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Regulatory Impact Analysis & Initial Regulatory Flexibility Analysis

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Traceability for Livestock Moving Interstate

Policy & Program Development

Policy Analysis & Development

Summary

APHIS is proposing to establish general traceability regulations for livestock moving interstate. The purpose is to improve APHIS' ability to trace livestock in the event disease is found. In this analysis, we examine expected benefits and costs of the rule in accordance with Executive Orders 12866 and 13563. Benefits are expected to exceed the costs overall. Possible impacts on small entities are considered in accordance with the Regulatory Flexibility Act.

While the rule would apply to cattle and bison, horses and other equine species, poultry, sheep and goats, swine, and captive cervids, the focus of this analysis is on expected economic effects for the beef and dairy cattle industries. These enterprises would be most affected operationally by the rule. For the other species, APHIS would largely maintain and build on the identification requirements of existing disease program regulations.

Costs for cattle producers are estimated in terms of activities that would need to be conducted for official animal identification and issuance of an interstate certificate of veterinary inspection (ICVI), or other movement documentation, for livestock moved interstate. Incremental costs incurred are expected to vary depending upon a number of factors, including whether an enterprise does or does not already use eartags to identify individual cattle. For many operators, costs of official animal identification and ICVI's would be similar, respectively, to costs associated with current animal identification practices and the inshipment documentation currently required by individual States. Existing expenditures for these activities represent cost baselines for the private sector. To the extent that official animal identification and ICVI's would simply replace current requirements, the incremental costs of the rule for private enterprises would be minimal.

Certain animal disease traceability requirements would be implemented in stages, thereby lowering near-term costs of the program. For example, beginning on the effective date of the final rule, official identification requirements would apply only to sexually intact cattle and bison 18 months of age or over, dairy cattle of any age, and cattle and bison of any age used for rodeo, exhibition, or recreational purposes. Beginning one year after APHIS has established satisfactory compliance with the official identification requirements for these classes of cattle and bison, initially exempted cattle and bison under 18 months of age would need to be officially identified as well, but the identification numbers of these younger animals would not need to be recorded on the ICVI.

There are two main cost components for the proposed rule, using eartags to identify cattle and having certificates for cattle moved interstate. Approximately 20 percent of cattle are not currently eartagged as part of routine management practices. Annual incremental costs of official identification for cattle enterprises are estimated to total from $12.5 million to $30.5 million, assuming producers who are not already using official identification would tag their cattle as an activity separate from other routine management practices. More likely, producers who are not already using official eartags can be expected to combine tagging with other routine activities such as vaccination or de-worming, thereby avoiding the costs associated with working cattle through a chute an additional time. Under this second scenario, the total incremental cost of official identification would be about $3.5 million.

All States currently require a certificate of veterinary inspection, commonly referred to as a health certificate, for the inshipment from other States of breeder cattle and 48 States require one for feeder cattle. Annual incremental costs of the proposed rule for ICVI's are estimated to range between $2 million and $3.8 million. If States currently requiring documentation other

than ICVI's such as owner-shipper statements or brand certificates continue to accept these documents in lieu of an ICVI, as permitted by this proposed rule, the ICVI requirement in this proposed rule would not result in any additional costs.

The combined annual costs of the rule for cattle operations of official identification and movement documentation would range between $14.5 million and $34.3 million, assuming official identification would be undertaken separately from other routine management practices; or between $5.5 million and $7.3 million, assuming that tagging would be combined with other routine management practices that require working cattle through a chute.

Currently, States and Tribes bear responsibilities for the collection, maintenance, and retrieval of data on interstate livestock movements. These responsibilities would be maintained under the proposed rule, but the way they are administered would likely change. Based on availability, Federal funding would be allocated to assist States and Tribes as necessary in automating data collection, maintenance, and retrieval to advance animal disease traceability.

Direct benefits of improved traceability include the public and private cost savings expected to be gained under the proposed rule. Case studies for bovine tuberculosis, bovine brucellosis, and bovine spongiform encephalopathy (BSE) illustrate the inefficiencies currently often faced in tracing disease occurrences due to inadequate animal identification and the potential gains in terms of cost savings that may derive from the proposed rule.

Benefits of the proposed traceability system are for the most part potential benefits that rest on largely unknown probabilities of disease occurrence and reactions by domestic and foreign markets. The primary benefit of the proposed regulations would be the enhanced ability of the United States to regionalize and compartmentalize animal health issues more quickly,

minimizing losses and enabling reestablishment of foreign and domestic market access with minimum delay in the wake of an animal disease event.

Having a traceability system in place would allow the United States to trace animal disease more quickly and efficiently, thereby minimizing not only the spread of disease but also the trade impacts an outbreak may have. The value of U.S. exports of live cattle in 2010 was $131.8 million, and the value of U.S. beef exports totaled $2.8 billion. The value of U.S. cattle and calf production in 2009 was $31.8 billion. The estimated incremental costs of the proposed rule for cattle enterprises—between $14.5 million and $34.3 million, assuming official identification is a separately performed activity, and between $5.5 million and $7.3 million, assuming official identification is combined with other routine management practices that require working cattle through a chute—represent about one-tenth of one percent of the value of domestic cattle and calf production. If there were an animal disease outbreak in the United States that affected our domestic and international beef markets, preservation of a very small proportion of these markets would need to be attributable to the proposed animal disease traceability program in order to justify estimated private sector costs.

Most cattle operations in the United States are small entities. USDA would ensure the rule's workability and cost effectiveness by collaborating in its implementation with representatives from States, Tribes, and affected industries.

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Introduction

APHIS is proposing to establish general traceability regulations for livestock moving interstate. Under this proposed rule, unless specifically exempted, livestock moved interstate would have to be officially identified and accompanied by an interstate certificate of veterinary inspection (ICVI) or certain other documentation. The purpose of this proposed rule is to improve APHIS' ability to trace livestock in the event disease is found.

In this analysis, we examine expected benefits and costs of the rule in accordance with Executive Orders 12866 and 13563. Benefits are expected to exceed the costs overall. Possible impacts on small entities are considered in accordance with the Regulatory Flexibility Act.

The Need for Regulatory Action

Preventing and controlling animal disease is the cornerstone of protecting American animal agriculture. While ranchers and farmers work hard to protect their animals and their livelihoods, there is never a guarantee that their animals will be spared from disease. To support their efforts, the Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of Agriculture (USDA) has promulgated regulations to prevent, control, and eradicate disease. Traceability does not prevent disease, but knowing where diseased and at-risk animals are, where they have been, and when, is indispensible in emergency response and in ongoing disease control and eradication programs.

The United States does not currently have an overarching animal disease traceability program integrated to meet the needs of all species and disease programs. Many of our animal disease program regulations, such as those for bovine tuberculosis and brucellosis, contain components of a traceability program, e.g., requirements for an animal moving interstate to be

officially identified and accompanied by documentation recording, among other things, the animal's official identification number and the locations from and to which it is being moved. Such requirements, however, do not apply to all livestock or to all interstate movements. This rulemaking is intended to address animal disease traceability gaps in the regulations and enhance our ability to safeguard animal health.

We are particularly concerned with current inadequacies in disease tracing capabilities in the cattle industry. Previously, many cattle received official identification through USDA's vaccination program for brucellosis, which requires that certain young female cattle and bison (aged 4 to 12 months) moving into and out of States or areas designated as Class B or Class C for brucellosis be vaccinated for the disease. These vaccinated calves must be permanently identified by means of a tattoo and either an official vaccination eartag or other official eartag if one is already attached to the animal (9 CFR part 78). Our eradication efforts have been tremendously successful, and now all 50 States are brucellosis-free. While this is certainly a positive development, it has resulted in a steep decline in the number of officially identified cattle. In 1988, when there were only 27 Class Free States and many more calves were subject to those requirements, 10 million calves were officially identified, but by 2010 that number had fallen to 3.1 million.

As a result of decreasing levels of official identification in cattle, the time required to conduct disease investigations is increasing. For example, investigations for bovine tuberculosis frequently now exceed 150 days, as USDA and State teams spend substantially more time and money in conducting tracebacks. The decreased level of official identification has resulted in an expansion of the scope of investigations needed to identify suspect and exposed animals, requiring the testing of thousands of cattle that would otherwise not have needed to be tested.

While the rule would apply to cattle and bison, horses and other equine species, poultry, sheep and goats, swine, and captive cervids, the focus of this analysis is on expected economic effects for the beef and dairy cattle industries. These enterprises would be most affected operationally by the rule. For the other species, APHIS would largely maintain and build on the identification requirements of existing disease program regulations, as discussed in the Supplemental Information to the proposed rule. Most poultry moved interstate would be officially identified in accordance with the National Poultry Improvement Plan regulations or as agreed to by State animal health officials and a group/lot identification number could be used. Poultry moved interstate to live bird markets would need to have an ICVI. For equines, this rule is consistent with current industry practices for identification related to testing for equine infectious anemia. Horses and other equine species moved interstate would be required to be accompanied by an ICVI or other interstate movement document, as agreed to by the States or Tribes involved in the movement. For swine, sheep and goats moved interstate, this rule would not change currently required official identification devices or methods and movement documentation.

The proposed rule has been developed in consideration of existing disease-specific livestock movement regulations and of what was learned from the National Animal Identification System (NAIS). The latter was initiated in 2004, as a means by which livestock producers could participate in national animal health safeguarding efforts. A benefit-cost study was commissioned by USDA, to comprehensively and quantitatively examine the program's expected economic worth (NAIS Benefit-Cost Research Team 2009).[1] Although the approach of the proposed traceability regulations differs from prior implementation strategies, parts of the

[1] Hereafter referred to as "the benefit-cost study."

benefit-cost study remain relevant and help inform our understanding of the cost and benefit components of the proposed traceability program.

Broad participation at public meetings has underscored the need for USDA to continue to maintain close collaboration with States, Tribes, and producers in the development of this rule. Based on input from these entities, the proposed animal disease traceability program would rely on widely used and cost-effective methods to identify livestock moved interstate. The proposed rule represents a flexible yet coordinated approach to animal disease traceability that would be outcome-based, empowering States, Tribes, and producers to determine the means of traceability that work best for them.

Alternatives to the Proposed Rule

NAIS was one alternative to the rule considered by APHIS. Although more than 500,000 livestock producers took part in NAIS, these producers represent only 36 percent of livestock enterprises, a proportion insufficient for an animal disease traceability program to be effective.

In contrast to NAIS, the proposed rule would require traceability only for livestock moving interstate. It would also encourage the use of low-cost technology, such as metal eartags, for identifying livestock. Moreover, while the proposal lists methods and devices approved by APHIS for identifying species of livestock covered by the rule, it would allow alternative means of identification, such as branding, as agreed upon by animal health officials in the shipping and receiving States or Tribes involved in an interstate movement.

The proposed rule also stands in contrast to NAIS in terms of providing an adaptable approach that embraces the strengths and expertise of States, Tribes, and producers, while being less federally dictated. States and Tribes would be able to establish systems for tracing the interstate movement of livestock that work best for them. APHIS intends through future

rulemaking to establish performance standards for States and Tribes, but will not require a one-size-fits-all approach.

Within the proposed animal disease traceability framework, APHIS also considered fully implementing official identification for all cattle upon promulgation of the final rule. This alternative was rejected in favor of phasing in the identification requirements for cattle and bison under 18 months of age, other than for dairy cattle, and cattle and bison used for rodeo, exhibition, or recreational purposes.

Under the proposed phase-in schedule, APHIS would expand the official identification requirements to cover all cattle and bison only after (i) determining that the requirements are being effectively implemented throughout the production chain for all cattle required to be officially identified in the initial phase, and (ii) finding that at least 70 percent of all such cattle are officially identified when moved interstate. The proposed rule is preferred to the "no phase-in" alternative because it would allow States, Tribes, and producers time to adjust to the animal disease traceability requirements.

