

**HEAT-RELATED ILLNESS
SMALL BUSINESS ECONOMIC IMPACT STATEMENT (SBEIS)**

**WASHINGTON STATE DEPARTMENT OF LABOR AND INDUSTRIES
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1. ASSESSING COSTS	2
1.1. COST SURVEY METHODOLOGY	2
1.2. SAMPLING PLAN	2
1.3. SAMPLE SIZE.....	4
1.4. SAMPLING FRAME.....	5
1.5. PROPORTIONATE STRATIFIED RANDOM SAMPLING	5
1.6. SURVEY.....	6
1.7. RESPONSE RATE	7
2. ASSESSING ECONOMIC IMPACT BY SIZE OF BUSINESS	8
2.1. IDENTIFYING AND EVALUATING TEMPERATURE AND OTHER FACTORS	9
2.1.1. UPPER BOUND COST PER FTE ESTIMATE	9
2.1.2. LOWER BOUND COST PER FTE ESTIMATE	9
2.2. PREVENTING, CONTROLLING, AND CORRECTING HRI HAZARDS.....	10
2.2.1. UPPER BOUND COST PER FTE ESTIMATE	10
2.2.2. LOWER BOUND COST PER FTE ESTIMATE	11
2.3. DRINKING WATER	12
2.3.1. UPPER BOUND COST PER FTE ESTIMATE	12
2.3.2. LOWER BOUND COST PER FTE ESTIMATE	12
2.4. RESPONDING TO SIGNS AND SYMPTOMS OF HRI	13
2.4.1. UPPER BOUND COST PER FTE ESTIMATE	13
2.4.2. LOWER BOUND COST PER FTE ESTIMATE	14
2.5. INFORMATION AND TRAINING.....	15
2.5.1. UPPER BOUND COST PER FTE ESTIMATE	15
2.5.2. LOWER BOUND COST PER FTE ESTIMATE	16
3. REDUCING THE COST FOR SMALL BUSINESSES.....	16
4. SMALL BUSINESS INVOLVEMENT IN THE RULEMAKING PROCESS	17
5. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE RULE	17
6. NUMBER OF JOBS CREATED OR LOST.....	17
REFERENCES.....	18

The Division of Occupational Safety and Health (DOSH) of the Washington State Department of Labor & Industries (L&I) is proposing a new rule under chapter 296-62-095 of the Washington Administrative Code (WAC) section that will govern Heat-Related Illness in the Outdoor Environment. The overarching scope and purpose of the proposed rule is set forth in WAC 296-62-09510, which reads as follows:

The provisions of this rule apply to all employers with one or more employees performing work in an outdoor environment. It requires employers to implement workplace practices designed to reduce to the extent feasible the risks of heat-related illness resulting from outdoor exposure to temperature, humidity, and other environmental factors, or any combination thereof.

The following Small Business Economic Impact Statement (SBEIS) was prepared in compliance with the Regulatory Fairness Act (RFA), RCW 19.85.040, and provides an analysis of the likely cost per full-time equivalent (FTE) for small businesses compared to large businesses associated with implementation of WAC 296-62-095. In particular, the following rule provisions were analyzed:

- WAC 296-62-09530, Employer responsibility
- WAC 296-62-09540, Drinking water
- WAC 296-62-09550, Responding to signs and symptoms of heat-related illness
- WAC 296-62-09560, Information and training

1. ASSESSING COSTS

1.1. COST SURVEY METHODOLOGY

As part of both the cost-benefit analysis and the Small Business Economic Impact Statement (SBEIS), L&I estimated the probable costs of compliance for Washington businesses if the draft proposed heat-related illness permanent rule were adopted. Primarily, the assessment of quantifiable costs occurred in three steps discussed below: (1) developing and implementing a sampling strategy, (2) designing and sending out a cost survey to employers, and (3) estimating the monetized costs for the various components of the draft proposed rule that may have an economic impact.

