

U.S. DEPARTMENT OF AGRICULTURE

Food Safety and Inspection Service

Preliminary Cost-Benefit Analysis

Proposed Performance Standards for *Salmonella* in Raw Comminuted Pork and Intact or Non-Intact Pork Cuts

Preliminary Cost-Benefit Analysis
Raw Comminuted Pork and Intact or Non-Intact Pork Cuts Performance Standards

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I. Introduction

FSIS is proposing pathogen reduction performance standards for *Salmonella* in raw comminuted pork and raw intact or non-intact pork cuts. Should these standards become final, the Agency plans to assess whether establishments producing these products are effectively addressing *Salmonella* using a moving window of FSIS sampling results. Approximately one year (52 weeks) after the new performance standards are made final, the Agency plans to post, based on the most recent 52 *Salmonella* sample results, whether the establishment is meeting or not meeting the performance standards. Should the pork performance standards become final, they would replace the Raw Pork Sampling Program.¹ FSIS estimates that resources needed to operate the pork performance standards would be more than the resources used in the Raw Pork Sampling Program due to follow-up sampling.

This cost-benefit analysis (CBA) quantifies and explains the potential costs and benefits of the proposed *Salmonella* performance standards for raw comminuted pork and intact or non-intact pork cuts. Establishments meeting the performance standards would not have any cost associated with these standards. Establishments that initially do not meet the proposed standard but aspire to do so, would incur additional costs when making changes to their production processes to lower the prevalence of *Salmonella*. For example, establishments may conduct *Salmonella* sampling and testing, apply antimicrobial interventions (including purchasing necessary capital equipment), and/or conduct training. To ensure a conservative cost estimate, FSIS assumes that establishments would reassess their Hazard Analysis and Critical Control Points (HACCP) System plan² if they do not meet the proposed performance standards.

¹ FSIS Notice: Raw Pork Parts Sampling Program: [Raw Pork Products Sampling Program | Food Safety and Inspection Service \(usda.gov\)](#).

² 9 CFR 417.4(a)(3) requires an establishment to conduct a HACCP re-assessment at least annually and “whenever any changes occur that could affect the hazard analysis or alter the HACCP plan.”

Establishments that decide to make changes to meet the performance standards, such as applying antimicrobial interventions, would also validate their HACCP plan. In addition, raw comminuted pork establishments and intact or non-intact pork cuts establishments that initially do not meet the proposed performance standards, would face costs regarding corrective actions. The type of corrective action, and the implementation of these actions, would ultimately be the choice of the individual establishment.

The benefits of the proposed standards come from a reduction of *Salmonella* illnesses. As is documented in the 2020 Risk Assessment,³ establishments that do not meet the performance standards but then make changes to meet the performance standards would reduce *Salmonella* contamination in their product, which would result in health benefits from averted *Salmonella* illnesses.

An establishment's production volume would likely influence the types of changes made to their production process in response to the proposed pathogen reduction performance standards. For this reason, FSIS used the volume categories described in the 2020 Risk Assessment to help predict the changes that establishments would most likely implement to meet the proposed performance standards. The 2020 Risk Assessment describes the methodology for developing the proposed pathogen reduction performance standards for raw comminuted pork and intact or non-intact pork cuts based on daily production volume thresholds. As described in the 2020 Risk Assessment, comminuted pork establishments producing 6,000 to 50,000 pounds a day roughly align with the medium strata for comminuted pork establishments and establishments producing over 50,000 pounds a day with the large strata. Additionally, intact or non-intact pork cuts establishments producing more than 50,000 pounds a day roughly align with

³ https://www.fsis.usda.gov/sites/default/files/media_file/2022-02/Pork_Salmonella_Performance_Standards_Risk_Assessment_April_8_2020_Feb_8_2022.pdf

the large strata for establishments that produce pork cuts. The proposed performance standards would be applicable to these establishments. FSIS used its Public Health Information System (PHIS) data to identify these establishments by volume category. Table 1 details the summary of the proposed pork performance standards.

Table 1. Proposed <i>Salmonella</i> Performance Standards for Pork Products		
Product	Maximum number of allowable positive samples	Minimum number of samples needed to assess establishment performance³
Raw Comminuted Pork ¹	13 of 52	52
Intact or Non-Intact Pork Cuts ²	6 of 52	52
¹ Medium and large raw comminuted pork establishments that produce more than 6,000 pounds of product per day. ² Large intact or non-intact pork cuts establishments that produce more than 50,000 pounds of product per day. ³ Any establishment with more than the maximum number of allowable positive samples for that product class in a 52-week window would be categorized as Category 3 (see below) even when less than the minimum number of samples (52) are collected/analyzed.		

II. Baseline

The CBA used the same PHIS data used in the 2020 Risk Assessment to identify establishments that produce raw comminuted pork and intact or non-intact pork cuts. In this data set, there were 1,334 raw comminuted pork establishments with a total annual production volume of 3.5 billion pounds and 1,070 intact or non-intact pork cuts establishments with a production volume of 5.5 billion pounds as displayed in table 2.

The proposed performance standards would include medium and large raw comminuted pork establishments producing more than 6,000 pounds per day. The proposed performance standard for these comminuted pork establishments is 13 allowable *Salmonella*-positive samples per 52 samples collected per 12-month period. The proposed performance standards also include

large intact or non-intact pork cuts establishments producing more than 50,000 pounds per day. The proposed performance standard for these intact or non-intact pork cuts establishments is 6 allowable *Salmonella*-positive samples per 52 samples collected per 12-month period. According to the 2020 Risk Assessment,⁴ there would be 138 establishments subject to the raw comminuted pork performance standard and 38 establishments subject to the intact or non-intact pork cuts performance standard, representing 10 and 4 percent of all establishments and 96 and 91 percent of total production volume, respectively, table 2. According to the 2020 Risk Assessment, 20 establishments would be subject to both standards, with two establishments estimated to initially not meet both standards and seven establishments estimated to not meet one of the standards. Establishments subject to both standards are likely to take the same actions as other establishments not meeting one standard, but FSIS included costs for meeting both standards to ensure a conservative cost estimate. Table 2 displays the raw comminuted pork and intact or non-intact pork cuts establishments and production volume subject to the standards.