U.S. Cattle Production

Cattle production is one of the most important industries in the United States, generating $43.8 billion in cash receipts during 2009 (USDA NASS 2010a). The structure of the cattle industry continues to change, with a greater proportion of cattle being raised on fewer and larger farms. The total number of cattle operations in the United States in 2009 was 950,000, of which 753,000 were cow-calf operations. During the last 20 years, the number of all cattle operations in the United States has fallen 28 percent, while beef cow operations have declined by 21 percent. Over this period, the average number of cattle per operation has increased by 36 percent

to nearly 100 head for all cattle operations. In 2009, operations with 500 or more head accounted for 47.7 percent of the total cattle inventory, compared to 38.0 percent in 1999.

Although the total cattle inventory fell by 15 percent between 1979 and 2009, commercial beef production grew by 22 percent. The decline in cattle inventory has been offset by a 23 percent increase in the average dressed weight of federally inspected cattle.

The dairy industry in the United States has also undergone significant structural change (USDA NASS 2010b). Total milk cow operations have declined significantly, while the number of large operations has increased. There were 65,000 milk cow operations in 2009, compared to 97,460 in 2001, a decline of 33 percent in 8 years. Despite the large decrease in milk cow operations during this time period, milk cow numbers rose 1 percent (to 9.2 million head in 2009) and milk production increased by 15 percent (to 189,320 million pounds in 2009).

Between 2001 and 2009, the number of dairy operations with 500 or more head increased by 20 percent, from 2,795 to 3,350 establishments. The number of enterprises with 2,000 or more head showed the greatest percentage increase (128 percent), rising from 325 to 740 operations. While the number of larger operations has grown, smaller operations have declined in number. Operations with fewer than 500 head fell from 94,665 in 2001, to 61,650 in 2009, a decline of 35 percent. Production per cow for both larger and smaller operations continues to increase as lower-producing cows are culled from herds and less efficient operations exit the industry.

In sum, greater concentration and operational efficiencies characterize both the beef and dairy cattle industries. In this environment, operators rely increasingly on interstate movement of their livestock to achieve their marketing objectives. The proposed traceability requirements

would further assure market participants that disease outbreaks can be contained without undue delay, minimizing market disruptions domestically and internationally.

Expected Costs

We address expected costs of the proposed rule for the primary private and public entities that would be affected: cattle enterprises, equine and poultry enterprises, States and Tribes, and the Federal government. With respect to cattle producers, we provide general estimates of the costs of principal activities that would be required. For many operators, costs of official animal identification and interstate movement documentation under the proposed rule would be much the same, respectively, as the costs associated with current herd management practices involving eartagging and State-required inshipment documentation. Incremental costs for most equine and poultry enterprises are expected to be minimal due to current identification requirements related to, respectively, testing for equine infectious anemia and National Poultry Improvement Plan movement documentation. Impacts of the rule for States and Tribes are considered in terms of the need to upgrade data maintenance and retrieval capabilities in order to carry out the activities needed to trace livestock. Lastly, preliminary projections are presented of Federal funding that would be needed to implement the rule.

Cattle Enterprises

Unless specifically exempted, livestock moved interstate under the proposed rule would have to be officially identified and accompanied by an ICVI or other acceptable documentation. Types of official individual animal identification numbers and group/lot identification numbers (GIN) are specified in the Animal Disease Traceability General Standards document that accompanies this proposed rule. Cattle and bison required to be officially identified for interstate movement would be identified with either an official eartag or a GIN when appropriate.

Animal identification and certification currently practiced

An indication of the prevalence of current animal identification practices for adult cattle is provided in APHIS surveillance data for 2009 and 2010. Of a total of 156,952 cattle included in the survey (45,489 beef and 111,463 dairy), 46 percent had some form of an official USDA identification eartag (35 percent of beef cattle and 50 percent of dairy cattle surveyed). In addition, the survey noted a number of other types of identification used, including owner eartags, back tags, slaughter tracking eartags, and FSIS condemnation eartags.

Recent surveys by APHIS Veterinary Services, National Animal Health Monitoring System (NAHMS) regarding herd management practices of beef and dairy cattle producers also provide information on operators' current animal health monitoring and recordkeeping. The NAHMS cow-calf survey (USDA APHIS 2008) found that two-thirds of operations used some form of individual animal identification on at least some cows, and nearly 80 percent of cows had some form of individual identification. Plastic eartags were the most common single type of individual cow identification for operations and individual cows (50.4 and 57.5 percent, respectively). Electronic identification or microchips were used on 0.8 percent of operations and 1.2 percent of individual cows.

The proportion of cow-calf operations that used any form of individual animal identification ranged from 59.3 percent of operations with 1 to 49 cows, to 89.1 percent of operations with 200 cows or more. Plastic eartags were the most common type of individual animal identification across all herd sizes.

Nearly half of cow-calf operations (46.7 percent) used some form of individual animal identification on at least some calves, and 64.8 percent of calves had some form of individual identification. The most common type of individual calf identification was a plastic eartag for

operations (37.7 percent) and individual calves (50.2 percent). Electronic identification or microchip responders were used for calves on 0.7 percent of operations and 2.9 percent of individual calves.

About 40 percent of cow-calf operations with 1 to 49 cows used individual animal identification on at least some calves, compared with about 60 to 70 percent of operations in the other herd-size categories. As with cows, a plastic eartag was the most common type of individual animal identification for calves across all herd sizes.

The NAHMS dairy survey (USDA APHIS 2007) found that over 90 percent of dairy operations used some form of individual animal identification, and almost all cows (97.4 percent) had some form of individual animal identification. Most operations (86.5 percent) used eartags on cows as a form of individual identification, and most cows (94.0 percent) had individual eartags. Various methods of electronic identification were used on 4.1 percent of dairy operations, accounting for 9.0 percent of cows. On operations that used individual animal identification, evaluating milk production and genetic improvements were the two most common reasons given (38.1 and 30.4 percent of operations, respectively).

These statistics on current animal identification practices support the expectation that incremental costs of official animal identification would be minimal for the majority of cattle enterprises.

We are unable to determine the number of cattle for which official identification would be required. Relevant sources (Shields and Mathews 2003, USDA NASS 2010c) do not provide information on interstate livestock movements specific to the categories of cattle that would be directly affected by the proposed rule. Livestock marketing information includes animals shipped to slaughter. While data on States' inshipments exclude animals brought into a State for

immediate slaughter, they include feeder cattle, which would be initially exempted from the identification requirements. In 2009, inshipments totaled 19,790,000 head; the Nation's cattle and calf inventory totaled 93,701,200 head on January 1, 2010. Assuming these data will not change dramatically in coming years, they indicate that roughly 20 million head would be eventually official identified when moved interstate, including movement of beef cattle younger than 18 months but excluding cattle moved interstate directly to slaughter. This number represents about one-fifth of the Nation's cattle and calves. We do not have an estimate of the number of cattle moved interstate directly to slaughter rather than to a feedlot. These animals also would require official identification in the second phase of the proposed rule.

Under current regulations, animals are usually required to be accompanied by a shipper statement or health certificate when moving interstate. An APHIS or State representative or accredited veterinarian responsible for issuing a certificate of veterinary inspection must forward a copy of the certificate to the State animal health official in either the State of origin or the State of destination. Many States also require entry permits, which can be oral or written.

An ICVI, like animal health certificates currently required in the CFR, is to have the following information: certificate number, species, number of animals, purpose of movement, address at which the animals were loaded for interstate movement, destination address, names of the consignor and the consignee and their addresses if different from above, and official identification number of each animal or group of animals moved that is required to be officially identified (or if the sending and receiving States/Tribes have agreed upon an alternative form of identification, a record of that identification). If animals moving under a GIN also have individual official identification, only the GIN would have to be listed on the ICVI.

All States already require a certificate of veterinary inspection for breeding cattle received from other States, with the information required including, as a minimum, the items described above for an ICVI. The proposed ICVI requirements would simply replace existing interstate movement documentation requirements. Currently 48 States use ICVI's for feeder cattle.

Unit costs

The Federal government would supply metal eartags and eartag applicators to States or Tribes free-of-charge for distribution to cattle operations, if resources allow.[2] An eartag applicator can last for several years. Table 1 shows the incremental, or additional, costs of official animal identification for enterprises that either do or do not already identify animals using eartags as a part of their routine management practices. For producers currently using official identification, there would be no additional cost. Approximately 35 percent of beef cattle currently have official identification. These producers are referred to as Group 1 in Table 1. An estimated 45 percent of beef cattle have some type of identification for management purposes other than official identification. These producers are referred to as Group 2 in Table 1. The only additional costs for producers who are already tagging their cattle, but not using official identification, would be the labor required to attach the official animal identification. As shown in table 1, this incremental cost is estimated to be $0.18 per head. Chute operation costs, as well as costs of shrinkage and possible human or animal injury, are costs that the producer would bear

[2] The FY 2012 President's Budget requests funding to pay for the eartags. The cost of an eartag is about 10 cents. An estimated 30 million cattle are shipped interstate per year , including 19.5 million that are shipped without official identification (see table 3). We therefore estimate the total cost of official eartags needed because of the proposed rule to be $3.0 million per year. This cost would be offset to some extent by reduced costs to animal disease programs that currently pay for tags for cattle. If in the future, federally appropriated funds were not available to purchase these additional eartags, those producers not currently using official identification would purchase eartags which would increase total producer costs by about $1.95 million.

in any case. Management style, working weights, and other factors can contribute to variations in costs, including shrinkage costs, from operation to operation.

The age at which cattle are identified using eartags, for those operations that do so, varies from one enterprise to the next. For management purposes, some producers tag young calves or heifers just before they are bred, while other producers do not tag their cattle until they are nearly ready for sale. Operations that tag calves at birth would have considerably lower costs associated with shrinkage compared to operations that tag their cattle just before the time of sale. The proposed rule does not specify at what age cattle would need to be officially identified, only that it be accomplished prior to interstate movement for those animals that would require official identification. Official identification could provide additional benefits to an operator, depending on the type of managerial information included on the eartag beyond the requirements set forth in the Animal Disease Traceability General Standards document.

For the remaining 20 percent of cattle that would not be eartagged if it were not required by the proposed rule, the chute operation costs and the costs of shrinkage and possible injury (as well as the cost to attach the eartag) are fully attributable to the rule. These producers are referred to as Group 3 in Table 1. The cost per head of official animal identification is estimated to range between $1.68 and $4.68. The cost of tagging may be somewhat underestimated, since some period of time (5 to 15 minutes set-up time) would be needed to prepare for tagging. These cost estimates represent the cost if tagging were carried out independent of other cattle management activities. In practice, producers could reduce the cost by choosing to combine tagging with routine activities such as vaccinating or de-worming cattle. By combining tagging with other activities, producers would incur costs similar to Group 2 producers, $0.18 per head.

We anticipate that a significant portion of Group 3 producers will choose to reduce their costs in this manner.

Table 1. Estimated producer incremental cost of official animal identification for cattle

	Group 1: Incremental cost if official identification is currently used[1]	Group 2: Incremental cost when incorporated into routine management practices[2]	Group 3: Incremental cost when not incorporated into routine management practices[3]
	Per Head		
Metal eartag[4]	Zero	Zero	Zero
Eartag applicator[5]	Zero	Zero	Zero
Chute operation[6]	Zero	Zero	$1.00 to $2.50
Labor to attach the eartag[7]	Zero	$0.18	$0.18
Shrinkage and injury[8]	Zero	Zero	$0.50 - $2.00
Total	Zero	$0.18	$1.68 to $4.68

[1] Estimated to comprise 35 percent of beef cattle.
[2] Estimated to comprise 45 percent of beef cattle.
[3] Estimated to comprise 20 percent of beef cattle.
[4] Metal tags with numbers conforming to the National Uniform Eartagging System (NUES) would be provided at the direction of State and Tribal animal health officials.
[5] Eartag applicators would also be provided to producers for NUES tags.
[6] Based on data presented in the benefit-cost study. For establishments that do not routinely eartag livestock, tagging may take place at an approved tagging site.
[7] Based on a median farm worker's hourly wage (farm and ranch animals) of $10.42, and assuming 1 minute is required to tag 1 animal (U.S. Department of Labor, http://www.bls.gov/oes/2009/may/oes452093.htm).
[8] Assumed upper-bound shrinkage cost is $1.90, based on a weight loss of about 0.2 percent, or about 2.5 pounds for a cow weighing 1,270 pounds, and a price of $950 (http://www.ams.usda.gov/mnreports/gl_ls132.txt). Potential injury costs comprise the balance of this cost category. A range of $0.50 to $2.00 is used, allowing for subsequent gain by livestock on feed. Shrinkage may be less of an issue for replacement breeding stock, but potential injury costs would be an issue in all instances.