1.2. SAMPLING PLAN

The development of the sampling strategy for the Heat-Related Illness cost survey required an unusual amount of care due to the nature of the injuries and illnesses the rule seeks to prevent. That is, while it might seem appropriate to sample those industries known to have the highest number of heat-related illness Workers' Compensation claims¹, heat-related illness may be an underlying cause for primary diagnoses related to accidents. In other words, these accident-related injuries may really be a function of heat-related illness symptoms workers were experiencing prior to the accident (such as dizziness, or orthostatic intolerance, Kenefick and Sawka, 2007) (see State of Washington Office of the Governor,

¹ See Table IIb on p. 6 of Bonauto, et al. (2007) for a list of HRI claims in Washington State from 1995-2005 broken out by industry sector at the 6-digit NAICS level.

2007). For instance, in their study of heat-related illness among workers in Italy, Morabito and colleagues (2006) note that “some occupational injuries might be induced by a previous lipothymia or loss of consciousness due to environmental factors, but discharge data only contains the ICD classification of traumatism in the principal diagnoses.”² While more suggestive than conclusive, the authors also found that, in each of the study months, the greatest number of reported work-related accidents happened on days when the daytime apparent temperature was between 76.6 and 81.5 degrees Fahrenheit (Morabito, et al., 2006). This is consistent with Ramsey, et al.’s (1983) findings that unsafe work behavior increases in warmer temperatures. The authors also report findings from previous studies suggesting a relationship between environmental temperature and injury rates, whereby injuries are more common at both colder and warmer temperatures (that is, the relationship between the two variables is that of a U-shaped curve).

In addition, L&I assumes that exposure to heat-related illness hazards may be slightly more evenly distributed across industries and businesses employing outdoor employees than the Workers’ Compensation claims rates by industry would suggest. For one thing, the heat-related illness claims reported by Bonauto and colleagues (2006) and broken out by industry were representative of *both* outdoor and indoor workers (though 78.5% were outdoor workers). In addition, L&I chose to develop a sampling strategy that accounts for the possibility that certain industries may actually have outdoor employees exposed to heat-related illness hazards in greater numbers than their claims rates would suggest. This could happen, for example, in industries where HRI is more likely to be the first and perhaps undiagnosed of what are really two workplace injuries or illnesses (e.g., in industries where HRI may be more likely to result in a workplace accident). Another example of when one might expect true *exposure* rates to be concealed by an examination of *claims* rates is when particular industries have already been taking steps all along to prevent heat-related illness such that exposure is actually greater than their HRI claims rates would suggest. This is all to say that the sampling frame was developed based on the industries in which workers were thought to be exposed to HRI hazards rather than on Workers’ Compensation claims data.

Another consideration was the side of the state in which employers were located. This was important given that a disproportionate share of heat-related illness claims occur in Eastern Washington. That is, while Eastern Washington represents only 22 percent of the employed population, it represents 47 percent of HRI claims (Bonauto, et al., 2006). However, this factor was ultimately not considered in the development of the sampling frame, because employees in Western Washington are in some ways at more risk even though they may face less overall exposure to HRI hazards. For example, a recent HRI fatality occurred in Western Washington in the city of Vancouver, which has relatively more variation in temperature during the summer months. This temperature variation subjects employees in Western Washington to *greater* risk in some sense, in that they are less likely to be acclimatized to the heat, a factor that is known to predispose individuals to HRI (Bonauto, et al., 2007; Bonauto, et al., 2006; Morabito, et al., 2006; Epstein, et al., 1999; Bricknell, 1996; Gardner, et al., 1996).

² Note that ICD refers to the International Classification of Diseases published by the World Health Organization.

The sampling strategy involved the following three steps, each of which will be reviewed in more detail below: (1) determining the appropriate sample size, (2) building the appropriate sampling frame based on likely exposure of outdoor employees to HRI hazards, and (3) using proportionate stratified random sampling to select the number of businesses within each industry sector that would be randomly selected.

