,944	-29,510	-39,787	-30,483	-27,214	-134,939	-32,910
Producer Surplus	7,735	28,778	38,842	29,722	26,533	131,610	32,099
Net	-210	-732	-944	-761	-681	-3,328	-812
						5-Year Average	
Price Changes in 2006 Dollars (dollars per head)	$0.35	$1.37	$1.94	$1.60	$1.53	$1.36	
Percentage Price Changes	0.04%	0.15%	0.22%	0.18%	0.17%	0.15%	

Note: Welfare and price changes are computed using the BAS model, as described in section 2. Consumers are buyers of fed cattle for slaughter in the United States. Producers are sellers of U.S.-sourced fed cattle for slaughter in the United States. Welfare changes may not sum due to rounding.

Appendix Table 8. Fed beef: welfare and price changes with the proposed rule, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual-ized Value
			Thousand Dollars				
Undiscounted Welfare Changes							
2006 Dollars							
Consumer Surplus	-74,823	-33,181	0	0	0	-108,003	
Producer Surplus	73,378	32,557	0	0	0	105,934	
Net	-1,445	-624	0	0	0	-2,069	
Discounted Welfare Changes (3%)							
2006 Dollars							
Consumer Surplus	-72,643	-31,276	0	0	0	-103,919	-22,691
Producer Surplus	71,240	30,688	0	0	0	101,928	22,257
Net	-1,403	-588	0	0	0	-1,991	-435
2001 Dollars							
Consumer Surplus	-63,435	-27,338	0	0	0	-90,773	-19,820
Producer Surplus	62,210	26,824	0	0	0	89,033	19,441
Net	-1,225	-514	0	0	0	-1,739	-380
Discounted Welfare Changes (7%)							
2006 Dollars							
Consumer Surplus	-69,928	-28,981	0	0	0	-98,909	-24,123
Producer Surplus	68,577	28,436	0	0	0	97,014	23,661
Net	-1,350	-545	0	0	0	-1,895	-462
2001 Dollars							
Consumer Surplus	-61,064	-25,332	0	0	0	-86,396	-21,071
Producer Surplus	59,884	24,856	0	0	0	84,740	20,667
Net	-1,179	-476	0	0	0	-1,656	-404
						5-Year Average	
Price Changes in 2006 Dollars (dollars per cwt)	$0.36	$0.15	$0.00	$0.00	$0.00	$0.10	
Percentage Price Changes	0.25%	0.11%	0.00%	0.00%	0.00%	0.07%	

Note: Welfare and price changes are computed using the BAS model, as described in section 2. Consumers are U.S. buyers of fed beef at the wholesale level. Producers are sellers of U.S.-produced fed beef at the wholesale level. Prices are in carcass weight equivalent. Welfare changes may not sum due to rounding.

Appendix Table 9. Cull cattle/processing beef: welfare and price changes with the proposed rule, assuming projected displacement of processing beef imports from other countries by cull cattle imported from Canada and a price elasticity of demand of -0.6, in 2006 dollars, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual-ized Value
			Thousand Dollars				
Undiscounted Welfare Changes							
Consumer Surplus	281,552	231,624	177,180	203,607	202,519	1,096,483	
Producer Surplus	-138,337	-118,735	-95,443	-113,967	-115,147	-581,628	
Net	143,216	112,889	81,738	89,641	87,372	514,855	
Discounted Welfare Changes (3%)							
Consumer Surplus	273,352	218,328	162,145	180,902	174,694	1,009,422	220,412
Producer Surplus	-134,308	-111,919	-87,344	-101,258	-99,327	-534,155	-116,635
Net	139,044	106,409	74,802	79,645	75,368	475,267	103,777
Discounted Welfare Changes (7%)							
Consumer Surplus	263,133	202,310	144,632	155,331	144,393	909,799	221,892
Producer Surplus	-129,287	-103,708	-77,910	-86,945	-82,098	-479,947	-117,054
Net	133,846	98,602	66,722	68,387	62,295	429,852	104,837
						5-Year Average	
Price Changes (dollars per cwt)	-$4.00	-$3.00	-$3.00	-$3.00	-$3.00	$4.80	
Percentage Price Changes	-4.29%	-3.66%	-2.85%	-3.22%	-3.25%	-5.32%	

Note: Welfare and price changes are computed using the BAS model, as described in section 2. Consumers are U.S. buyers of processing beef at the wholesale level. Producers are sellers of U.S.-produced processing beef at the wholesale level. Prices are in carcass weight equivalent. Welfare changes may not sum due to rounding.