The proposed rule would establish the ICVI as the primary document for the interstate movement of livestock. Other documentation for interstate movement, as agreed upon by two or

more States/Tribes, would be acceptable. The rule would also define the minimum information required to be on an ICVI, as described above.

An ICVI could be issued only by a State, Federal, or accredited veterinarian. A copy of the ICVI (or other interstate movement document used in lieu of an ICVI or permit) would be required to be forwarded by the veterinarian to the State animal health official of the State of origin within 5 working days. The State of origin, then, would be required to forward a copy of the ICVI to the State of destination within 5 working days.

Table 2 compares the incremental cost of acquiring an ICVI by enterprises that are already using certificates of veterinary inspection for moving cattle interstate other than for immediate slaughter and enterprises that are not doing so. For the former group, the incremental cost may be additional charges by the veterinarian who is issuing the ICVI, if more time is required than when currently certifying livestock for interstate movement to meet States' requirements. Currently all 50 States require a certificate of veterinary inspection for breeder cattle and 48 States require one for feeder cattle. We estimate the incremental cost per head to range between zero and $1.00.

For operations that would not otherwise have cattle certified for interstate movement, there would be the chute operation costs and the costs of shrinkage and possible injury for animals that would need individual animal identification recorded on the ICVI, as well as the costs of an accredited veterinarian. We estimate the incremental cost per head to range between $4.00 and $7.50 for cattle that need individual official identification recorded and between $1.00 and $3.00 for animals not required to have their identification recorded.

Initially, cattle and bison under 18 months of age (excluding sexually intact dairy cattle, cattle and bison used for rodeo, exhibition, or recreational purposes) would not need to be

identified, but would still require an ICVI for interstate movement. The ICVI would state the number and type of animals (e.g., 40 mixed steers and heifers) and include a statement such as, "No official identification required at this time."

Beginning 1 year after APHIS has established satisfactory compliance with the official identification requirements for sexually intact cattle and bison 18 months of age or over, dairy cattle of any age, cattle and bison used for rodeo or recreational events, and cattle and bison used for shows or exhibitions; initially exempted cattle and bison under 18 months of age would need to be officially identified as well, but the identification numbers of these younger animals would not need to be recorded on the ICVI. The ICVI would include a statement such as, "40 mixed steers and heifers all officially identified with individual official eartags," or, "40 mixed steers and heifers officially identified with Group/Lot identification number _____."

Table 2. Estimated producer incremental cost of interstate certificate of veterinary inspection (ICVI) for cattle

	Incremental cost for enterprises already utilizing certificates of veterinary inspection for moving cattle interstate other than for immediate slaughter	Incremental cost for enterprises not already utilizing certificates of veterinary inspection for moving cattle interstate other than for immediate slaughter
	Per Head	
Issuance of ICVI, including recording of the animal's official identification number[1]	Zero to $1.00	$1.00 to $3.00
Chute operation[2]	Zero	$1.00 to $2.50
Shrinkage and injury[3]	Zero	$0.50 - $2.00
Total	Zero to $1.00	$1.00 to $7.50

[1] Issued by an APHIS representative, State or Tribal representative, or accredited veterinarian.
[2] Based on data presented in the benefit-cost study. This cost only applies to cattle that would need to have individual animal identification recorded on the ICVI.
[3] Assumed upper-bound shrinkage cost is $1.90, based on a weight loss of about 0.2 percent, or about 2.5 pounds for a cow weighing 1,270 pounds, and a price of $950 (http://www.ams.usda.gov/mnreports/gl_ls132.txt). Potential injury costs comprise the balance of this cost category. This cost only applies to cattle that would need to have individual animal identification recorded on the ICVI. A range of $0.50 to $2.00 is used, allowing for subsequent gain by livestock on feed. Shrinkage may be less of an issue for replacement breeding stock, but potential injury costs would be an issue in all instances.

The unit costs shown in tables 1 and 2 are generalized but indicative of their likely magnitude. Importantly, there are economies of size for both animal identification and ICVI activities. Costs per head would decrease as the numbers of animals officially identified and for which ICVI's are issued increase. Cattle enterprises range widely in the equipment that they would have available for the animal restraint necessary for eartagging and recording animal identification for the issuance of an ICVI. Larger operations that regularly tag cattle for management purposes are more likely to have permanent chutes, and smaller operations may

make use of portable chutes or take their cattle to a tagging site only in instances when it is necessary to acquire a movement certificate. If States currently require documentation other than ICVI's such as owner-shipper statements or brand certificates and continue to accept these documents in lieu of an ICVI, as permitted by this proposed rule, the ICVI requirement in this proposed rule would not result in any additional costs.

As mentioned, USDA would bear the cost of the eartags and the eartag applicators as resources allow. The 10-cent metal eartags reflect USDA's intent to rely on low-cost technology. Although the metal tags are inexpensive, they are more labor-intensive than electronic systems when reading and recording animal identification data. Depending on an operator's management objectives, a different type of eartag, including ones that support automated data capture, may be chosen.

Unit charges for the services of an accredited veterinarian for issuing an ICVI would vary, depending on the number of ICVI's issued at a particular location and the travel time required. The incremental cost ranges shown in table 2, up to $1.00 for enterprises already using certificates of veterinary inspection for moving non-slaughter cattle interstate and from $1.00 to $3.00 for enterprises not already doing so, represent the additional inspection and ICVI recording costs that may be charged in most instances. APHIS welcomes public comment that would allow a better estimation of these cost ranges.

Costs of retagging of cattle moved interstate would be much the same as the tagging costs shown in table 1. A State or Tribal animal health official or an area veterinarian-in-charge could authorize the replacement of lost eartags or ones that had deteriorated or were otherwise not usable. To facilitate traceback, records would need to be kept when official identification devices are replaced under such circumstances. We observe that since most beef cattle under 18

months would be initially exempt from the traceability regulations, the need to retag cattle received by backgrounding operations may be relatively infrequent.[3]

Producers with only several head of cattle have various options to align with the identification requirements and to minimize their costs. Some may elect to officially tag calves at a young age when tagging can be done before a chute and corrals are needed to work the animals. When calves are older, many producers will likely officially identify their calves when they work the animals for other routine management practices such as vaccinating or de-worming. Producers that sell at markets within their State can determine if they want to assume the responsibility of having their cattle eligible for interstate movement. If so, producers unable to tag their own animals may have calves tagged at a market that provides tagging services. The tagging and related marketing arrangements provided by auctions and markets to consigners will likely vary among regions of the country.

Total costs

Enterprises having the estimated 35 percent of cattle currently official identified would not incur any additional costs of tagging. Operators having the estimated 45 percent of cattle currently identified with some type of tag other than official identification would incur an estimated cost of $0.18 per head. The remaining 20 percent of operations that do not currently use eartags would incur an estimated cost of $1.68 to $4.68 per head. As an example, if an operator were to move 20 head interstate, there would be no additional identification cost if the cattle are already officially identified. If they would normally be tagged but not officially

[3] Backgrounding refers to an intermediate stage of beef production that lasts for several months before the cattle are moved to a feedlot. During the backgrounding period—when the animals eat roughage and/or light energy rations or graze pasture (native grass or winter wheat)—producers decide when to place them in feedlots to fatten for slaughter, based on market conditions and forage availability.

identified, the total incremental cost is estimated to be $3.60 for a herd of 20 head. If the operator would not otherwise tag the cattle as a routine management practice, then the total incremental cost of official identification is estimated to range from $33.60 to $93.60 for the 20-head herd. The latter group of operators could lower their costs for identifying cattle by incorporating eartagging into routine management practices.

For the same example, if the 20 head of cattle were already being moved interstate with a certificate of veterinary inspection, then the total incremental ICVI cost is estimated to range from between zero and $20. If the cattle would not need a certificate of veterinary inspection for interstate movement if it were not for the proposed rule, the total incremental cost would range between an estimated $20 and $150. The high-cost estimate would be incurred only if animals need to be worked in a chute specifically for the purpose of issuing an ICVI. Clearly, expected impacts of the rule depend on current identification practices and movement documentation. These costs could be different for cattle moved from and to States or Tribes that accept documentation other than ICVI's.

About 74 million cattle and calves were sold in 2007. As described above, approximately 20 million head move interstate as breeding animals and feeders. We do not have information on the number of cattle moved interstate directly to slaughter, but estimate it to be about 10 million head, based upon USDA NASS "Meat Animals Production, Disposition, and Income 2009 Summary" data.[4] Thus, a total of 30 million head or about 40 percent of cattle and calves sold are assumed to move interstate. Based on this quantity, we estimate total costs of official identification.

[4] The estimated number of cattle inshipments is 20 million. We reduce this number by one-half to account for breeding animals included in the inshipments data.

Table 3 shows the estimated total costs if all producers were to continue current management practices. For the operations already using official identification, there would be no additional animal identification cost attributable to this rule. For the 45 percent of operations using some tagging method but not using official identification, we estimate the incremental cost of tagging to be $2.4 million. For the 20 percent of operations that do not currently use any tags, we estimate the incremental cost of tagging would range from $10.0 million to $28.1 million if they were to conduct tagging as an activity separate from other routine management practices. Total annual costs of official identification for cattle are estimated to range between $12.5 million and $30.5 million.

Table 3. Estimated costs of official identification with current management practices

	Estimated Number of Cattle Moving Interstate	Incremental Cost, Low Estimate[5]	Incremental Cost, High Estimate
Using Official ID	10,500,000	$0	$0
Tagging but not using official ID	13,500,000	$2,430,000	$2,430,000
Not tagging	6,000,000	$10,080,000	$28,080,000
Total	30,000,000	$12,510,000	$30,510,000

Table 4 shows the estimated total cost of official identification with modified management practices. As discussed in the Unit Costs section, a significant portion of the producers who are currently not tagging can reduce the cost of tagging by combining it with other routine cattle management activities. Under modified management practices, producers

[5] The incremental costs are those costs of official identification that are attributed to this rule.

would choose to combine tagging with other routine activities such as vaccinating or de-worming cattle, thereby avoiding the costs associated with working cattle through a chute an additional time.

Table 4. Estimated costs of official identification with modified management practices

	Estimated Number of Cattle Moving Interstate	Incremental Cost[6]
Using Official ID	10,500,000	$0
Tagging but not using official ID	13,500,000	$2,430,000
Not currently tagging	6,000,000	$1,080,000
Total	30,000,000	$3,510,000

The additional cost of ICVI's in a traceability system would be minimal because all 50 States currently require a certificate of veterinary inspection for breeder cattle and 48 States require a certificate of veterinary inspection for feeder cattle. The rule would impose no additional costs for an ICVI for breeder animals, which make up about 56 percent of the national herd (2007 Census of Agriculture). For feeder cattle moving to any State other than California or Texas, there would be no additional cost for ICVI's. Approximately two million cattle are moved into California and Texas. If cattle shipped into these two States required an ICVI, the additional cost would range from an estimated $2.0 million to $3.8 million, if the individual animal identification number is recorded. We anticipate that States not currently requiring

[6] The incremental costs are those costs of official identification that are attributed to this rule.

ICVI's may continue to accept other documentation such, as owner-shipper statements or brand certificates, as permitted by this proposed rule, in which case there would be no additional costs for movement documentation. However, we include these possible additional costs of movement documentation in our private-sector total cost estimates.

The combined annual costs of the rule for cattle operations of official identification and movement documentation are estimated to range between $14.5 million and $34.3 million, assuming official identification would be undertaken separately from other routine management practices; or between $5.5 million and $7.3 million, assuming that tagging would be combined with other routine management practices that require working cattle through a chute.