1.3. SAMPLE SIZE

In determining the appropriate sample size needed to get valid estimates for the cost of compliance with the draft proposed HRI rule, L&I considered a couple of factors; namely, the desired level of confidence and uncertainty in the cost estimates, and the anticipated response rate. Each of these is discussed below.

The Department first considered the level of confidence and uncertainty it was willing to accept in order to ensure the most rigorous and statistically valid compliance cost estimates. L&I chose conventional levels, 95 percent confidence with ± 5 percent uncertainty. It next considered the size of the business account population from which the sample would be selected. After screening out locations that had closed, L&I pulled addresses and industry information for 230,715 physical locations of Washington businesses from its administrative Data Warehouse (refreshed as of April 3, 2007).

Given that the Department did not know key population characteristics (mean, variance, and standard deviation) with respect to each parameter of interest, the desired sample size was estimated based on a formula that assumes an infinitely large population.³ It uses the most conservative estimate of probability ($p = .5$), as well as the desired precision (95% confidence level; $\pm 5\%$ uncertainty). One can make similar calculations using the actual known population size ($N = 230,715$ for all physical locations open and active as of April 3, 2007), but will get essentially the same result for the desired sample size ($n = 384$ using known N ⁴ as opposed to $n = 385$ assuming an infinitely large N).

In determining the requisite sample size, L&I also took into account the relatively low response rates it has historically reported for surveys to businesses regarding the costs of proposed rulemaking.⁵ This was done by reviewing a number of economic analyses and rulemaking files involving surveys conducted over the past decade. Table A-1 in the appendix of the cost-benefit analysis presents a summary of the findings, including sample size, sampling methods, number of respondents, and response rate for each survey. Of the nine self-administered, mail-in cost surveys included in this review, sample sizes ranged from 323 to 5,644 and response rates ranged from 8% to 25%.

³ $n = [p*q]/[.05/1.96]^2$

⁴ Sample size for known population size calculated using an online sample size calculator available at the following website: <http://www.surveysystem.com/sscalc.htm>.

⁵ Reasons for the relatively low response to the regulatory cost surveys are unknown; however, L&I assumes that some or all of the following factors may be at play: (1) employers may not see any clear benefit to participating, (2) due to the ever-changing nature of businesses and the potential lag time in updating our administrative database, samples may include incorrect and outdated contact information, and (3) despite L&I's assurances to the contrary, employers may fear that the information they provide will be used against them in the form of citations, fines, or other enforcement measures.

The final determination of sample size employed the above information to attain a desired sample size given that population parameters with respect to cost are unknown, the desirable confidence level is 95% (with +/- 5% uncertainty), and response rates for surveys of this nature tend to range from 8 to 25 percent. It also took into account the fact that the sampling frame is perhaps not as efficiently targeted as L&I would have liked given the somewhat allusive nature of heat-related illness exposure noted earlier (methods for deriving the sampling frame are discussed below). L&I ultimately chose a sample size of 5,500 because it is sufficient to yield statistically significant cost estimates, assuming a 7 percent response rate and conventional levels for statistical validity. That is, if assumptions were to hold, one would expect a returned sample size of 385, which would allow for statistically valid estimates of the overall cost of compliance. Yet there is most likely non-response bias in terms of who responded to the survey and who did not. This issue is discussed in section 6.2 of the cost-benefit analysis.

1.4. SAMPLING FRAME

In building the sampling frame from which businesses would be randomly selected, L&I began with the total population of all open and active physical locations in the Department's administrative database, including both State Fund and Self-Insured employers. It then excluded industries from the sampling frame in three phases. First, industry sectors at the 2-digit NAICS-level were eliminated if they were unlikely to have any outdoor employees exposed to HRI hazards. Likewise, industries were eliminated at the 3- and then 6-digit NAICS-levels if they were unlikely to have outdoor employees exposed to HRI hazards (see Figure A-1 in the appendix of the cost-benefit analysis for a complete list of industries excluded from the sampling frame). Given the broad scope of the rule and the nature of heat-related illness hazards for outdoor workers, it was not possible to zero in on the exact industries likely to be impacted by this draft proposed rule. Instead, the sampling frame reflects those specific industries thought to be most likely to have outdoor workers. It is important to note that businesses in industries not included in the sampling frame will still need to be in compliance with the proposed heat-related illness rule if it is adopted and they employ outdoor workers in the summer months. Similarly, businesses in industries included in the sampling frame will not be subject to the rule if they do not employ any outdoor workers.