⁴ https://www.fsis.usda.gov/sites/default/files/media_file/2022-02/Pork_Salmonella_Performance_Standards_Risk_Assessment_April_8_2020_Feb_8_2022.pdf

Table 2. Initial and Affected Share of Establishments and Production Volume (2020 Risk Assessment)¹		
	Industry Total	
	Raw Comminuted Pork	Intact or Non-Intact Pork Cuts
Number of establishments	1,334	1,070
Annual production volume (Billion lbs.)	3.46	5.53
	Total Subject to the Performance Standard	
	Raw Comminuted Pork²	Intact or Non-Intact Pork Cuts³
Number of establishments	138	38
Share of establishments	10%	4%
Production volume (Billion lbs.)	3.33	5.06
Share of Total Production	96%	91%
<p>¹The 2020 Risk Assessment defines the proposed performance standards as a maximum allowable number of <i>Salmonella</i> positive samples in a 52-week moving window ending the last Saturday of the previous month. FSIS is proposing performance standards to accomplish a reduction in <i>Salmonella</i> illnesses. The 2020 Risk Assessment contains these findings.</p> <p>²Medium and large raw comminuted pork establishments that produce more than 6,000 pounds of product per day.</p> <p>³Large intact or non-intact pork cuts establishments that produce more than 50,000 pounds of product per day.</p>		

According to the 2020 Risk Assessment, 56 percent of establishments subject to the raw comminuted pork performance standard and 61 percent of establishments subject to the intact or non-intact pork cuts performance standard would meet the standard. Also, an estimated 51 percent of the production volume for raw comminuted pork and 67 percent of production volume for intact or non-intact cuts would initially meet the performance standards. The 2020 Risk Assessment estimates that 45 percent of establishments would attempt to meet the performance standard after initially not meeting the standard. Table 3 displays the estimated number of establishments not meeting the standards, their production volume, the estimated number of establishments that would attempt to meet the standards after making changes, and their production volume.

Table 3. Share of Establishments and Production Volume Not Meeting the Standards (2020 Risk Assessment¹)

Metric	Raw Comminuted Pork ²	Intact or Non-Intact Pork Cuts ³
	Establishments	Establishments
Establishments		
That would initially not meet the standards.	61	15
That are expected to meet the standards after initially not meeting the standards.	28	7
Production Volume		
	Billion Pounds	Billion Pounds
That would initially not meet the standards.	1.64	1.65
That is expected to meet after initially not meeting the standards. ⁴	0.74	0.77

¹The 2020 Risk Assessment defines the percent of establishments meeting the standards and the percent of establishments seeking to meet the proposed standard after initially not meeting the standards.

²Medium and large raw comminuted pork establishments that produce more than 6,000 pounds of product per day.

³ Large intact or non-intact pork cuts establishments that produce more than 50,000 pounds of product per day.

⁴Calculated using the average production volume for establishments not meeting the performance standards and multiplying that per establishment average by the total number of establishments likely to meet after initially not meeting the proposed standards.

Should these proposed standards become final, about one year after FSIS starts assessing whether establishments meet the standards, FSIS would determine each establishment’s performance based on the sample results from the previous 52-week window of FSIS *Salmonella* sample results. Each establishment, subject to the pork performance standards, would be categorized on the FSIS website. Please see definitions for meeting the performance standards, not meeting the performance standards and the categories below:

Meeting. Establishments with no more than the allowable number of positive *Salmonella* sample results for that product class during the 52-week window ending the last Saturday of the previous month, based on the last 52 FSIS *Salmonella* sample results.

Not Meeting. Establishments with more than the allowable number of positive *Salmonella* sample results for that product class during the 52-week window ending the last Saturday of the previous month, based on the last 52 FSIS *Salmonella* sample results.

Category 1: Establishments with 50% or less of the allowable number of positive *Salmonella* sample results for that product class during the most recent 52-week window, based on the last 52 FSIS *Salmonella* sample results. These establishments would meet the performance standards.

Category 2: Establishments with greater than 50% but not more than the allowable number of positive *Salmonella* sample results for that product class during the most recent 52-week window, based on the last 52 FSIS *Salmonella* sample results. These establishments would meet the performance standards. FSIS assumes establishments in Category 2 would not take actions that require additional resources to move into Category 1. FSIS is requesting comments on this assumption.

Category 3: Establishments with more than the allowable number of positive *Salmonella* sample results for that product class during the most recent 52-week window, based on the last 52 FSIS *Salmonella* sample results. These establishments would **not** meet the performance standards.

III. Industry Cost

Establishments that do not meet the performance standards would incur costs associated with their HACCP plan reassessment and a portion of those establishments would incur cost for

Agency Food Safety Assessments (FSAs). FSIS expects some establishments to incur additional costs if they change their production processes in response to not meeting the performance standards. These changes should lower the prevalence of *Salmonella*. Some examples of what establishments may do in response to not meeting the performance standards include employing antimicrobial equipment, applying antimicrobial solution, conducting *Salmonella* testing, and training employees.

FSIS used data from surveys and reports to estimate the industry costs. Survey data from the FSIS Phase II Pork Exploratory Sampling, conducted June 1, 2018 to May 31, 2019,⁵ showed that about 50 percent of raw comminuted pork establishments and intact or non-intact pork cuts establishments do not apply any antimicrobials. Among the establishments that use antimicrobials, organic acids and Peracetic Acid (PAA) were the most commonly used. FSIS experts noted that establishments seeking to make changes to meet the performance standards would typically use PAA instead of organic acids because PAA achieves larger pathogen reductions in pork products.⁶ FSIS used the costs detailed in the 2015 Research Triangle Institute (RTI) International *Costs of Food Safety Investments*⁷ report for PAA solution and antimicrobial equipment costs estimates.

⁵ FSIS Pork Data for Phase II of the Pork Exploratory Sampling (June 1, 2018 to May 31st, 2019)

⁶ Brashears, Mindy. 2019. Research Report: Texas Tech University. Available at: [\(PDF\) Reduction of Salmonella in Post-Harvest Chilled Pork Head Meat Using Multiple Interventions \(researchgate.net\)](#).

⁷ Viator, C. Et. Al. 2015. Research Triangle Institute (RTI) International collected data on the cost of food safety investments for the production of meat and poultry products at the pre-harvest and slaughter and processing stages. This data was provided to FSIS in a final report titled *Costs of Food Safety Investments* and was prepared by Catherine L. Viator, Mary K. Muth, and Jenna E. Brophy. The contract number is No. AG-3A94-B-13-0003. The order number is AG-3A94-K-14-0056. Table 4-8. Costs of Antimicrobial Equipment Used in Large Slaughter and Processing Establishments and Table 4-10. Costs of Antimicrobial Solutions, Low and High Cost Methods, Pork Large Establishment.