Interstate Movement of Horses and Poultry

There are approximately 4.3 million on-farm horses and other equines (2007 Census of Agriculture). USDA does not count horses and other equine species on nonfarm operations. The American Horse Council Foundation published an estimate of the U.S. horse inventory for 2003 based on a survey conducted by Deloitte Consulting, LLC. The Deloitte estimate was a total of 9.2 million horses.[7] Among livestock, horses are unique in that they live longer, are generally more valuable, and are transported interstate more often. Many horses are routinely identified for breed registries, horse identification services, or to ensure the integrity of the racing industry.

There are approximately 2.2 million tests conducted annually for equine infectious anemia (EIA). Testing for EIA is a State requirement for all interstate movement and in some States for intrastate movement as well. Horses must be identified on the requisite EIA test-related paperwork. When horses move interstate to attend shows or exhibitions, registration is

[7] The large difference between the USDA-NASS estimate and the Deloitte estimate derives from differing list-development procedures and adjustment procedures for missing data.

required upon entry. Accordingly, event officials are able to track horses moving interstate to the farm of origin.

In this proposed rule, horses and other equines moved interstate would be required to be accompanied by an ICVI or other interstate movement document, as agreed to by the States or Tribes involved in the movement. Because horses moving interstate must be tested for EIA and be identified in the test-related paperwork, the change from current to the proposed requirements will be relatively small. In some cases the additional cost may be zero. In other cases, the additional cost of the ICVI may range from an estimated $4.00 to $7.50. If 2.2 million additional ICVI's were issued in addition to the EIA paperwork, the total additional cost could range from $8.8 million to $16.5 million. The 2007 Census of Agriculture estimates the market value of horses and equines sold to total $2 billion. This understates the total value of horses and other equine species since it only considers those animals sold.

In 2009, total U.S. production of broiler meat was 35.5 billion pounds with a retail value of $44 billion. Poultry moved interstate would be required to be accompanied by an ICVI unless they are from a flock participating in the National Poultry Improvement Plan (NPIP) and are accompanied by the documentation required under the NPIP regulations or they are moved directly to a recognized slaughtering establishment. An ICVI would not be needed if the poultry are moved from the farm of origin for veterinary medical examination, treatment, or diagnostic purposes and either returned to the farm of origin without change in ownership or euthanized and disposed of at the veterinary facility.

The proposed documentation requirement would not result in any additional costs for poultry enterprises that participate in NPIP. Poultry moved interstate to live bird markets (LBM) would need to have an ICVI or other documentation as agreed to by the States. Live bird

markets are concentrated in the Northeast, specifically in New York and New Jersey. There are about 109 LBM's in New York and New Jersey with 191 suppliers located in 12 different States. Both New York and New Jersey currently require movement documentation for poultry moving to live bird markets. Southern California has the second biggest concentration of LBM's. There are about 35 LBM in southern California and fewer than 50 in the entire State. It is estimated that there are 12 to 15 producers who supply poultry for LBM in southern California. Other areas of the country have few live bird markets.

The period of highest LBM demand is from November through February. In New York and New Jersey, approximately 700,000 birds circulate through the market during that time. By comparison, the southern California LBM handles about 30,000 birds in that same time. During non-peak months, the daily population of birds in Southern California LBM is approximately 8,300 live birds (Cardona et al. 2009).

APHIS does not have an estimate of the possible costs of the proposed rule for enterprises that move poultry interstate to the live bird markets if ICVI's were to be required, and welcomes information that may be submitted in comment on the proposed rule. If New York and New Jersey maintain current requirements for movement documentation, the proposed rule would not result in additional costs.

States and Tribes

Expected costs of the proposed rule for States and Tribes are related to changes in their animal disease traceability activities. States and Tribes bear responsibilities for the collection, maintenance, and retrieval of data on interstate livestock movements. While these responsibilities would be maintained under the proposed rule, the way they are administered

would likely change. Federal funding, as available, would be allocated to assist States and Tribes in making the necessary data collection, maintenance, and retrieval advancements.

Under the proposed rule, after receiving a copy of an ICVI forwarded by the APHIS or State representative or accredited veterinarian who issued it, the State animal health official of the State of origin would be required to then forward a copy to the State animal health official of the State of destination within 5 working days. The proposed 5-day limit for forwarding is intended to facilitate a traceback and/or trace forward investigation if an animal moved interstate in accordance with the regulations were found to be suspect or affected.

These proposed regulations require that, with certain exceptions, covered livestock moving interstate be officially identified and accompanied by an ICVI or other movement document. This proposed rule would require that any State, Tribe, accredited veterinarian, or other person or entity who distributes official identification devices maintain for a minimum of 5 years a record of the names and addresses of anyone to whom the devices were distributed. We would also require that approved livestock facilities keep for a minimum of 5 years any ICVIs or alternate documentation used in lieu of an ICVI, for covered livestock that enter the facilities. The proposed 5-year requirement for maintaining records of official identification devices and ICVIs or other animal movement documents is necessary because certain animal diseases, such as tuberculosis and bovine spongiform encephalopathy, have very long latency or incubation periods, which can make traceback efforts quite challenging. Such diseases may not manifest themselves until an animal reaches adulthood, possibly several years after it was officially identified and/or moved interstate. The proposed recordkeeping requirements would enhance our ability to conduct traceback investigations of infected and exposed animals, even in cases where the disease that the animal has contracted or been exposed to has a very long latency

period.

Current bovine tuberculosis regulations require dealers who purchase, deal in, or sell cattle or bison; or who act as a commission representative or broker; or who operate and conduct an auction in which cattle or bison are sold to maintain records for a period of five years.[8] Because they have an existing recordkeeping system, we do not anticipate significant costs for maintaining a record of ICVIs or alternate documentation. We anticipate that accredited veterinarians will charge a price for their services that is adequate to cover the cost of any recordkeeping they do with respect to distribution of official identification devices. Federal funding (described below) will be available to States and Tribes to develop and implement an animal traceabilty approach. These funds may be used to enhance recordkeeping if needed. We request comment on the burden and practical utility of this proposed requirement.

Improvement by States and Tribes of their animal disease traceability capabilities, as envisioned, would require resources to increasingly automate their data systems to provide electronic retrieval of ICVI data, which would result in major advances in animal disease management. Data-entry costs would be incurred, but systems would be able to better facilitate the rapid retrieval of animal movement information, in contrast to the relatively inefficient, paper-based process that is now found in many States.

Federal resources would be used to fund cooperative agreements with States and Tribes to implement the animal disease traceability plan. USDA expects that the States would match approximately 20 percent of the funds provided to them either through funds or in-kind contributions. For FY 2012, the projected appropriated Federal funding is $14.2 million (table 5). Of this amount $1.9 million is for information technology and $9.6 million is for field

[8] USDA APHIS 91-45-011 Bovine Tuberculosis Eradication Uniform Methods and Rules, Effective January 1, 2005, pg. 11-12.

implementation. A 20-percent share from the States would be about $2.3 million. These funds would finance information technology improvements, field implementation, and program administration. With Federal assistance, gains from increased efficiencies of animal disease traceability by States and Tribes are expected to outweigh State- and Tribe-incurred costs.

In accordance with the Paperwork Reduction Act, the preamble to the proposed rule describes the information collection or recordkeeping requirements contained in the rule. These requirements would be primarily borne by State, Tribal, and territorial animal health officials; accredited veterinarians; livestock market operators; and harvest facility employees. The Paperwork Reduction Act section estimates the time required to meet the requirements of the proposed rule and asks for public comment.

Federal Funding

Table 5 shows the estimated Federal budget plan to develop and implement the animal disease traceability approach for fiscal year 2012. These estimates are Federal costs only, and a significant portion of these funds would be provided to the States and Tribes. As mentioned, USDA expects that the States would match approximately 20 percent of the funds provided to them either through funds or in-kind contributions. This assumption is based on contributions of States toward current and past cooperative agreements in support of animal disease traceability.

Table 5. Projected Federal appropriated funding for supporting animal disease traceability activities, fiscal year 2012

	FY 2012
System funding (information technology)	$1,900,000
Field implementation	$9,611,600
Program administration	$2,729,400
Total	$14,241,000

Among implementation costs would be the recording of animal identification numbers retired at slaughter. In estimating this cost, we assume eartag numbers would be entered at a federally funded central tag processing center. APHIS estimates the cost of tag retirement and data entry would be about $0.11 per tag.

Federal appropriated funding for supporting animal disease traceability activities for fiscal years 2012 through 2015 will be determined by the Federal budgeting process, but we expect them to total $127.7 million over the four fiscal years. During fiscal year 2010, $13.1 million was spent for traceability efforts. Development of more effective animal traceback mechanisms will yield benefits as detailed later in this document.

Rule Elements that would lessen the Cost Burden for Producers

Enterprises that move their cattle interstate would bear certain costs when the proposed rule becomes final, although, as noted, incremental costs for many operations may well be minimal. We identify here several elements of the rule that would further lessen the cost burden. A central tenet of the regulatory philosophy that underlies this rule—namely, allowing States, Tribes, and producers to find and use the approaches to traceability that work best for them—would enable entities to seek and employ low-cost means of achieving the rule's objectives. For example, any two or more States or Tribes would be allowed to agree upon and use any form of animal identification for interstate movement of cattle under the proposed regulations.

The collaborative manner in which the rule's implementation is intended to advance would also help to minimize operational burdens. An advisory group that includes representation from APHIS, States, Tribes, and industry would offer recommendations on issues relating to traceability and provide feedback on the effectiveness of various elements of the traceability program.

Official identification requirements for cattle and bison would be phased-in over time. Beginning on the effective date of the final rule, these requirements would apply only to sexually intact cattle and bison 18 months of age or over, dairy cattle of any age, cattle and bison of any age used for rodeo or recreational events, and cattle and bison used for shows or exhibitions. Beginning 1 year after APHIS has established satisfactory compliance with the official identification requirements for these classes of cattle and bison moved interstate, the requirements would become applicable to initially exempted cattle and bison under 18 months of age.

In addition to individual identification of cattle and bison by means of official eartags, the proposed rule would allow for the use of a group/lot identification number (GIN) when cattle or bison are eligible for interstate movement using group/lot identification. It would not be necessary to have the GIN attached to each animal, a provision in keeping with the rule's emphasis on allowing for maximum regulatory flexibility.

The cost burden would also be lessened by the phase-in of the rule's newly-defined identification numbers and systems and their similarity to existing numbers and systems. For example, the proposed animal identification number (AIN) definition is similar to that in existing regulations. APHIS would phase-out existing AIN formats in order to achieve greater standardization of this numbering system, while providing producers with adequate notice of the change so they can work through existing inventories of eartags. This proposed requirement would apply only to animals tagged one year or more after the effective date of the final rule. Producers would not have to retag animals that had been officially identified using the USA or manufacturer's code AIN prior to that date.

Existing regulations allow for the use of premises-based numbering systems on official eartags. Numbering systems using a premises identification number and a producer's production numbering system would continue to be allowed under the proposed rule, but APHIS would expand the range of allowable location identifiers by defining a location-based numbering system.

There are two situations that are exempt from the traceability requirements: movement entirely within Tribal land that straddles a State line, and the Tribe has a separate traceability system from the States in which its lands are located; and movement to a custom slaughter facility in accordance with Federal and State regulations for preparation of meat for personal consumption.

There are also several instances in which cattle and bison could be moved interstate without an ICVI. These situations include:

- Movement as part of a commuter herd [9] with a copy of the commuter herd agreement;
- Movement directly from one State through another State and back to the original State; or
- Movement to an approved tagging site, provided that the cattle and bison are officially identified there before they are commingled with cattle and bison from other premises.