Appendix Table 10. Combined (cull cattle/processing beef, feeder cattle, fed cattle, and fed beef) welfare changes with the proposed rule, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual-ized Value
				Thousand Dollars			
Undiscounted Welfare Changes							
2006 Dollars							
Consumer Surplus	198,881	107,687	28,902	69,376	71,941	476,787	
Producer Surplus	-25,608	25,668	64,364	33,225	27,718	125,365	
Net	173,273	133,354	93,266	102,600	99,658	602,152	
Discounted Welfare Changes (3%)							
2006 Dollars							
Consumer Surplus	193,090	101,506	26,450	61,639	62,057	444,740	97,112
Producer Surplus	-24,863	24,195	58,902	29,520	23,909	111,662	24,384
Net	168,226	125,699	85,350	91,158	85,966	556,401	121,494
2001 Dollars							
Consumer Surplus	166,790	88,342	22,633	54,005	54,475	386,246	84,339
Producer Surplus	-20,686	21,303	51,450	25,281	20,179	97,526	21,296
Net	146,103	109,646	74,084	79,286	74,655	483,775	105,634
Discounted Welfare Changes (7%)							
2006 Dollars							
Consumer Surplus	185,871	94,058	23,592	52,926	51,293	407,740	99,452
Producer Surplus	-23,933	22,419	52,540	25,347	19,762	96,136	23,457
Net	161,938	116,477	76,132	78,274	71,054	503,876	122,908
2001 Dollars							
Consumer Surplus	158,467	75,426	8,747	31,789	28,019	302,447	86,339
Producer Surplus	-17,918	25,889	56,809	35,611	32,876	133,266	20,514
Net	140,548	101,315	65,557	67,400	60,895	435,714	106,851

Note: Welfare changes are computed using the BAS model, as described in section 2. They are the sum of the partial equilibrium changes shown in Appendix Tables 6, 7, 8, and 10. Definitions of consumer and producer are given in the notes to these appendix tables.

Appendix Table 11. Cull cattle/processing beef: welfare and price changes with the proposed rule, assuming no displacement of processing beef imports from other countries by imports from Canada, in 2006 dollars, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual- ized Value
			Thousand Dollars				
Undiscounted Welfare Changes							
Consumer Surplus	558,439	456,303	355,601	362,185	358,265	2,090,793	
Producer Surplus	-268,384	-229,626	-188,697	-200,219	-201,194	-1,088,120	
Net	290,055	226,677	166,903	166,966	157,071	1,007,672	
Discounted Welfare Changes (3%)							
Consumer Surplus	542,174	430,110	325,425	321,797	309,043	1,928,548	421,107
Producer Surplus	-260,567	-216,445	-172,685	-177,892	-173,552	-1,001,140	-218,603
Net	281,607	213,665	152,740	143,905	135,491	927,408	202,504
Discounted Welfare Changes (7%)							
Consumer Surplus	521,906	398,553	290,276	276,310	255,438	1,742,482	424,975
Producer Surplus	-250,826	-200,564	-154,033	-152,746	-143,448	-901,619	-219,896
Net	271,080	197,988	136,243	123,563	111,990	840,864	205,079
						5-Year Average	
Price Changes (dollars per cwt)	-$8.00	-$7.00	-$5.00	-$5.00	-$5.00	-$6.00	
Percentage Price Changes	-8.48%	-7.18%	-5.70%	-5.72%	-5.75%	-6.57%	

Note: Welfare and price changes are computed using the BAS model, as described in section 2. Consumers are U.S. buyers of processing beef at the wholesale level. Producers are sellers of U.S.-produced processing beef at the wholesale level. Prices are in carcass weight equivalent. Welfare changes may not sum due to rounding.