FSIS used the 2015 RTI *Meat Industry Survey in Support of Public Health Risk-Based Inspection* report⁸ to identify establishment actions for pathogen sampling and testing. As mentioned earlier, sampling and testing is another method establishments could use to respond to the proposed performance standards. The survey noted that 31.7 percent of meat establishments test for *Salmonella* during fabrication.⁹ FSIS used these survey results to assume that 68.3 (100 – 31.7) percent of establishments that initially do not meet the performance standard, but choose to make changes to meet the performance standards, would add *Salmonella* sampling and testing as a method to monitor their pathogen load.

FSIS used data from the Bureau of Labor Statistics (BLS) to inflate the cost of antimicrobial equipment, antimicrobial solution and *Salmonella* testing cost that were reported in the 2015 RTI *Costs of Food Safety Investments* report from 2015 to 2020 dollars.

A. Antimicrobial Costs

1. Annual Antimicrobial Equipment Costs

Establishments that do not meet the pork performance standards and choose to make changes to meet these standards are likely to add antimicrobial interventions to their production process. FSIS assumes these establishments would purchase automatic sprayers or spray cabinets to apply the antimicrobial solution.¹⁰ FSIS assumes establishments that make changes to meet

⁸ Viator, C. Et. Al. 2015. RTI International collected data in support of Risk-Based Inspection. This data was provided to FSIS in a final report titled *Meat Industry Survey in Support of Public Health Risk-Based Inspection* and was prepared by Catherine L. Viator, Sheri C. Cates, Shawn A. Karns, Peter Siegel, Jenna E. Brophy, Ariana Napier and Mary K. Muth. The contract number is No. AG-3A94-B-13-0003. The order number is AG-3A94-B-13-0003. Table 5-1. Laboratory Testing Costs. *Salmonella* Screening.

⁹ Meat Industry Survey in Support of Public Health Risk-Based Inspection (2015) (Question 3.4a, b) 31.7% of meat establishments test for *Salmonella* during fabrication.

¹⁰ RTI *Costs of Food Safety Investments* report (2015) notes in Table 4-8 that large pork establishments may use blast chillers as an intervention. FSIS assumes that pork establishments already have this equipment and would not purchase the \$6 million equipment as an intervention. Table 4-7 notes that small pork establishments may use hand sprayers as an intervention. FSIS assumes establishments subject to the standards would not use this equipment because it would not be practical for their daily production volume.

the performance standards and already have equipment for applying antimicrobials, would add a sprayer on the line or extend their spray cabinet.¹¹

Survey data from the FSIS Phase II Pork Exploratory Sampling, conducted June 1, 2018 to May 31, 2019,¹² showed that about 50 percent of raw comminuted pork establishments and 50 percent of intact or non-intact pork cuts establishments do not apply any antimicrobials. FSIS assumes 50 percent of the 28 raw comminuted pork establishments and the 7 intact or non-intact pork cuts establishments that initially do not meet the performance standards but choose to make changes would purchase antimicrobial equipment to meet the performance standards. FSIS assumes the remaining 50 percent already have antimicrobial equipment and would add to their existing equipment.

Cost associated with purchasing and installing antimicrobial equipment ranges from \$26,226 for an automatic sprayer to \$131,129 for a sprayer cabinet. FSIS arrived at these cost estimates by inflating the values found in the 2015 RTI *Costs of Food Safety Investments* report to 2020 dollars.¹³ For this analysis, FSIS assumes medium-volume raw comminuted pork establishments that purchase equipment to meet the performance standard would purchase automatic sprayers. Both higher-volume raw comminuted pork establishments and higher-volume intact or non-intact pork cuts establishments would purchase automatic sprayers or sprayer cabinets. The total antimicrobial equipment cost ranges from \$80,263 to \$251,694, with a primary estimate of \$165,978, annualized at the 7 percent discount rate over 10 years, table 4.

¹¹ FSIS assumes the cost to add a sprayer or extend the spray cabinet is 25 percent of the total cost noted in RTI's *Costs of Food Safety Investments* report (2015).

¹² FSIS Pork Data for Phase II of the Pork Exploratory Sampling (June 1, 2018 to May 31, 2019).

¹³ RTI *Costs of Food Safety Investments* report (2015) Table 4-8 Costs of Antimicrobial Equipment Used in Large Slaughter and Processing Establishments. Costs range from \$24,000 to \$120,000. The costs were inflated, by using the 2020 BLS Producer Price Index (PPI) Commodity data for Machinery and equipment-Agricultural machinery and equipment, not seasonally adjusted (Series ID WPU1114), to \$26,226 to \$131,129.

Table 4. Antimicrobial Equipment Cost (2020\$)			
One-time Cost	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork ¹	\$63,687	\$116,250	\$168,814
Intact or Non-Intact Pork Cuts ²	\$16,576	\$49,728	\$82,880
Total Costs Annualized ³	\$80,263	\$165,978	\$251,694
¹ Medium and large raw comminuted pork establishments that produce more than 6,000 pounds of product per day. ² Large intact or non-intact pork cuts establishments that produce more than 50,000 pounds of product per day. ³ Costs annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding.			

FSIS assumes that establishments would spend approximately 10 percent of their total equipment and installation costs annually in the form of operating, maintenance, and insurance costs.¹⁴ The total antimicrobial equipment maintenance cost ranges from \$52,294 to \$163,984, with a primary estimate of \$108,139, annualized at the 7 percent discount rate over 10 years, table 5.

Table 5. Antimicrobial Equipment Maintenance Cost (2020\$)			
Recurring Cost	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork ¹	\$41,494	\$75,740	\$109,986
Intact or Non-Intact Pork Cuts ²	\$10,800	\$32,399	\$53,998
Total Costs Annualized ³	\$52,294	\$108,139	\$163,984
¹ Medium and large raw comminuted pork establishments that produce more than 6,000 pounds of product per day. ² Large intact or non-intact pork cuts establishments that produce more than 50,000 pounds of product per day. ³ Costs annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding.			

¹⁴ RTI *Costs of Food Safety Investments* report (2015) notes this assumption on page 4-17.

2. Antimicrobial Agents (PAA)

Survey data from the FSIS Phase II Pork Exploratory Sampling, conducted June 1, 2018 to May 31, 2019,¹⁵ showed that about 50 percent of raw comminuted pork establishments and 50 percent of intact or non-intact pork cuts establishments do not apply any antimicrobials. As mentioned above, FSIS found that Peroxyacetic acid (also known as Peracetic acid or PAA) was the most commonly used antimicrobial applied to raw comminuted pork and intact or non-intact pork cuts. The 2015 RTI *Costs of Food Safety Investments* report estimated the cost of PAA to be about \$0.20 per hog head. FSIS divided the cost per head by the 2015 average hog dress weight of 213 pounds¹⁶ to get the per pound cost of \$0.00094. This cost was then inflated to \$0.001 per pound in 2020 dollars.¹⁷ This price per pound was then multiplied by the establishments' annual pounds of raw comminuted pork or intact or non-intact pork cuts production to calculate the antimicrobial solution cost. The total antimicrobial solution cost ranges from \$866,047 to \$1,058,502 with a primary estimate of \$962,274, annualized at the 7 percent discount rate over 10 years, table 6.