1.5. PROPORTIONATE STRATIFIED RANDOM SAMPLING

In conjunction with determining the desired sample size and the appropriate sampling frame, L&I also considered which sampling method would yield the most accurate cost estimates. The objective was to randomly select employers such that industries that received surveys were represented proportionate to their share of the overall sampling frame. Given this, L&I employed proportionate stratified random sampling by industry. This method allowed the Department to create strata at the industry-level that were assumed to be somewhat homogenous with respect to the likely costs of implementing the draft proposed heat-related illness rule, thus helping to reduce sampling variability (Pedhazur & Schmelkin, 1991: 331). To do this, L&I first determined what percentage of the overall sampling frame (N = 87,351) each 2-digit industry sector comprised. It then determined the sample size needed for each industry by multiplying that industry's proportion of the sampling frame by

the overall desired sample size ($n = 5,500$). To see the resulting sample sizes by industry, please refer to Table A-2 in the appendix of the cost-benefit analysis.

In order to randomly select businesses, L&I used an online random number generator (<http://www.random.org>) to obtain a list of random numbers for each industry that was the exact number of the sample size for each industry. Next, the Department numbered each business within each industry from 1 to n and used Vlookup in Excel to “grab” each business account that corresponded to a randomly generated number. This process of selection was not perfect, however, as the list of random numbers drew randomly *with replacement* such that there were some duplicate random draws. As a result, one of each duplicate pair was removed, as well as any accounts for which the Department did not have a mailing address.⁶ In the end, 5,206 surveys were sent to employers, rather than the 5,500 originally planned. This is because 142 businesses in the randomly selected lists were found to be missing physical location addresses or to be closed. In addition, another 152 were one of a duplicate randomly drawn pair that was eliminated from the list. (Please see Table A-2 in the appendix of the cost-benefit analysis).

1.6. SURVEY

The cost survey sent to randomly selected businesses provided respondents with information about the existing standard (if one indeed existed) and then told them what the proposed rule requires and what this means for them. In order to establish a baseline, the survey then asked respondents to answer questions about what they were doing in 2006 to be in compliance with existing standards (such as WAC 296-800, Safety and Health Core Rules). If respondents were *not* doing something in 2006 that is part of the proposed rule, the survey asked what they would do to be in compliance if the rule were adopted. It also asked whether there would be an additional cost to their business and, if so, how much it would likely be. (Please see Figure A-2 in the appendix of the cost-benefit analysis for a copy of the survey that was sent).

The survey was sent by mail to randomly selected business (“Attn: business safety manager”) on June 4th, 2007. Given that it asked respondents to estimate current and future costs, it was important to clarify that current costs referred to costs in the absence of any HRI rule. Since the HRI emergency rule for the summer of 2007 took effect at around the same time as the survey was disseminated to randomly selected businesses,⁷ L&I sent a follow-up postcard indicating that survey respondents should think of their “current” activities and associated costs as what they were doing *prior* to the emergency rule taking effect. This is the best tool L&I had to communicate to employers the assumptions they should make in order to arrive at the best baseline cost estimates possible. That said, it is noteworthy that many of the survey recipients that called L&I’s economic analyst were

⁶ Surveys were sent to the physical location address rather than the quarterly reporting address, the latter of which is used for accounting purposes. This was done to ensure that the person best able to answer questions pertaining to a particular site’s costs would be the person receiving the survey. However, this created some problems in survey delivery. For example, some businesses appear to use a P.O. Box for mailing and do not receive mail at their physical location. Some of these businesses did not receive the survey but should have.