Appendix Table 12. Alternative of no restriction by date of birth on live bovine imports: cull cattle/processing beef welfare and price changes, assuming projected displacement of processing beef imports from other countries by imports from Canada, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual-ized Value
			Thousand Dollars				
Undiscounted Welfare Changes							
2006 Dollars							
Consumer Surplus	437,381	358,986	217,965	249,382	247,643	1,511,356	
Producer Surplus	-212,624	-182,382	-117,260	-139,396	-140,614	-792,276	
Net	224,757	176,604	100,705	109,985	107,029	719,080	
Discounted Welfare Changes (3%)							
2006 Dollars							
Consumer Surplus	424,642	338,379	199,469	221,572	213,619	1,397,680	305,190
Producer Surplus	-206,431	-171,912	-107,310	-123,852	-121,295	-730,800	-159,573
Net	218,210	166,466	92,159	97,720	92,324	666,880	145,617
2001 Dollars							
Consumer Surplus	368,881	295,181	173,165	192,672	185,449	1,215,348	265,377
Producer Surplus	-179,324	-149,966	-93,159	-107,697	-105,300	-635,446	-138,752
Net	189,556	145,215	80,007	84,974	80,150	579,902	126,624
Discounted Welfare Changes (7%)							
2006 Dollars							
Consumer Surplus	408,767	313,552	177,924	190,252	176,566	1,267,061	309,025
Producer Surplus	-198,714	-159,299	-95,719	-106,345	-100,256	-660,333	-161,049
Net	210,053	154,253	82,205	83,907	76,310	606,728	147,976
2001 Dollars							
Consumer Surplus	355,091	273,524	154,462	165,437	153,282	1,101,796	268,718
Producer Surplus	-172,620	-138,963	-83,097	-92,474	-87,035	-574,189	-140,039
Net	182,470	134,561	71,365	72,963	66,247	527,606	128,678
						5-Year Average	
Price Changes in 2006 Dollars (dollars per cwt)	-$7.00	-$5.00	-$4.00	-$4.00	-$4.00	-$4.80	
Percentage Price Changes	-6.83%	-5.80%	-4.63%	-4.66%	-4.69%	-5.32%	

Note: Welfare and price changes are computed using the BAS model, as described in section 2. Consumers are U.S. buyers of processing beef at the wholesale level. Producers are sellers of U.S.-produced processing beef at the wholesale level. Prices are in carcass weight equivalent. Welfare changes may not sum due to rounding.

Appendix Table 13. Alternative of no restriction by date of birth on live bovine imports: combined (cull cattle/processing beef, feeder cattle, fed cattle, and fed beef) welfare changes, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual-ized Value
				Thousand Dollars			
Undiscounted Welfare Changes							
2006 Dollars							
Consumer Surplus	287,507	180,936	29,349	69,835	72,403	640,029	
Producer Surplus	-66,610	-9,428	65,545	34,436	28,930	52,872	
Net	220,897	171,507	94,894	104,270	101,332	692,900	
Discounted Welfare Changes (3%)							
2006 Dollars							
Consumer Surplus	279,134	170,551	26,859	62,046	62,455	601,042	131,241
Producer Surplus	-64,670	-8,886	59,983	30,596	24,955	41,976	9,168
Net	214,462	161,662	86,841	92,642	87,410	643,018	140,407
2001 Dollars							
Consumer Surplus	241,537	148,573	22,989	54,358	54,819	522,276	114,042
Producer Surplus	-55,262	-7,555	52,390	26,214	21,083	36,870	8,052
Net	186,274	141,019	75,380	80,572	75,903	559,149	122,092
Discounted Welfare Changes (7%)							
2006 Dollars							
Consumer Surplus	268,698	158,037	23,957	53,276	51,622	555,589	135,512
Producer Surplus	-62,253	-8,235	53,505	26,271	20,626	29,915	7,306
Net	206,446	149,802	77,462	79,547	72,248	585,504	142,817
2001 Dollars							
Consumer Surplus	232,508	137,673	20,506	46,675	45,310	482,671	117,720
Producer Surplus	-53,196	-7,000	46,732	22,508	17,426	26,471	6,457
Net	179,311	130,674	67,239	69,183	62,737	509,142	124,174

Note: Welfare changes are computed using the BAS model, as described in section 2. They are the sum of the partial equilibrium changes shown in Appendix Tables 6, 7, 8, and 10. Definitions of consumer and producer are given in the notes to these appendix tables.