¹⁵ FSIS Pork Data for Phase II of the Pork Exploratory Sampling (June 1, 2018 to May 31st, 2019).

¹⁶ USDA Economic Research Service. Livestock Meat & Domestic Data. Livestock poultry live and dressed weights. Average Hog Dressed weight from January 2015- December 2015. <https://www.ers.usda.gov/data-products/livestock-meat-domestic-data/livestock-meat-domestic-data/#> Livestock and poultry live and dressed weights.

¹⁷ RTI *Costs of Food Safety Investments* report (2015) Table 4-10. Costs of Antimicrobial Solutions, Low and High Cost Methods. Cost range from \$0.18 to \$0.22 per head or \$0.0085 to \$0.00103 per pound. The costs were inflated using the 2020 BLS Producer Price Index (PPI) Commodity data for PPI Commodity data for Chemicals and allied products-Other basic organics, not seasonally adjusted (Series ID WPU061403). FSIS assumes the antimicrobial solution cost to service an additional sprayer or extended spray cabinet is 25 percent of the total cost.

Table 6. Antimicrobial Solution Cost (2020\$)			
Recurring Cost	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork ¹	\$419,252	\$465,835	\$512,419
Intact or Non-Intact Pork Cuts ²	\$446,795	\$496,439	\$546,083
Total Costs Annualized ³	\$866,047	\$962,274	\$1,058,502
¹ Medium and large raw comminuted pork establishments that produce more than 6,000 pounds of product per day. ² Large intact or non-intact pork cuts establishments that produce more than 50,000 pounds of product per day. ³ Costs annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding.			

B. Industry Sampling, Testing and the Associated Lost Product Cost

FSIS assumes that establishments that do not meet the performance standards and make changes to meet the performance standard would incur additional costs associated with sampling, testing and lost product. As detailed in table 3, FSIS estimates 28 raw comminuted pork establishments and 7 intact or non-intact pork cuts establishments would make changes to meet the performance standards after initially not meeting the performance standards.

FSIS assumes 21 of the 28 raw comminuted pork establishments and 5 of the 7 intact or non-intact pork cuts establishments would incur the cost for the sample, the test and the associated lost product. FSIS assumes that a Quality Technician (QT) would take 15 minutes¹⁸ to take one sample at a compensation of \$11.04 per sample.¹⁹ FSIS estimates the average price

¹⁸ FSIS assumes it would take a Quality Technician 15 minutes to a sample in pork establishments similar to beef establishments. USDA/FSIS 2013 Pathogen Controls in Beef Operations Summary Results Survey (BOSR). Page 32: http://www.fsis.usda.gov/sites/default/files/media_file/2022-02/Beef-Operations-Survey-Results.pdf.

¹⁹ Bureau of Labor Statistics, Occupational Employment and Wages, May 2020 19-4011 Agricultural and Food Science Technicians in the Animal Slaughtering and Process Industry (NAICS code 311600). Mean wage estimate of \$22.08 obtained from the <https://www.bls.gov/oes/current/oes194011.htm>. To obtain the wage estimate of \$11.04 per sample the wage estimate was multiplied by a benefits and overhead factor of two and then divided by four to account for the required time.

for raw comminuted pork is \$0.80 per pound²⁰ and the average price of intact or non-intact pork cuts is \$0.78 per pound.²¹ FSIS assumes establishments would model their sampling after the Raw Pork Parts Sampling Program and lose approximately two pounds of product per sample.²² FSIS estimates the cost for the new *Salmonella* sampling, testing and associated lost product ranges from \$80,669 to \$128,733 with a primary estimate of \$105,651, annualized at the 7 percent discount rate over 10 years, table 7.

FSIS estimates that 5 of the 28 raw comminuted pork establishments and 1 of the 7 intact or non-intact pork cuts establishments already sample and test for a pathogen²³ and would only incur cost associated with adding a *Salmonella* test. FSIS assumes establishments would monitor pathogen reduction by sampling before and after their antimicrobial intervention once a week.²⁴ FSIS assumes establishments would use a *Salmonella* screening test and that these establishments operate about 50 weeks a year.²⁵ FSIS estimates the cost for a *Salmonella* test to

²⁰ USDA: Economic Research Service: Live Stock Meat: Domestic Data Whole sale price: 2020 Average: Trimmings, 72%, fresh: <https://www.ers.usda.gov/data-products/livestock-meat-domestic-data/livestock-meat-domestic-data/#Wholesale%20Prices>. Converted \$/cwt to \$/lbs. using the conversion rate 1/100.

²¹ USDA: Economic Research Service: Live Stock Meat: Domestic Data Whole sale price: 2020 Average: Pork cutout composite: <https://www.ers.usda.gov/data-products/livestock-meat-domestic-data/livestock-meat-domestic-data/#Wholesale%20Prices>. Converted \$/cwt to \$/lbs. using the conversion rate 1/100.

²² FSIS Notice: Raw Pork Parts Sampling Program: [Raw Pork Products Sampling Program | Food Safety and Inspection Service \(usda.gov\)](#). The sampling for the pork performance standards would model the raw pork parts sampling program. To be conservative, FSIS uses the assigned number of samples (60 per establishment) to calculate the lost product cost.

²³ 9 CFR 310.18 Contamination of carcasses, organs, or other parts. <https://www.law.cornell.edu/cfr/text/9/310.18>. 9 CFR 310.18 requires that each official establishment that slaughter swine of any class to develop and test for the microbial organisms that would be most effective in assessing its process. According to the 2020 Risk Assessment, 45 establishments subject to the pork performance standards also slaughter swine at their establishments. These establishments are required by 9 CFR 310.18 to sample and test for at least one pathogen or indicator. These 45 establishments represent about 25.6 percent of the establishments subject to the standards. $(45/176) = 25.6$ percent.

²⁴ FSIS Notice: Raw Pork Parts Sampling Program: [Raw Pork Products Sampling Program | Food Safety and Inspection Service \(usda.gov\)](#). FSIS assumes establishments would sample once a week to model the Sampling Program.