[9] In this proposed rule, a commuter herd is defined as a herd of cattle or bison moved interstate during the course of normal livestock management operations and without change of ownership directly between two premises, as provided in a commuter herd agreement. A commuter herd agreement is defined as a written agreement between the owner(s) of a herd of cattle or bison and the animal health officials for the States and/or Tribes of origin and destination specifying the conditions required for the interstate movement from one premises to another in the course of normal livestock management operations and specifying the time period, up to 1 year, that the agreement is effective. A commuter herd agreement would be subject to annual renewal. Meeting commuter-herd requirements in lieu of official identification requirements would still provide adequate traceability in our view.

Expected Benefits

The purpose of the proposed rule is to improve livestock traceability in the event that disease is found. Benefits of improved tracing capabilities would extend to private producers in terms of the health of their own animals and the preservation of domestic and international markets. States, Tribes, and the Federal government would benefit from reduced animal disease management expenditures when there is a disease outbreak, as well as through general gains to the economy that derive from the establishment of improved animal health safeguards.

In the first section that follows, we examine the direct benefits of improved traceability by considering public and private cost savings expected under the proposed rule. The tracing process is described. Given the variety of diseases traced, case studies are presented to illustrate the types of costs currently borne, their magnitudes, and potential savings. Due to the lack of specific information on economy-wide disease spread and impacts, the case studies illustrate the disease spread and economic impacts for selected instances where reliable information is available.

A second section highlights the market-related gains expected to be attributable to the rule. Improved animal disease traceability, as proposed, would help ensure that negative domestic and international market reactions to animal disease occurrences are minimized through efficient and quickly concluded epidemiological investigations.

Private and Public Sector Cost Savings

The time required to trace an animal's history of movement when there is disease discovery can largely determine the private and public costs that may be incurred. The traceability regulations proposed would help to significantly reduce the amount of time needed to fully identify the number and location of animals that have been in contact with an infected

animal. The longer it takes to complete the epidemiological investigation, the greater the number of entities affected and the greater the number of animals affected as well as geographical scope of an outbreak. It is critical that the tracing of animal movements be accomplished as quickly as possible.

Three animal diseases of concern in cattle are described and specific occurrences are used to demonstrate the benefits of traceability that would result from the proposed rule. Specific occurrences of three animal diseases of concern are used to depict actual instances in which the tracing capability was hindered due to a lack of complete information required by epidemiologists when conducting disease investigations. This is not to suggest that all disease investigations are inefficient due to a lack of information, but to reflect how these investigations become more complicated and affect more producers when good information is not readily available. Most concerning are outcomes when an investigation cannot quantify or specifically account for all at-risk livestock.

The specific characteristics of diseases lead to differences among epidemiological investigations. Knowing the history of the animal is critical when dealing with a highly contagious disease, in particular its prior locations and contacts with other animals. The type of information and its completeness affect how the disease investigation is conducted. Complete information can help animal health officials to minimize the number of herds tested. When information is limited or vague, the testing of herds is expanded to ensure all possible herds are included. When the herd owner cannot provide information indicating the source herd of an animal of concern, the herds of all potential suppliers of the subject animal must be tested. Numbers of animals needing to be tested can rapidly multiply as all potential sources are

considered. With official identification and good records, tracing can be restricted to a specific herd(s).

The trace process

In order to fully appreciate the costs and benefits of animal disease traceability, it is important to understand how a trace is conducted and the critical points that determine the length of time a trace will take. Time is the critical factor in a disease investigation. The more time it takes, the more herds and animals become infected or exposed, the more man-hours are needed to respond, and the more the industry suffers from the loss or delay of sales. Illustration 1 depicts a flow chart for a "typical" disease traceback of an infected animal from the point of slaughter. Keep in mind that there are myriad variables in tracing and every trace is unique. This illustration is intended to give the reader a basic understanding of the steps that are taken in a trace process that involves the cooperative efforts of State, Tribes, and Federal agencies.

The box at the top left represents an animal at an abattoir. At the plant, animal health officials spend a good deal of time collecting information and matching the information with samples that were positive. Records of the animals that were killed are examined, including physical descriptions of the live animals, carcass weights, body scores, the order in which the animals were processed, and prices paid.

One of the key pieces of information is the approved USDA backtag. This is very important in tracing animals to the last herd of residence and allows the investigation to proceed towards the herd of origin. Most adult animals presented for slaughter within one week of tagging have official backtags at the time of slaughter. If the movement to slaughter takes more than a week, the majority of the backtags are lost. Yet, the value of backtags is apparent, as an estimated 90 percent of adult animals arrive at slaughter with USDA approved backtags. When

an official USDA backtag is correlated with the animal of interest, the investigators can quickly identify the livestock market or dealer that supplied the animal to the abattoir.

If the backtag is not available, abattoir records are used to try to determine who supplied the animal. If the animal of interest was part of a group of animals from a single source that were penned together and slaughtered at the same time, the whole group can be traced back to the supplier. If the animal was commingled with animals from a variety of sources, the investigation must consider multiple potential suppliers.

At the livestock market or dealer, the time required to determine who the consignor of the animal was and where the animal resided prior to sale depends on the availability of appropriate records. If weight tickets, sales slips, and records of origin, identification, and destination are available, it can take one hour or less to complete the visit if a backtag is available, and a few hours if not. Currently, markets are required to maintain records of livestock transactions for 2 years. Some of our traces involve movements through markets that took place more than 2 years prior. If the market records are not available or incomplete, the investigator may need to examine additional records and go to other sources of information including banks, post offices, county assessor offices, brand inspection offices, and law enforcement. In this case, the last herd of residence is found only after days, weeks, or not at all.

Another critical piece of information to aid in a disease investigation is the official eartag. If available, the eartag number can be traced to the herd in which the tag was applied and allow the investigation to proceed towards the animal's place of termination. The length of time required varies from minutes to days depending on how the records of official eartags are maintained. Regardless of how the records are kept, the information provides another means of locating additional herds that may be affected. When an animal has both an approved backtag

and an official eartag, an investigation can proceed from two different directions simultaneously and reduce the total time required by half.

When animals are tested for official disease control program purposes, an official eartag is required and recorded on the test chart. Similarly, when adult animals are moved interstate, the official eartag is typically recorded on an interstate certificate of veterinary inspection (ICVI). Examination of these types of records may identify additional herds in which the animal of interest resided.

Illustration 1. Cooperative Federal, State, Tribal tracing with official identification, backtag, and records

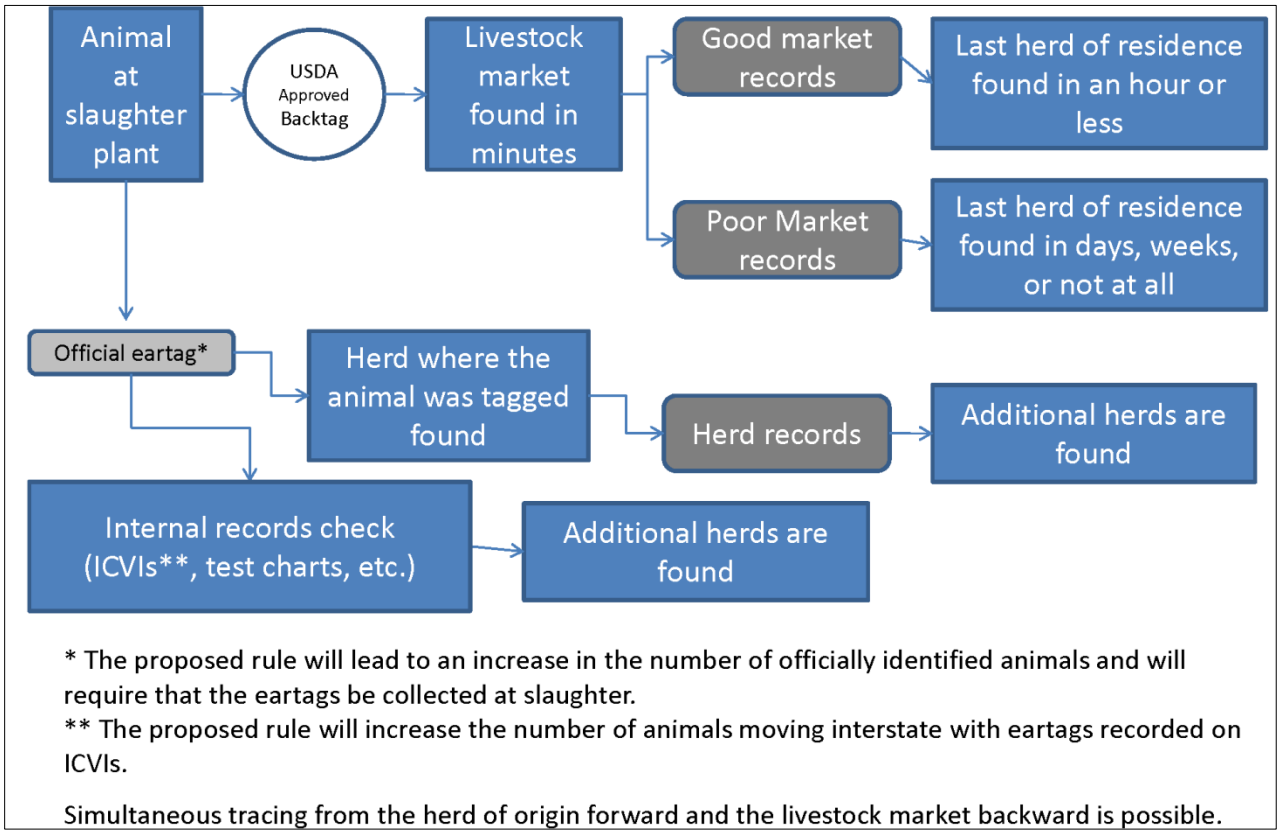
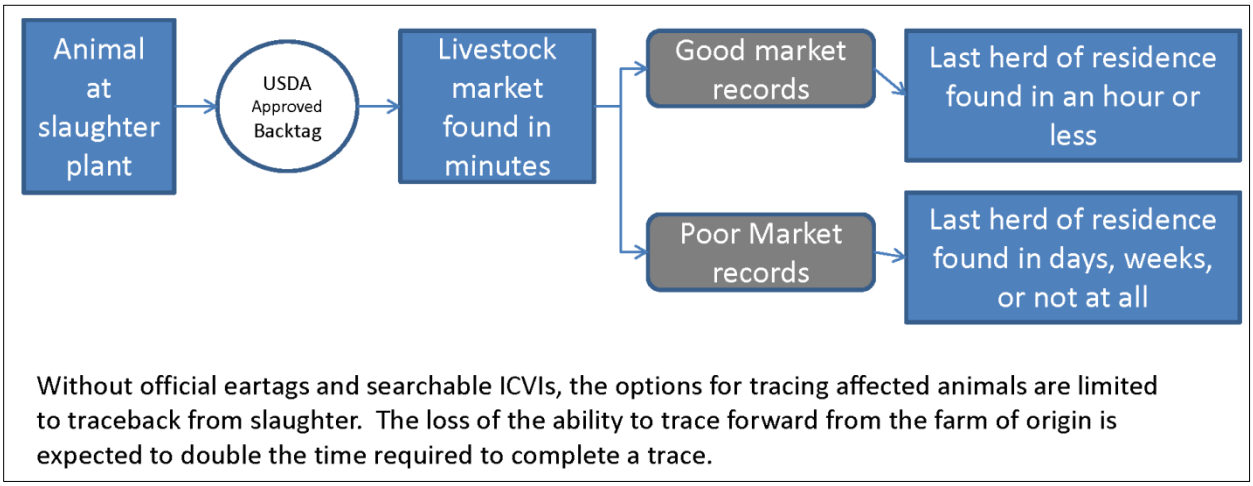


Illustration 2 shows that, without an official eartag, the only route for an investigation to take is through the livestock market. If records are not available, the source herd may never be found. Even if the herd is found, the time required to conduct the trace is expected to be at least

twice what it would be if there were an official eartag because tracing forward from the source is not possible. It is clear that additional investigation routes through the use of eartag records and internal databases are essential.