Appendix Table 14. Cull cattle/processing beef: welfare and price changes, assuming cull cattle imports and processing beef imports from Canada would resume at the same time, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual-ized Value
			Thousand Dollars				
Undiscounted Welfare Changes							
2006 Dollars							
Consumer Surplus	411,551	337,311	257,629	293,984	291,383	1,591,857	
Producer Surplus	-200,558	-171,735	-138,050	-163,609	-164,729	-838,680	
Net	210,993	165,576	119,578	130,375	126,654	753,177	
Discounted Welfare Changes (3%)							
2006 Dollars							
Consumer Surplus	399,564	317,948	235,767	261,201	251,349	1,465,829	320,071
Producer Surplus	-194,716	-161,876	-126,336	-145,364	-142,097	-770,389	-168,218
Net	204,848	156,072	109,431	115,837	109,253	695,440	151,853
2001 Dollars							
Consumer Surplus	347,096	277,359	204,677	227,131	218,204	1,274,467	278,286
Producer Surplus	-169,147	-141,211	-109,676	-126,404	-123,359	-669,797	-146,253
Net	177,949	136,148	95,001	100,728	94,846	604,670	132,033
Discounted Welfare Changes (7%)							
2006 Dollars							
Consumer Surplus	384,627	294,621	210,302	224,279	207,752	1,321,580	322,321
Producer Surplus	-187,437	-150,000	-112,690	-124,816	-117,449	-692,393	-168,868
Net	197,190	144,621	97,611	99,463	90,303	629,187	153,453
2001 Dollars							
Consumer Surplus	334,120	257,009	182,570	195,025	180,356	1,149,081	280,250
Producer Surplus	-162,824	-130,851	-97,830	-108,536	-101,962	-602,002	-146,823
Net	171,296	126,159	84,740	86,489	78,394	547,078	133,427
						5-Year Average	
Price Changes in 2006 Dollars (dollars per cwt)	-$6.22	-$5.01	-$3.77	-$4.28	-$4.26	-$4.71	
Percentage Price Changes	-6.28%	-5.33%	-4.14%	-4.65%	-4.68%	-5.02%	

Note: Welfare and price changes are computed using the BAS model, as described in section 2. Consumers are U.S. buyers of processing beef at the wholesale level. Producers are sellers of U.S.-produced processing beef at the wholesale level. Prices are in carcass weight equivalent. Welfare changes may not sum due to rounding.

Appendix Table 15. Combined (feeder cattle, fed cattle, cull cattle/processing beef, and fed beef) welfare changes, assuming cull cattle imports and processing beef imports from Canada would resume at the same time, 2007-2011

	2007	2008	2009	2010	2011	5-Year Total	Annual-ized Value
			Thousand Dollars				
Undiscounted Welfare Changes							
2006 Dollars							
Consumer Surplus	261,677	159,261	69,013	114,437	116,143	720,530	
Producer Surplus	-54,544	1,219	44,755	10,223	4,815	6,468	
Net	207,133	160,479	113,767	124,660	120,957	726,997	
Discounted Welfare Changes (3%)							
2006 Dollars							
Consumer Surplus	254,056	150,120	63,157	101,675	100,185	669,191	146,122
Producer Surplus	-52,955	1,150	40,957	9,084	4,153	2,387	523
Net	201,100	151,268	104,113	110,759	104,339	671,578	146,643
2001 Dollars							
Consumer Surplus	219,752	130,751	54,501	88,817	87,574	581,395	126,951
Producer Surplus	-45,085	1,200	35,873	7,507	3,024	2,519	551
Net	174,667	131,952	90,374	96,326	90,599	583,917	127,501
Discounted Welfare Changes (7%)							
2006 Dollars							
Consumer Surplus	244,558	139,106	56,335	87,303	82,808	610,108	148,808
Producer Surplus	-50,976	1,064	36,534	7,800	3,433	-2,145	-513
Net	193,583	140,170	92,868	95,103	86,241	607,963	148,294
2001 Dollars							
Consumer Surplus	211,537	121,158	48,614	76,263	72,384	529,956	129,252
Producer Surplus	-43,400	1,112	31,999	6,446	2,499	-1,342	-327
Net	168,137	122,272	80,614	82,709	74,884	528,614	128,923

Note: Welfare changes are computed using the BAS model, as described in section 2. They are the sum of the partial equilibrium changes shown in Appendix Tables 6, 7, 8, and 10. Definitions of consumer and producer are given in the notes to these appendix tables.