²⁵ RTI *Costs of Food Safety Investments* report (2015) Table 2-5 Standard Assumptions Used for Cost Calculations by Establishment Size and Species.

be about \$28 per test in 2020 dollars.²⁶ The cost to add *Salmonella* testing for establishments that already sample ranges from \$11,400 to \$21,600 with a primary estimate of \$16,800, annualized at the 7 percent discount rate over 10 years, table 7.

FSIS estimates that 2 of the 28 raw comminuted pork establishments and 1 of the 7 intact or non-intact pork cuts establishments already test for *Salmonella*²⁷ and would not incur any additional costs. The total *Salmonella* sampling and test cost ranges from \$92,069 to \$150,333 with a primary estimate of \$122,451, annualized at the 7 percent discount rate over 10 years, table 7.

Table 7. Annual <i>Salmonella</i> Sampling and Testing and Associated Lost Product Cost (2020\$)				
	Establishments	Low	Medium	High
Establishments that do not sample (2020\$)				
Comminuted Pork >6,000 per day	21	\$65,000	\$85,353	\$104,155
Intact or Non-Intact Pork Cuts >50,000 per day	5	\$15,669	\$20,298	\$24,578
Establishments that already sample (2020\$)				
Comminuted Pork >6,000 per day	5	\$9,500	\$14,000	\$18,000
Intact or Non-Intact Pork Cuts >50,000 per day	1	\$1,900	\$2,800	\$3,600
Total <i>Salmonella</i> Sampling and Testing and Associated Lost Product Costs Annualized¹		\$92,069	\$122,451	\$150,333
¹ Costs annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding.				
Note that two raw comminuted pork establishments and one intact or non-intact pork cuts establishment already tests for <i>Salmonella</i> and would not incur any additional costs.				

C. HACCP Plan Reassessment and Validation

In order to ensure their HACCP systems are functioning correctly, FSIS assumes that all establishments that do not meet the proposed performance standards would need to reassess their

²⁶ RTI *Costs of Food Safety Investments* report (2015) Table 5-1. Laboratory Testing Cost. *Salmonella* screening cost range from \$17 to \$32. The cost inflated using the 2020 BLS Employment Cost Index Total compensation for Private industry workers in Service-providing; management, professional, and related occupations (Series ID CIU201S000100000I).

²⁷ RTI *Meat Industry Survey in Support of Public Health Risk-Based Inspection* (2015) (Question 3.4a, b) 31.7% of meat establishments test for *Salmonella* during fabrication.

HACCP plans.²⁸ Establishments, to maintain an adequate HACCP system, may need to address the *Salmonella* pathogen in their HACCP plans, rather than through a prerequisite program such as Sanitation Standard Operating Procedures.

Additionally, some establishments may choose to make changes to their production processes that need to be validated. To ensure a conservative cost estimate, FSIS assumed that all establishments that initially do not meet the proposed performance standards and choose to make changes, would reassess and validate their HACCP plan.

1. HACCP Plan Reassessment Costs

FSIS used the 2015 RTI *Costs of Food Safety Investments* report to estimate the cost of reassessing a plan.²⁹ The survey showed that the labor hours required for reassessment for large establishments ranged from 30 to 90 hours. The 2015 RTI *Costs of Food Safety Investments* report notes that the reassessment would be completed by an experienced production employee.³⁰ The 2020 hourly wage for a production employee is \$15.00.³¹ FSIS applied a benefits and overhead factor of two to the hourly wage rate to account for employee benefits and overhead. The total estimated compensation rate is \$30.00 per hour.

2. HACCP Plan Validation Costs

²⁸ 9 CFR 417.4(a)(3) requires establishment to conduct a HACCP reassessment at least annually and “whenever any changes occur that could affect the hazard analysis or alter the HACCP plan.”

²⁹ RTI *Costs of Food Safety Investments* report (2015) Table 4-1. Costs of HACCP Plan Development, Validation, and Reassessment per HACCP Category.

³⁰ RTI *Costs of Food Safety Investments* report (2015) Table 4-1. Costs of HACCP Plan Development, Validation, and Reassessment per HACCP Category. Labor type required to develop and validate a HACCP plan is generally a food scientist employee, while a production employee with additional experience would reassess the plan.

³¹ Mean hourly wage estimate of \$15.00 obtained from the Bureau of Labor Statistics, May 2020 National Industry-Specific Occupational Employment and Wage Estimates for 51-3023 Production Occupations. <https://www.bls.gov/oes/current/oes513023.htm>.

The 2015 RTI *Costs of Food Safety Investments* report noted that HACCP validation takes a Food Scientist 160 to 480 hours to complete.³² The 2020 hourly wage for a Food Scientist is \$38.55.³³ The total estimated compensation rate of \$77.10 per hour includes a benefits and overhead factor of two. The total HACCP plan reassessment and validation costs range from \$66,552 to \$199,658 with a primary estimate of \$133,106, annualized at the 7 percent discount rate over 10 years, table 8.

Table 8. HACCP Plan Reassessment and Validation Costs (2020\$)				
One-Time Reassessment Cost	Number of Establishments	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork ¹	61	\$7,305	\$14,610	\$21,915
Intact or Non-Intact Pork Cuts ²	15	\$1,796	\$3,593	\$5,389
One-Time Validation Cost	Number of Establishments	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork ¹	28	\$45,961	\$91,922	\$137,883
Intact or Non-Intact Pork Cuts ²	7	\$11,490	\$22,981	\$34,471
Total Reassessment and Validation Costs Annualized ³		\$66,552	\$133,106	\$199,658
¹ Medium and large raw comminuted pork establishments that produce more than 6,000 pounds of product per day. ² Large intact or non-intact pork cuts establishments that produce more than 50,000 pounds of product per day. ³ Costs annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding.				

D. Training Cost

³² RTI *Costs of Food Safety Investments* report (2015) Table 4-1. Costs of HACCP Plan Development, Validation, and Reassessment per HACCP Category. Labor type required to develop and validate a HACCP plan is generally a food scientist employee, while a production employee with additional experience would reassess the plan.

³³ Mean hourly wage estimate of \$38.55 obtained from the Bureau of Labor Statistics, May 2020 National Industry-Specific Occupational Employment and Wage Estimates for 19-1012 Food Scientists & Technologists. <https://www.bls.gov/oes/current/oes191012.htm>.

FSIS predicts that in addition to costs associated with HACCP plan reassessment and validation, establishments that choose to make changes to their HACCP system to meet the proposed performance standards would incur costs for employee training. Production employees may be trained on operating new equipment, mixing antimicrobial solution or any additional tasks associated with addressing pathogens in the establishment's HACCP plan. FSIS assumes that these establishments would operate two shifts and a Quality Control (QC) manager would train a production employee on each shift.³⁴

1. One-time Training Cost

FSIS assumes that the one-time training would last one to three hours.³⁵ The 2020 hourly wage for a QC manager is \$56.82.³⁶ The total compensation for a QC manager is \$113.64 and the total compensation for a production employee is \$30.00. The total wage compensation includes a benefits and overhead factor of two.