Illustration 2. Cooperative Federal, State, Tribal tracing without official identification and records



Without official eartags and searchable ICVIs, the options for tracing affected animals are limited to traceback from slaughter. The loss of the ability to trace forward from the farm of origin is expected to double the time required to complete a trace.

To summarize, the critical points in the investigation include:

1. Is an official backtag available?
    a. If "yes"
        i. The time to trace to the market is minimal.
        ii. An investigative route to the last herd of residence is possible
        iii. The time at the market determining the last herd of residence is less than an hour.
    b. If "no"
        i. The time to trace to the market is longer.
        ii. The time at the market is at least several hours.
2. Is an official eartag available?
    a. If "yes"
        i. An investigative route to the herd where the tag was applied is available

ii. An investigative route to additional herds via internal database records is available.

b. If "no" these routes are not available and the time to conduct the trace could be doubled.

3. Are good market records available?
    a. If "yes" the time at the market is less than an hour.
    b. If "no" the time at the market is hours and other external sources of information may be required increasing the time to days or weeks.
4. Are records of official eartag distribution, official tests, and ICVIs easily searchable?
    a. If "yes" the time to find additional herds may be minutes or hours.
    b. If "no" the time to find additional herds may be hours, days, or weeks.

The proposed rule would require all cattle in interstate movement with some exceptions to be identified with official eartags. This will lead to an increase in the number of cattle with official identification at slaughter and provide animal disease investigators with the traceability route to additional herds. This addresses critical point #2.

One exception in the initial phase of implementing the proposed rule is to allow USDA-approved backtags in lieu of official eartags for cattle moving directly to slaughter. This approach will help facilitate the use of backtags so cattle arriving at slaughter can be traced to the last herd of residence. This addresses critical point #1.

The proposed rule has a recordkeeping requirement of 5 years for markets and slaughter establishments. The current requirement is 2 years. Cattle have a life span of several years. The new requirement will allow for more tracing information to be reported. This addresses critical point #3.

The proposed rule includes the requirement for States and Tribes to maintain a record of official eartag distribution for at least 5 years. That will help our disease investigators quickly determine the herd in which an animal of interest was identified. Similarly, the proposed rule would require States and Tribes to maintain a record of ICVIs issued for 5 years. These two requirements will address critical point #4.

Current animal diseases of concern in cattle

Tuberculosis

Tuberculosis (TB) is a disease of concern today and provides a good reference to demonstrate the need for traceability. TB is a contagious disease of both animals and humans. Bovine TB can be transmitted from livestock to humans and other animals. No other TB organism has as great a host range as bovine TB, which can infect all warm-blooded vertebrates. Bovine TB has affected animal and human health since antiquity. Once the most prevalent infectious disease of cattle and swine in the United States, bovine TB caused more losses among U.S. farm animals in the early part of the 20th century than all other infectious diseases combined.

TB eradication efforts have been quite successful in the United States. Still, since 2002 the United States has spent over $200 million on indemnities and control activities for diseased or suspect cattle and that amount is expected to rise as eradication efforts continue. In Michigan, the disease has seriously affected the State's livestock industry. The projected impact of the disease on Michigan's producers is estimated at $121 million over 10 years.

In fiscal year (FY) 2010, 13 TB-affected cattle herds were confirmed in the United States. TB-affected herds were identified in Colorado (2), Kentucky (1), Michigan (5), Mississippi (1), Nebraska (1), Ohio (1), and South Dakota (2). The States of Kentucky, Mississippi, Ohio and

South Dakota held accredited free status for TB for over 20 years. All affected herds identified in FY 2010 were depopulated with Federal indemnity except for two beef herds in Michigan that are undergoing test-and-remove herd plans. The Ohio herd was detected during a dispersal sale and is no longer in existence.

From October 2010 through March 2011, six TB-affected cattle herds were confirmed in the United States. TB-affected herds were identified in Colorado (4), Indiana (1), and Michigan (1). All the affected herds in Colorado have been depopulated with Federal indemnity, and the disposition of the herds in Indiana and Michigan are pending.

The epidemiological investigation of animals found infected at slaughter is still the main method that is used to locate TB herds. Traceback investigations are conducted from the slaughter plant.

Brucellosis

Brucellosis is a contagious disease, caused by bacteria of the genus *Brucella* that affects both animals and humans. The disease mainly affects cattle, bison, and swine; however, goats, sheep, horses, and humans are susceptible as well. In its principal animal hosts, it causes loss of young through spontaneous abortion or birth of weak offspring, reduced milk production, and infertility. There is no economically feasible treatment for brucellosis in livestock. In humans, brucellosis initially causes flu-like symptoms, but the disease may develop into a variety of chronic conditions, including arthritis. Humans can be treated for brucellosis with antibiotics.

All 50 States have been officially classified Class Free for bovine brucellosis since July 2009, despite recent detections in a few States. To date during FY 2011, brucellosis has been detected in four domestic cattle and bison herds in two States in the Greater Yellowstone Area (GYA)—two affected cattle herds and one affected privately owned bison herd in Wyoming, and one affected privately owned bison herd in Montana. All four herds are under quarantine with

affected-herd plans, and intensive epidemiological investigations, including testing of area herds, are in progress. No epidemiological links have been identified among these herds. Brucellosis-affected wild elk may be the most likely source of infection for these herds.

In late January, Texas disclosed a brucellosis-affected cattle herd, the first detection of brucellosis in a cattle herd in Texas in over 5 years. This herd has been depopulated, and a thorough epidemiological investigation is in progress. The GYA remains our primary focus for brucellosis in livestock because the disease is endemic in GYA wild elk and bison. There is no indication that brucellosis has spread outside the GYA.

Bovine Spongiform Encephalopathy

Bovine spongiform encephalopathy (BSE), widely referred to as "mad cow disease," is a chronic degenerative disease affecting the central nervous system of cattle. BSE is a progressive and fatal neurological disease of cattle caused by an unconventional transmissible agent. BSE belongs to the family of diseases known as transmissible spongiform encephalopathies.

The incubation period (the time from when an animal becomes infected until it first shows disease signs) averages 4 to 6 years, although the period can be longer or shorter. Following the onset of clinical signs, the animal's condition deteriorates until it either dies or is destroyed. The process of deterioration usually takes from 2 weeks to 6 months. Currently, there is no test to detect the disease in live cattle; veterinary pathologists confirm BSE by postmortem microscopic examination of brain tissue or by the detection of abnormal prions in brain tissue. BSE is so named because of the spongy appearance of the brain tissue of infected cattle when examined under a microscope.

Three cases of BSE have been detected in the United States. The first case was in a cow in Washington State in 2003 that had been imported from Canada. BSE was subsequently detected in a 12-year-old beef cow in Texas in 2005 and in a 10-year-old beef cow in Alabama in

2006. Both indigenous cases were born before the feed ban implemented by the U.S. Food and Drug Administration in 1997.

APHIS conducted BSE enhanced surveillance from 2004 to 2006. More than 830,000 samples were tested. This was a one-time effort to detect BSE at a very low-level and to provide information about prevalence. The results indicated that the prevalence of BSE in the United States was low—less than 1 infected animal per million based on a population of 42 million adult cattle.[10]

The ongoing BSE surveillance program was launched in 2006 and has continued. The goal of this program is not only to meet the World Organization for Animal Health (OIE) benchmark of detecting 1 case of BSE in 100,000 adult cattle with 95 percent confidence, but also to meet the higher U.S. standard of detecting 1 case of BSE in 1million adult cattle with 95 percent confidence. Populations of cattle at higher risk for BSE have been targeted for surveillance, including but not limited to animals with central nervous system (CNS) signs and animals over 30 months of age condemned ante mortem at slaughter for CNS signs. More than 40,000 samples have been collected and tested in each year of the ongoing BSE surveillance program. This sampling strategy has far exceeded the level of testing required to meet OIE and U.S. internal surveillance goals.[11]

Animal disease traceback investigations

The following three tables summarize specific investigations for TB, brucellosis, and BSE occurrences.

[10] http://www.aphis.usda.gov/publications/animal_health/content/printable_version/fs_BSE_ongoing_vs.pdf
[11] http://www.aphis.usda.gov/newsroom/hot_issues/bse/surveillance/ongoing_surv_results.shtml

Table 5. Bovine tuberculosis	
Date Investigation Opened: March 2010	Investigation Status: Ongoing
Incident	An adult cow (approximately 3.5 years) was slaughtered. The animal was part of a consignment from an auction market two days prior. On post mortem examination, the FSIS inspectors noticed lesions suggestive of a TB infection. The carcass was retained, tissues were collected, and tests were conducted. Four days later, National Veterinary Services Laboratories published a histopathology analysis with the diagnosis of *Mycobacteriosis*-compatible. The herd that marketed the animal before slaughter was found to be infected with TB.
Method of Identification	The only identification available on the infected animal was a backtag collected at slaughter that had been applied at the auction market.
Methods of Tracing	The auction market back tag was used to determine the consignor and in turn, the last farm location of the infected cow (or the index herd). Herd records of the index herd were examined for the two-year period prior to the detection of infection to determine what animals had left the farm. Three markets were the primary means for the owner to dispose of his cull animals. As a result, most of the adult animals that left this herd were identified by a backtag that had been applied at one of the three livestock markets. Herd records, while limited, where used to help determine movement of young animals sold from the herd.
Investigative Summary	The index herd consisted of approximately 900 animals. A caudal fold test was conducted on some of the animals: 48/168 (29 percent) heifers and 165/498 (33 percent) cows were positive. A gamma interferon test was conducted on 165 heifers, and 105 of them were positive. The herd was depopulated and samples were tested, confirming the previous tests. A thorough review of available herd records determined that a total of 1,627 adult animals left the index herd as culls being sold at one of the three auction markets during the previous two-year period. Using the backtags applied at the markets, 1,505 (92.5 percent) adult animals reported slaughtered out of State were verified. The other 122 (7.5 percent) adult animals were only reported as slaughtered, but could not be verified due to lack of permanent identification. Without verification, the possibility remains that some of the 122 adult animals may have been diverted from slaughter channels back to a farm. Epidemiological tracing was conducted using the animal identification information recorded on the herd test chart to determine where animals that entered the herd came from. Official eartags from 5 States were noted. Subsequent tracing through those States provided evidence of animals of interest having been in 5 additional States for a total of 10 States. Due to limited records, it was difficult to determine the locations of breeding and feeding animals from the index herd. The tracing of one- to five-day-old calves proved to be much different. Owner records indicated that 259 calves had been sold from the premises during the two previous years, and they all lacked any type of identification. The movements were documented on a brand inspection form completed by the owner and did not contain addresses, descriptions and in many cases, the total number of animals removed from the premises on a specific date. The brand authority intended for producers to utilize tracking methods on these animals and to record them; however, this was not the case. In total, 57 of the 259 calves (22 percent) were located at other farms. These calves were disposed of and tested for TB. Five of the 57 calves each located on a different farm were found to be positive for TB. This resulted in those five farms being declared infected premises and subsequently depopulated.