2. Recurring Training Costs

Establishments would also accrue additional costs due to employee turnover. As the production employees responsible for ensuring proper antimicrobial application or other pathogen control related tasks leave over time, establishments would train new hires to replace them. To estimate annual recurring training costs, FSIS used a turnover rate of 48.3 percent³⁷ and applied it to the one-time training costs previously calculated. These recurring costs would begin the year after

³⁴ RTI *Costs of Food Safety Investments* report (2015) Table 2-5 Standard Assumptions Used for Cost Calculations by Establishment Size and Species.

³⁵ RTI *Costs of Food Safety Investments* report (2015). Table 4-4. Training Costs for Management and Production Employees. Annual Refresher Training Hours.

³⁶ Mean hourly wage estimate of \$56.82 obtained from the Bureau of Labor Statistics, May 2020 National Industry-Specific Occupational Employment and Wage Estimates for 11-3051 Management Occupations. <https://www.bls.gov/oes/current/oes113051.htm>.

³⁷ 2020 annual total separations rate for nondurable goods, Bureau of Labor Statistics Job Openings and Labor Turnover Survey, available at: <https://www.bls.gov/news.release/jolts.t16.htm>.

establishments choose to make changes to their HACCP plans. The total one-time and recurring training costs range from \$5,550 to \$16,646, with a primary estimate of \$11,097, annualized at the 7 percent discount rate over 10 years, table 9.

Table 9. One-time Training and Recurring Training Costs (2020\$)				
One-Time Training Cost	Number of Establishments	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork ¹	28	\$1,070	\$2,141	\$3,211
Intact or Non-Intact Pork Cuts ²	7	\$268	\$535	\$803
Recurring Training Cost	Number of Establishments	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork ¹	28	\$3,369	\$6,737	\$10,106
Intact or Non-Intact Pork Cuts ²	7	\$843	\$1,684	\$2,526
Total Training Costs Annualized³		\$5,550	\$11,097	\$16,646
¹ Medium and large raw comminuted pork establishments that produce more than 6,000 pounds of product per day. ² Large intact or non-intact pork cuts establishments that produce more than 50,000 pounds of product per day. ³ Costs annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding.				

E. Food Safety Assessment (FSA) Entrance and Exit Meetings

FSIS would prioritize a PHRE for any pork establishment that does not meet the *Salmonella* pathogen reduction performance standards. FSIS estimates that 57.4 percent of establishments that receive a PHRE would also receive an FSA.³⁸ PHREs are performed using the PHIS and do not involve interactions with the establishment. FSIS would use the results of

³⁸ EIAO Public Health Risk Evaluation (PHRE) methodology Implementation of FSIS Directive 5100.4 (September 2016) report.

the PHRE to determine the need for an FSA at the establishment. FSAs require entrance and exit meetings with the establishment. Combined, these meetings require about two hours of the QC manager’s time.³⁹ As referenced above, the total estimated compensation rate for a QC manager is \$113.64 per hour, this rate includes a benefits and overhead factor of two. The total FSA entrance and exit meeting cost ranges from \$1,021 to \$1,701, with a primary estimate of \$1,361, annualized at the 7 percent discount rate over 10 years, table 10.

Table 10. Food Safety Assessment (FSA) Entrance and Exit Meetings (2020\$)				
FSA Entrance and Exit Meetings	Number of Establishments	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork ¹	36	\$817	\$1,089	\$1,361
Intact or Non-Intact Pork Cuts ²	9	\$204	\$272	\$340
Total FSA Entrance and Exit Meeting Costs Annualized ³		\$1,021	\$1,361	\$1,701
¹ Medium and large raw comminuted pork establishments that produce more than 6,000 pounds of product per day.				
² Large intact or non-intact pork cuts establishments that produce more than 50,000 pounds of product per day.				
³ Costs annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding.				

F. Summary of Total Industry Cost

Total industry cost ranges from \$1.16 million to \$1.84 million, with a primary estimate of \$1.50 million, annualized at the 7 percent discount rate over 10 years, table 11. The majority of these costs are associated with antimicrobial equipment, maintenance, solution and labor incurred by establishments that initially do not meet the performance standards but attempt to meet the standard.

³⁹ FSIS Office of Field Operations Estimate.

Table 11. Total Industry Costs			
Cost Component (\$2020)	Low Estimate	Primary Estimate	High Estimate
Antimicrobial Equipment	\$80,263	\$165,978	\$251,694
Antimicrobial Equipment Maintenance	\$52,294	\$108,139	\$163,984
Antimicrobial Solution	\$866,047	\$962,274	\$1,058,502
<i>Salmonella</i> Sampling, Testing and Associated Lost Product Cost	\$92,069	\$122,451	\$150,333
HACCP Plan Reassessment and Validation Cost ¹	\$66,552	\$133,106	\$199,658
Employee Training	\$5,550	\$11,097	\$16,646
Food Safety Assessment (FSA) Entrance and Exit Meetings	\$1,021	\$1,361	\$1,701
Total Costs Annualized ²	\$1,163,796	\$1,504,406	\$1,842,518
¹ FSIS assumes establishments that do not meet the proposed standards would reassess their HACCP plan. Of these establishments, FSIS assumes 45% would make changes to meet the standards and incur additional HACCP validation costs. ² Costs annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding.			

IV. Agency Costs

In fiscal year 2020, FSIS planned for 8,640 raw comminuted pork *Salmonella* samples and 2,400 intact or non-intact pork cuts samples for a total of 11,040 samples⁴⁰ for the Raw Pork Sampling Program.⁴¹ The raw comminuted pork and intact or non-intact performance standards would replace the Raw Pork Sampling Program. The 2020 Risk Assessment estimates 138 raw comminuted pork establishments and 38 intact or non-intact pork cuts establishments would be subject to the standards.⁴² FSIS estimates that 61 comminuted pork establishments and 15 intact or non-intact pork cuts establishments would initially not meet the performance standards. Each of these establishments would be assigned 16 additional follow-up samples, for a total of 1,216 follow-up samples. Establishments producing 1,001 to 6,000 pounds of comminuted pork

⁴⁰ FSIS Annual Sampling Plan FY2021: Table A3: FY 2020 and FY 2021 Sample Numbers for Raw Pork: https://www.fsis.usda.gov/sites/default/files/media_file/2021-02/fsis-annual-sampling-plan-fy2021.pdf.

⁴¹ FSIS Notice: Raw Pork Parts Sampling Program: [Raw Pork Products Sampling Program | Food Safety and Inspection Service \(usda.gov\)](https://www.fsis.usda.gov/sites/default/files/media_file/2022-02/Pork_Salmonella_Performance_Standards_Risk_Assessment_April_8_2020_Feb_8_2022.pdf).

⁴² https://www.fsis.usda.gov/sites/default/files/media_file/2022-02/Pork_Salmonella_Performance_Standards_Risk_Assessment_April_8_2020_Feb_8_2022.pdf

products or 1,001 to 50,000 pounds of pork cuts are not included in the performance standards; however, they would be randomly selected for about 372 and 84 sampling tasks,⁴³ respectively. FSIS would use the results of the lower-volume sampling to gain additional information on the prevalence of *Salmonella* in these products. FSIS estimates that total sampling for the performance standards, including follow-up sampling and lower-volume sampling, would be 12,232 samples annually.

The number of additional samples is calculated by subtracting the estimated number of samples for the pork performance standard (12,232) from the number of samples planned in FY2021 (11,040). As such, the net increase in Agency sampling is 1,192 samples, which are attributed to follow-up sampling. The cost for the additional 1,192 samples ranges from \$42,496 to \$156,765, with a primary estimate of \$81,508, annualized at the 7 percent discount rate over 10 years, table 12.

Recurring Cost	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork	\$36,792	\$72,124	\$141,401
Intact or Non-Intact Pork Cuts	\$5,704	\$9,384	\$15,364
Total Costs Annualized ¹	\$42,496	\$81,508	\$156,765

¹Costs annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding.

FSIS would also incur costs from an increase in PHREs and FSAs. Pork establishments that do not meet the *Salmonella* pathogen reduction performance standards would be prioritized for a PHRE. It takes an FSIS Enforcement Investigations and Analysis Officer's (EIAO) one to two hours to complete a PHRE. FSIS estimates that 57.4 percent of establishments that receive a

⁴³ Analysis completed by FSIS Office of Planning, Analysis, and Risk Management (OPARM).

PHRE would also get an FSA.⁴⁴ FSAs take 40 to 47 hours to complete and an additional two hours for entrance and exit meetings. EIAOs spend approximately \$1,202⁴⁵ on travel expenses per FSA. Table 13 shows the estimated FSIS cost for PHREs and FSAs for the estimated number of establishments that would not meet the performance standards. The total FSIS cost for PHREs and FSAs ranges from \$18,870 to \$23,105, with a primary estimate of \$20,988, annualized at the 7 percent discount rate over 10 years, table 13.

Table 13. FSIS Pork Performance Standards PHRE and FSA Cost (2020\$)				
PHRE Cost Estimate	Number of Establishments	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork ¹	61	\$583	\$875	\$1,167
Intact or Non-Intact Pork Cuts ²	15	\$143	\$215	\$287
FSA Cost Estimate	Number of Establishments	Low Estimate	Primary Estimate	High Estimate
Raw Comminuted Pork ¹	36	\$14,429	\$15,822	\$17,215
Intact or Non-Intact Pork Cuts ²	9	\$3,715	\$4,076	\$4,436
Total Costs Annualized³		\$18,870	\$20,988	\$23,105
¹ Medium and large raw comminuted pork establishments that produce more than 6,000 pounds of product per day. ² Large intact or non-intact pork cuts establishments that produce more than 50,000 pounds of product per day. ³ Costs annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding.				

⁴⁴ EIAO Public Health Risk Evaluation (PHRE) methodology Implementation of FSIS Directive 5100.4 (September 2016) report.

⁴⁵ The FSA 2016 travel cost used in the EIAO Public Health Risk Evaluation (PHRE) methodology Implementation of FSIS Directive 5100.4 (September 2016) report was inflated using the 2020 BLS Consumer Price Index (CPI) All items in U.S. city average, all urban consumers, not seasonally adjusted (Series ID CUUR0000SA0) from \$1,115 to \$1,202 per FSA.

V. Public Health Benefits

As establishments make changes to their production processes and reduce the prevalence of *Salmonella* in raw comminuted pork and intact or non-intact pork cuts, public health benefits would be realized in the form of averted illnesses. The Agency's policy of web-posting establishments' performance may have stimulated improvements in industry performance. FSIS data show that sharing this information publicly provides an incentive for establishments to further reduce *Salmonella* levels, which is necessary to reduce foodborne illness due to salmonellosis and protect consumers. For instance, in the poultry industry, after the Agency's announcement in 2006 that it was considering posting the names of broiler and turkey slaughter establishments with their respective performance standard categories based on *Salmonella* verification testing, the broiler slaughter establishments that had been in Category 3 decreased by 55 percent.⁴⁶ As discussed in the 2020 Risk Assessment, FSIS estimated the number of annual illnesses attributed to products subject to the proposed performance standards. FSIS estimated 45 percent of establishments that do not meet the standards would make changes to meet the standards. These establishments would make changes a year after the standards have been implemented. The estimated public health benefits associated with the proposed *Salmonella* pork performance standards ranges from \$49.09 million to \$203.24 million, with a primary estimate of \$107.94 million, annualized at the 7 percent discount rate over 10 years, table 14.

⁴⁶ FSIS defined the following categories for broiler and turkey slaughter establishments in 2006: Category 1: Consistent Process Control: Establishments that have achieved 50 percent or less of the *Salmonella* maximum allowable percent positive during all completed 52-week moving windows over the last 3 months. Category 2: Variable Process Control: Establishments that meet the *Salmonella* maximum allowable percent positive for all completed 52-week moving windows but have results greater than 50 percent of the maximum allowable percent positive during any completed 52-week moving window over the last 3 months. Category 3: Highly Variable Process Control: Establishments that have exceeded the *Salmonella* maximum allowable percent positive during any completed 52-week moving window over the last 3 months. Changes to the *Salmonella* and *Campylobacter* Verification Testing Program, Federal Register, Vol 80, No. 16, January 26, 2015. Docket No. FSIS-2014-0023. <https://www.federalregister.gov/documents/2015/01/26/2015-01323/changes-to-the-salmonella-and-campylobacter-verification-testing-program-proposed-performance>.