	To date, the investigation has involved 426 locations in 12 States with 6 infected premises found.
Cost	The disease investigation resulted in the depopulation of 1,139 animals on 6 infected premises including the index premises. USDA has paid $741,700 to producers for destroyed animals involved in this investigation. There were additional dollars paid for trucking and disposal that were not available. Estimated testing costs exceed $2 million. It is estimated that this incident required an Animal Health Technician's time two days per week for the past year. This time could easily have been reduced by 50 percent with adequate identification and records. Testing costs in this case will exceed $2 million. We believe improved traceability as a result of the proposed rule would reduce costs by between $600,000 and $1 million.
Impact	As of March 2011, this incident is still ongoing. To date, 426 different locations have been investigated with approximately 10 percent of the locations being herds that were tested for TB. In some cases, the tracing has stopped due to the lack of adequate identification and movement records. This is unfortunate because of the nature of this aggressive strain of TB, and the fact that infected herds were found. There are still 122 cull breeding animals that are unaccounted for. We do not know if they were slaughtered as expected or if they returned to a livestock operation. The uncertainty undermines the credibility of traceability efforts. Only 57 of the 259 calves (22 percent) were successfully traced, but they led to 5 infected premises. The inability to trace the remaining 198 calves causes serious concern and begs the questions: "What happened to the other 198 calves (88 percent), how many infected premises are left undetected, and how far has the infection spread?" While the cost of the investigation to date is significant, the inability to answer these questions quickly and accurately means sizable additional negative impacts as well as higher associated costs are likely to result from this case.
Comparison with Proposed Rule on Traceability	The proposed rule will require the identification of all dairy cattle moving interstate, regardless of age. Adult dairy cattle will be required to have the official eartags recorded on an ICVI. Producer and livestock markets will be required to keep a copy of movement records for 5 years for all animals moving interstate. The amount of official identification and tracing information will increase significantly due to these activities. There has been an average of 31 positive cases for the past 5 years. On average, one million animals are tested annually for TB. If testing for TB could be better targeted to the herds that had actual contact with animals of interest provided by identification and records, the system would be more accurate and efficient. Only the known herds of interest would need to be tested. If the number of animals tested was reduced, we estimate the government and producer sectors' combined dollar savings associated with the testing alone would be between $1.17 million (25% reduction in testing) and $3.51million (75% reduction in testing) annually. (State and Federal costs are shown below; producer costs are detailed in Table 8.) An animal disease traceability program allows for a more efficient use of resources as herds are tested based on clear documentation of their connection to the index animal. USDA or State employees perform most of the testing. As a result of fewer herds/animals tested, resource efficiencies are gained, and these employees would be available to fill mission critical activities in other areas. The potential values of these efficiencies are

	summarized in the following table based at differing levels of projected reductions in the number of animals requiring testing for TB. **Costs to States and the Federal Government** Average number of TB trace tests per year[12] 260,000 Average cost per head to test (requires handling animals twice) $10.00[13] Estimated cost of TB testing (State and Federal) $2,600,000 Value associated with reduced number of animals requiring testing due to improved animal disease traceability 25% reduction $650,000 50% reduction $1,300,000 75% reduction $1,950,000

Table 6. Bovine brucellosis	
Date Investigation Opened: January 2011	Investigation Status: Ongoing
Incident	Due to targeted animal disease surveillance, an adult bull at processing, moved interstate to an abattoir, was determined to be a reactor for bovine brucellosis. A disease investigation was initiated due to the classification of the official blood test.
Method of Identification	The animal lacked an official animal identification number at the time of sampling. The bull was identified by carcass tag number on the slaughter plant kill sheet and associated with an owner.
Methods of Tracing	Kill sheet information provided at the abattoir served as the sole basis for conducting the investigation. In this case, the animal's owner was also the feedlot owner where the animal was in residence prior to processing.
Investigative Summary	The investigation involved 155 bulls from two pens in one out-of-State feedlot that sourced animals from two different livestock markets in two additional States. As noted, the bulls had no official identification at processing and, correspondingly, the feedlot had no list of official animal identification for these animals. Brand inspection records retained by the feedlot accounted for 57 different brands for 149 of the bulls and 6 animals with no brands. Feedlot records indicated the 155 animals could have been sourced from 4 different livestock markets. As a result, the 4 involved livestock markets have identified 40 potential source locations in one State and another 17 potential source locations in yet another State. Because the five involved States (one State was mistakenly involved initially) are large beef-producing States, and with an assumption of 125 head herd size, the investigation will potentially involve testing at least 7,100 head of cattle for bovine brucellosis. The investigation remains open as of March 23, 2011.
Cost	Final costs have not been tabulated as the investigation is ongoing. With an estimated $20 per head testing and personnel costs, this investigation will cost nearly $150,000, assuming no additional positives are found. This estimate does not include producer costs. If the reactor animal had been officially identified and the number recorded at the time of processing, the investigation could have been more focused with a potential cost savings of $120,000.

[12] USDA, APHIS, Veterinary Services data for 2010.
[13] Based on funds paid for fee-basis testing.

Impact	More herds than needed were tested and the cost of testing alone is significant. The added cost to producers may be even greater in terms of gathering the herd to be tested and restricted opportunities to conduct business as usual.
Comparison with Proposed Rule on Traceability	The proposed rule will require cattle 18 months-of-age and older to be officially identified and accompanied by an ICVI when moved interstate. This would have provided the tools to accurately and efficiently investigate the incident and conclude it with minimal impact to producers and taxpayers. On average, 477 brucellosis reactor cattle have been identified annually for the past 5 years in the United States. Approximately 25 percent, or 120, of these cases require a similar degree of investigation to this case. Based upon BSE surveillance data referenced in table 9 of this document, approximately 60 percent of adult cattle lack official identification. It is estimated that 72 comparable brucellosis investigations are conducted annually without information readily available for effective and efficient official animal identification. This example shows an investigation that had potential costs savings of $120,000. Conservatively assuming that 72 comparable investigations could save half that amount, the estimated savings would be $4.32 million (72*$60,000). Additional savings to the cattle industry as well as States and Tribes would also be realized, should official identification of adult cattle be routine. The benefit to bovine brucellosis disease investigations for the cattle industry, States and Tribes, and USDA could easily exceed $5 million annually.

Table 7. Bovine spongiform encephalopathy	
Date Investigation Opened: March 15, 2006	Investigation Status: Closed May 1, 2006
Incident	A confirmed positive of a previously inconclusive bovine spongiform encephalopathy (BSE) sample from a 10-year-old cow in Alabama was made on March 15, 2006. The goal of the epidemiological investigation was to locate at-risk animals besides the index cow: • Two most recent progeny of the index cow • Birth cohorts of the index cow that were born and raised on the same farm (herd of origin) 1 year before and 1 year after the index cow was born.
Method of Identification	• No official identification • No tattoo, no management eartag, and no brand • Other alternatives used: – Color – Red – Age – Estimated to be 10-years-old – Sale weight when purchased by index herd
Methods of Tracing	The process of tracing the animals of interest was based on interviews with current and previous owners, stockyard sales records, phenotype, age, stage of pregnancy, and deoxyribonucleic acid (DNA) genetic matching.
Investigative Summary	The positive cow had no tattoo, no eartag, and no brand. Thirty-seven farms were investigated (involving the use of DNA), to identify a herd of origin. This included two farms where the index cow resided, and 35 other farms that might have supplied the index cow to the farms where the index case resided. The index case did not have unique or permanent identification, and its size and color are common in the southern United States. Due to the unremarkable appearance of solid red cows, it is not easy for owners to remember individual animals. In the southern United

	States, it is common business practice to buy breeding age cows and keep them for several years while they produce calves. Most calves produced are sold the year they are born, whereas breeding cows are often sold when there is a lapse in breeding, which can occur multiple times in a cow's life. For these reasons, USDA could not locate the herd of origin and the inconclusive investigation was closed after 48 days.
Cost	The estimated cost of the investigation was $40,000. This included State and Federal field resources to conduct interviews, review records with herd owners and market operators, travel, and DNA testing.
Impact	While the overall market impact cannot be defined, this case reflects the inability of the United States to trace the movement history and herd where the animal at a young age was exposed to the disease.
Comparison with Proposed Rule on Traceability	An official identification tag from the index animal would have facilitated traceability, with minimal interviewing, to the farm of tagging within one day with cooperative participation. As described in the discussion of private sector costs of the proposed rule, the estimated cost of an identification tag is $0.18 per animal for producers that already tag and $1.68 to $4.68 for producers who do not tag their animals. This incremental cost includes all associated costs of working an animal merely for tagging purposes. Many operators already tag their cattle as part of routine management activities.

Benefits of effective traceability to producers

As discussed above, disease investigations that lack complete information and official animal identification are frequently expanded to involve more herds than would otherwise be necessary. This practice ensures the farm location that might have held the subject animal or other potentially exposed animals can be "ruled out" as being infected. More complete records and official animal identification allow investigations to focus on specific locations that are known to have had the animal of concern. In lieu of complete information, animal health officials must broadly "blanket" their herd reviews and testing to all possible locations.

As the investigation broadens in scope to ensure the disease occurrence is fully examined, more producers are required to have their herds involved in the investigation. Producers that are included in a disease investigation incur disruption to their operation and have associated costs, including:

- Time spent with animal health officials to review records needed for the investigation as well as locating historic records called for during the investigation.
- Assembling the herd for testing. This includes labor costs, time, and the inconvenience of testing when other critical farming operations need to be done.
- Costs associated with testing. These include shrinkage, injury, loss of production (especially in dairy herds), and labor. The costs are double for TB because each herd test involves handling the animals twice in a 72-hour period.

Generalized private sector costs of TB and brucellosis testing and potential cost savings due to improved traceability are summarized in table 8.

Table 8. Summary of producer costs for TB and brucellosis testing and potential savings from improved traceability

Bovine Tuberculosis		
Average number of TB trace tests per year[14]		260,000
Average cost of producers' time, labor, etc. (per animal)		$6.00[15]
Cost of TB testing		$1,560,000
Value associated with reduced number of animals requiring testing due to improved animal disease traceability		
	25% reduction	$390,000
	50% reduction	$780,000
	75% reduction	$1,170,000
Bovine Brucellosis		
Average number of brucellosis trace tests per year[16]		252,000
Average cost of producers' time, labor, etc. (per animal)		$3.00
Cost of brucellosis testing		$756,000
Value associated with reduced number of animals requiring testing due to improved animal disease traceability		
	25% reduction	$189,000
	50% reduction	$378,000
	75% reduction	$567,000

[14] USDA, APHIS, Veterinary Services data for 2010.
[15] Based on the Regulatory Impact Analysis estimate of the chute costs to producers of $1.68 to $4.68 per head, times two because each animal must be handled twice.
[16] USDA, APHIS, Veterinary Services data for 2010.

In addition, there are other costs that are difficult to value, such as the loss of revenue when there is a "hold order" in place preventing the movement of animals into or out of a herd while a test is pending. This can delay the sale of calves, breeding stock or fed cattle, resulting in additional feed costs and missed opportunities to take advantage of favorable market conditions.

Comparison to traceability for sheep and goats

The benefit of traceability, achieved primarily through official identification, is well demonstrated in the sheep and goat industry. In September 2001, the scrapie regulations were revised to require the official identification of sheep and goats not in slaughter channels (except low-risk commercial goats) and any sheep over 18 months-of-age in interstate commerce. In addition, the revision required States to implement and enforce official identification of most sheep and goats upon change of ownership in intrastate commerce.

Official identification means to apply an official identification number to an animal using an approved device or method. It also requires creating and maintaining (for 5 years) a record linking the identification number to the owner of the flock of origin/birth of the animal, if other than the person to whom the official identification numbers were issued.

APHIS maintains a database in which tag manufacturers enter the distribution records for official eartags. Most eartags are distributed directly from the tag manufacturer to the end-user. Some tags are redistributed by State or Federal offices who record the end-user in the database.

Since implementation of the Federal identification requirements for sheep and goats, only 12 percent of the positive animals identified through slaughter surveillance that did not have official identification were successfully traced to the flock of origin, whereas 94 percent of the

positive animals that were officially identified were successfully traced to the flock of origin. In FY 2010, estimates indicate that 93 percent of all mature sheep were officially identified when they arrived at slaughter establishments.

As a result of our ability to effectively traceback diseased animals, scrapie prevalence has decreased from 0.2 percent in 2002-2003 to 0.03 percent in FY 2010, a decrease of 85 percent.

Concluding observations

Official animal identification provides key information resulting in improved traceability. The low level of official identification in the cattle industry is well-documented. For example, 2007-2011 data from bovine spongiform encephalopathy (BSE) surveillance, summarized in table 9, show that on average less than 40 percent of the animals had an official identification eartag. These data findings are similar to those from USDA APHIS (2008) that indicate that 41 percent of beef cattle and 16 percent of beef calves are identified with an official eartag.

Table 9. Summary of BSE Surveillance Samples

Year	Number of Cattle Sampled	Number of Cattle with Official Identification Eartags	Percent of Cattle with Official Identification Eartags
2007	13,192	4,684	36 percent
2008	44,855	18,429	41 percent
2009	45,499	18,217	40 percent
2010	45,251	17,102	38 percent
2011	8,155	2,840	35 percent
2007-2011	156,952	61,272	39 percent

The current low level of official identification in the cattle sector often impedes tracing capability. In comparison, successful traceability in the sheep industry is a direct result of high levels of official identification.

The objective of the proposed rule is to improve traceability, in particular, in the cattle industry. While the proposed rule would only require official identification for animals moving interstate, it is likely that many livestock enterprises will routinely officially identify all of their

animals in anticipation of future, unknown marketing opportunities that may be out-of-State. As a result, we anticipate the level of official identification increasing significantly in the cattle sector.

Market Effects of Improved Traceability

Animal diseases occur unexpectedly. This lack of predictability prevents a straightforward evaluation of the benefits of the proposed traceability regulations. However, we can acquire a sense of the magnitude of the benefits by comparing likely consequences of a disease outbreak under different animal identification capabilities. One of the analyses in the benefit-cost study is based on a relevant scenario.

Simulations were conducted to evaluate potential impacts of restricted export markets as a result of a hypothetical foot-and-mouth disease (FMD) outbreak in southwest Kansas. The study compared impacts under two levels of animal identification: 90-percent traceability and 30-percent traceability. Impacts were evaluated in terms of changes in consumer and producer surplus. Consumer surplus is the difference between what consumers would be willing to pay for a commodity and the price they actually do pay. Producer surplus is the difference between what producers would be willing to accept for a commodity and the price they actually do receive. Gains or losses in producer and consumer surplus represent changes in the welfare of society.

The authors confined the disease spread scenario to a southwest region of Kansas, for which there was well-calibrated and reliable animal location and movement data, critical inputs into the disease spread model. They acknowledged that restricting the model to this geographic area underestimates both the extent of disease spread likely to occur and its duration. However,

they also note that the study results were driven more by export market losses than by animal losses and restricted animal movements associated with the disease outbreak.

It was estimated that with 90-percent traceability, producer surplus would be $4.5 billion (present value over 10 years) larger than if there were 30-percent traceability. The benefits would primarily derive from access to beef export markets expected to become more restricted if 30-percent traceability prevailed. The study also found that consumer surplus would be less with 90-percent traceability than if there were 30-percent traceability, by about $800 million (present value over 10 years). The reason is that under 30-percent traceability, beef that would have been exported had there not been a FMD discovery remains on the domestic market, depressing prices and increasing consumer surplus. The analysis concludes that the net benefit or societal gain of having 90-percent traceability as compared to 30-percent traceability if there were a contained FMD outbreak in Kansas, based on the model's assumptions, could total $3.7 billion (present value over 10 years).

While this scenario does not specifically model conditions that may exist under the proposed rule, it does provide an indication of the magnitude of potential trade benefits that are expected to derive from having a traceability program in place when there is a disease outbreak. As pointed out in the benefit-cost study, the benefits of a traceability system are for the most part potential benefits that rest on largely unknown probabilities of disease occurrence.

Having a traceability system in place would allow the United States to trace animal disease more quickly and efficiently, thereby minimizing not only the spread of disease but also the trade impacts an outbreak may have. Major beef-exporting competitors of the United States, including Australia, Brazil, and Canada, have traceability systems.

The value of U.S. exports of live cattle in 2010 was $131.8 million, and the value of U.S. beef exports totaled $2.8 billion. The value of U.S. cattle and calf production in 2009 was $31.8 billion.[17] Annual incremental costs of the proposed rule for cattle enterprises are estimated to be between $14.5 million and $34.3 million, assuming official identification would be undertaken separately from other routine management practices; or between $5.5 million and $7.3 million, assuming that tagging would be combined with other routine management practices that require working cattle through a chute. The upper range of these costs would represent about one-tenth of one percent of the value of domestic cattle and calf production. In other words, if there were an animal disease outbreak in the United States that affected our domestic and international beef markets, preservation of a very small proportion of these markets would need to be attributable to the animal disease traceability program in order to justify estimated private sector costs.

The primary benefit of the proposed regulations would be the enhanced ability of producers, State and Tribes, and the Federal government to regionalize and compartmentalize animal health issues more quickly, minimizing losses and enabling reestablishment of foreign and domestic market access with minimum delay in the wake of an animal disease event.

Benefits Summary

The three cases presented illustrate how the Federal government, States and Tribes, and producers can directly benefit from the proposed animal disease traceability system. For producers affected by a disease traceback, the proposed traceability system would mean that fewer tests would need to be carried out (and therefore fewer animals would need to be worked through a chute) and livestock sales and other farm operations would not be disrupted. Under the proposed traceability system, there would be an increased likelihood that all exposed animals

[17] http://www.ers.usda.gov/news/BSECoverage.htm

would be found. Tracebacks that cannot be successfully concluded because of incomplete records contribute to uncertainty about supply and prices.

In addition to the direct benefits to producers, the proposed traceability system would provide added assurance that APHIS has the capability to respond to a foreign animal disease outbreak such as foot and mouth disease quickly and efficiently, As described in the foregoing example, effects for producers due to changes in prices and international market access could be dramatic, in this scenario resulting in a $3.7 billion net benefit to society because of improved animal disease traceability.

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 that describes expected impacts of a proposed rule on small entities.

Reason Action is Being Considered

APHIS enacts regulations to prevent, control, and eradicate diseases of livestock (including poultry), thereby increasing foreign and domestic confidence in the safety of U.S. farm-raised animals and their products. Many animal disease program regulations, such as those for bovine tuberculosis and brucellosis, contain components of a traceability program, e.g., requirements for certain animals moving interstate to be officially identified and accompanied by documents recording, among other things, the animals' official identification numbers and the locations from and to which they are being moved. However, the United States does not currently have an overarching animal disease traceability program integrated to meet the needs

of all species and disease programs. This rulemaking is intended to address animal disease traceability gaps in the regulations and enhance our ability to safeguard animal health.

Objective of and Legal Basis for the Rule

This proposed rule would establish minimum traceability requirements, namely, official identification of livestock moved interstate unless specifically exempted and issuance of an interstate certificate of veterinary inspection (ICVI) or other acceptable movement documentation. The rule reflects a flexible yet coordinated approach that would enable States, Tribes, and livestock producers to use means of traceability that work best for them. The objective is to improve APHIS' ability to trace livestock in the event disease is found.

In accordance with the Animal Health Protection Act (7 U.S.C. 8301 et seq.), the Secretary of Agriculture has the authority to promulgate regulations to prevent the introduction into the United States or dissemination of any pest or disease of livestock.

Potentially Affected Small Entities

As explained in the Supplemental Information for this rule, APHIS expects the cattle industry would be the livestock sector principally affected by this rule. Cattle enterprises that move cattle interstate would be directly affected.

Existing animal identification requirements for the interstate movement of farm-raised animals largely satisfy the proposed official animal identification and ICVI requirements. Cattle moving interstate are often required to be accompanied by a health certificate under current regulations. Some diseases require specific statements and tests as part of the certificate. In addition, nearly all States require a certificate of veterinary inspection for breeder and feeder cattle entering from another State.

Table 10 shows cattle industries that would be affected by the rule, as categorized by the North American Industry Classification System, and sales and employment information that underscores the prevalence of small entities among establishments that comprise these industries. We note that numbers of establishments shown include ones that may not be directly affected by the rule, in particular, those that do not move cattle interstate.

Table 10. Small-entity representation in cattle sector industries that may be affected by the proposed rule, 2007

Industry (NAICS code)	Number of Establishments	SBA Small-Entity Size Standard	Average Value of Establishments' Annual Sales[1]	Number of Establishments with fewer than 100 Employees
Beef cattle ranching and farming (112111)	656,475	≤ $750,000 annual receipts	$43,197	
Dairy cattle and milk production (112120)	57,318	≤ $750,000 annual receipts	$611,773	
Cattle feedlots (112112)	31,065	≤ $2,500,0000 annual receipts	$977,048	
Animal (except poultry) slaughtering (311611)	1,597	≤ 500 employees		1,466
Rendering and meat byproduct processing (311613)	228	≤ 500 employees		208

Sources: USDA NASS, 2007 Census of Agriculture, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_US/st99_1_062_062.pdf; U.S. Census Bureau, 2007 Economic Census, http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-ds_name=EC0731I1&-_lang=en.

[1]Includes government payments.

The Census of Agriculture allows further examination of small entities that could be affected by the proposed rule, namely, small family cattle enterprises and cattle enterprises for which one or more of the principal operators belong to a socially disadvantaged group. Small family farms are defined by USDA as family farms with gross sales of less than $250,000 (USDA ERS 2010). (Any farm where the operator and persons related to the operator own a majority of the business is considered a family farm.) In 2007, nearly 88 percent of farms with cattle and calf inventories were small family farms.

Small family farms are further divided into retirement farms (operators reporting they are retired), residential/ lifestyle farms (operators reporting a major occupation other than farming), and farming-occupation farms (operators reporting farming as their major occupation). Farming-occupation farms are classified as low-sales small family farms (sales less than $100,000) and high-sales small family farms (sales between $100,000 and $249,999). A fifth category of small family farms are limited resource farms, which have sales of not more than $100,000 and a total household income at or below the national poverty level for a family of four, or less than 50 percent of county median household income.

The Census of Agriculture indicates that in 2007, 40 percent of small family cattle operations were residential/lifestyle farms. With regard to the other categories of small family cattle enterprises, over one-fourth of the owners reported that they had already retired, limited resource farms and the low-sales farming-occupation farms each comprised about 15 percent of the operations, and about 6 percent were high-sales farming-occupation farms.

Socially disadvantaged groups are ones that historically have been subjected to bias and prejudice. They include women, persons of Hispanic origin, American Indians or Alaska Natives, Asians, African Americans, and Native Hawaiians or other Pacific Islanders. These

farm operators, themselves, may not have experienced bias or prejudice, but they identify with one or more of these gender, ethnic, and racial groups.

For more than 8 percent of cattle operations in 2007, the principal operator was a woman. About 5 percent of cattle operations had a person of Hispanic heritage and/or an American Indian or Alaskan native as one of their top-three operators. Fewer than 2 percent of cattle operations have an African-American as a top-three operator.

Most cattle enterprises are small family farms. As is true for other cattle operations, incremental costs of the proposed rule for these farms would depend upon whether official animal identification would be incorporated into ongoing, routine management practices, and whether the enterprise is already moving cattle interstate other than for immediate slaughter.

Projected Reporting, Recordkeeping, and Other Compliance Requirements

Reporting and recordkeeping requirements associated with the proposed rule are discussed in the rule under the heading "Paperwork Reduction Act." APHIS would require that any State, Tribe, accredited veterinarian, or other person or entity who distributes official identification devices maintain for a minimum of 5 years a record of the names and addresses of anyone to whom the devices were distributed. APHIS would also require that approved livestock facilities keep for a minimum of 5 years paper or electronic records of any ICVI's or alternate documentation used in lieu of an ICVI for livestock that enter the facility on or after the effective date of the final rule following from this proposal. If an animal loses an official identification device and needs a new one, the person applying the new one would have to record information about the event and maintain the record for 5 years.

Duplication, Overlap, or Conflict with Existing Rules and Regulations

APHIS has not identified any duplication, overlap, or conflict of the proposed rule with other Federal rules.

Alternatives to minimize Significant Economic Impacts of the Rule

APHIS has developed this rule intent on minimizing costs that the private sector may bear. Incremental costs of official animal identification would be minimal for many cattle operations that would incorporate this activity into current herd management practices involving eartagging. Similarly, current movement documentation required by nearly all States for inshipments of breeding and feeder cattle is much the same as the proposed ICVI; incremental costs for operations that already move cattle interstate other than for immediate slaughter would be minimal.

The rule's implementation would be phased-in over time, as performance targets are achieved. The collaborative manner in which the rule's implementation is intended to advance, with representatives from States, Tribes, and the affected industries advising APHIS on the effectiveness of various elements of the traceability program, is also expected to help minimize operational burdens.

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