Table 14. Annual Illnesses Averted (2020 Risk Assessment)	Low Estimate	Primary Estimate	High Estimate
	95 th Percentile		
Illnesses Averted for Raw Comminuted Pork	3,600	8,300	16,300
Illnesses Averted for Intact or Non-Intact Pork Cuts	10,000	21,600	40,000
Total Illnesses Averted	13,600	29,900	56,300
Total Illnesses Averted Benefit (2020\$) ¹	\$49,094,984	\$107,936,767	\$203,238,795
¹ Costs annualized at a discount rate of 7% over 10 years. Cost of Illness annualized at a discount rate of 7% over 10 years, occurring one year after establishments would begin making changes.			

FSIS used cost of illness estimates for *Salmonella* of \$4,164⁴⁷ per case to quantify the effect that these averted illnesses would have on the economy. FSIS assumes benefits would only accumulate once changes are in place in the establishment. After the proposed standards are finalized, and once the first 52-week window is complete, FSIS plans to begin web-posting for all eligible establishments. FSIS calculated a range of estimates to reflect the uncertainty in the underlying foodborne illness distribution.⁴⁸

VI. Industry Benefits

FSIS expects that industry would benefit from reduced outbreak-related recalls. The negative impacts of recalls on industry include the loss of sales revenue, the loss of consumer confidence, and consumers shifting away from meat products.⁴⁹ Recalls negatively impact consumers by creating anxiety and time-consuming inconveniences (e.g., looking for recall information, checking the products purchased, returning or disposing of products identified by

⁴⁷ The FSIS estimate for the cost of *Salmonella* (\$4,164 per case, —2020 dollars) was developed using the USDA, Economic Research Service Cost Estimates of Foodborne Illness *Salmonella* (October 2014) updated for inflation. <https://www.ers.usda.gov/data-products/cost-estimates-of-foodborne-illnesses/>.

⁴⁸ https://www.fsis.usda.gov/sites/default/files/media_file/2022-02/Pork_Salmonella_Performance_Standards_Risk_Assessment_April_8_2020_Feb_8_2022.pdf

⁴⁹ Marsh, T.L., T.C. Schroeder, J. Mintert. (2004). Impacts of Meat Product Recalls on Consumer Demand in the USA. *Applied Economics*. 36(9):897-909. URL accessed on July 1, 2020: <http://ses.wsu.edu/publication/impacts-of-meat-product-recalls-on-consumer-demand-in-the-usa/>.

the recalls). FSIS expects the proposed performance standards would lead to less contaminated products, because of industry actions taken to reduce *Salmonella* in these products to meet the proposed performance standards. The reduction in *Salmonella* would result in less exposure to *Salmonella* for consumers that eat pork products and fewer illnesses, outbreaks and recalls.

VII. Summary of Net Benefits

Table 15 displays the total costs and benefits expected from the implementation of the proposed performance standards for raw comminuted pork and intact or non-intact pork cuts establishments. According to the 2020 Risk Assessment,⁵⁰ there would be 138 establishments subject to the raw comminuted pork performance standard and 38 establishments subject to the intact or non-intact pork cuts performance standard. The proposed performance standards would lead to industry cost for these establishments and FSIS would incur agency cost when implementing these standards. Benefits would occur once establishments that initially do not meet the performance standards make changes to meet the performance standards. The net benefits are the public health benefits minus the industry and agency costs. The estimated net benefits associated with the proposed *Salmonella* pork performance standards range from \$47.87 million to \$201.22 million, with a primary estimate of \$106.33 million, annualized at the 7 percent discount rate over 10 years, table 15.

⁵⁰ https://www.fsis.usda.gov/sites/default/files/media_file/2022-02/Pork_Salmonella_Performance_Standards_Risk_Assessment_April_8_2020_Feb_8_2022.pdf

Table 15. Summary of Estimated Net Benefits¹ (2020\$)				
Compliance Rate²	Cost/Benefit Component	Low Estimate (\$mil)	Primary Estimate (\$mil)	High Estimate (\$mil)
45%	Industry Costs	\$1.16	\$1.50	\$1.84
	Agency Cost	\$0.06	\$0.10	\$0.18
	Public Health Benefits	\$49.09	\$107.94	\$203.24
	Net Benefits ³	\$47.87	\$106.33	\$201.22
¹ All costs (savings) annualized at a discount rate of 7% over 10 years. Numbers in table may not sum to totals due to rounding. ² Compliance rate for establishments initially not meeting the proposed standards, but then meeting the proposed standards over 2 years. ³ Numbers in table may not sum to totals due to rounding.				

VIII. Effects on Small Business

FSIS assumes the proposed performance standards would not have a significant effect on small businesses, because the cost of the performance standards would be less than 2 percent of an establishment's estimated minimum revenue. The smallest establishments impacted by the raw comminuted pork performance standards produce at least 6,000 pounds a day. FSIS estimates that a comminuted pork establishment producing at least 6,000 pounds a day would produce at least 1.65 million pounds of product per year. The smallest establishments impacted by the intact or non-intact pork cuts performance standards produce at least 50,000 pounds a day. FSIS estimates that an intact or non-intact pork cuts establishment producing at least 50,000 pounds a day would produce at least 13.75 million pounds of product per year.⁵¹ FSIS estimates the average price for raw comminuted pork as \$0.80 per pound⁵² and the average price of intact

⁵¹ RTI *Costs of Food Safety Investments* report (2015) Table 2-5 Standard Assumptions Used for Cost Calculations by Establishment Size and Species. Calculation assumes 275 production days in a year.

⁵² USDA: Economic Research Service: Live Stock Meat: Domestic Data Whole sale price: 2020 Average: Trimmings, 72%, fresh: <https://www.ers.usda.gov/data-products/livestock-meat-domestic-data/livestock-meat-domestic-data/#Wholesale%20Prices>. Converted \$/cwt to \$/lbs. using the conversion rate 1/100.

or non-intact pork cuts as \$0.78 per pound.⁵³ The estimated minimum annual revenue per establishment for raw comminuted pork is \$1.32 million and \$10.73 million for an intact or non-intact pork cuts establishment.

FSIS estimates that 76 establishments would not pass the performance standard and would incur an estimated industry cost of \$19,802 per establishment. This cost represents 1.5 percent and 0.2 percent of total revenue for raw comminuted pork and intact or non-intact pork cuts establishments, respectively. FSIS assumes that performance standards would have a minimal impact as compared to the establishment's minimum revenue, thus the performance standards would not have a significant effect on small businesses. FSIS is requesting comment on this assumption.

⁵³ USDA: Economic Research Service: Live Stock Meat: Domestic Data Whole sale price: 2020 Average: Pork cutout composite: <https://www.ers.usda.gov/data-products/livestock-meat-domestic-data/livestock-meat-domestic-data/#Wholesale%20Prices>. Converted \$/cwt to \$/lbs. using the conversion rate 1/100.