⁷ An emergency rule pertaining to heat-related illness in the outdoor environment was adopted on June 5, 2007 and became effective June 18, 2007.

actually not familiar with the emergency rules from 2006 or 2007 and also had not heard about the draft proposed permanent rule.

1.7. RESPONSE RATE

Between June 11 and July 13, 2007, L&I received 804 completed surveys from businesses of the 5,206 surveys sent. Of those sent, 720 are presumed to have been undeliverable because the follow-up postcard was “returned to sender”.⁸ In addition, 9 survey recipients contacted L&I by mail, email, or phone to inform the Department that their businesses had either closed or were not operational in 2006 (the year for which costs were to be estimated). All told, the response rate for completed surveys of the 5,206 sent was 15% (804 out of 5,206) and the response rate for those presumed to have been successfully delivered to active accounts was 18% (804 out of 4,477). Of the 804 respondents, 483 businesses (or 60%) reported that they had employees who worked outdoors in 2006. Respondents were instructed to only continue answering the survey if they had outdoor employees in 2006, so it is important to note that the 483 “useable” surveys represent 9% of the total surveys sent, 11% of those presumed to have been successfully delivered, and 60% of the 804 completed surveys that L&I received. (Please see Table A-5 in the appendix of the cost-benefit analysis, which accounts for all the surveys sent).

Of the 483 survey respondents who had outdoor employees in 2006, response rates by industry varied some from what L&I would have expected based on the sampling frame shown in Table A-2 in the appendix of the cost-benefit analysis.⁹ That said, some industry-specific response rates were roughly proportionate to the number of surveys sent to that industry. For example, the construction industry represented 37.5% of surveys sent and 40.6% of respondents with outdoor employees. Yet other industries appear to have been represented more (or less) heavily in the pool of respondents relative to the sampling plan. For example, the agriculture, forestry, fishing, and hunting industry represented about 10.5% of the sampling frame but 18.2% of respondents. This may suggest that this industry sector is more likely to have outdoor employees relative to other industries in the sampling frame. It is also worth noting that a relatively high proportion of respondents with outdoor workers fell into the “other” category (about 19.3%). This may be explained by the fact that some respondents likely did not think any of the industry categories presented as options on the survey adequately reflected the nature of their work. (Please refer to Table A-3 and Table A-4 in the appendix of the cost-benefit analysis for a detailed breakdown of response rate by industry).

⁸ This is approximate and quite likely an underestimate. Some businesses contacted the Department to say they received the postcard but not the survey and L&I re-sent them the survey. Presumably some employers received the postcard but not the survey and did not contact the Department to request the survey.

⁹ Note the distinction in the definition of “industry” in the sampling frame as compared to the survey responses. Industry in the case of the sampling frame refers to the 2-digit North American Industrial Classification System (NAICS) industry sector. Industry in the case of the survey responses means the industry category presented on the survey that the respondent felt best described their firm’s operations. Respondents may not have classified their businesses in the way that L&I employees trained in assigning NAICS codes to businesses may have, so there will likely be some natural discrepancy between the sampling frame and the surveys. For example, a disproportionate number of respondents classified themselves as “other,” but upon reading the description they provided, it was apparent they should have been classified as another industry in the list provided to them.

Of the 483 respondents with outdoor workers in 2006, 433 supplied sufficient information to determine whether or not they were a small business. Of those 433, approximately 89% (385) were small businesses, defined in the Regulatory Fairness Act (RCW 19.85) as any business entity that has 50 or fewer employees. This is roughly comparable to the percentage of Washington businesses statewide that meet this definition (about 86%). In order to determine whether or not a business was small, the Department considered responses to two questions: (1) the reported number of full-time equivalents (FTEs) in 2006, and (2) the reported number of part-time hours temporary/seasonal or part-time workers worked in 2006. A calculation was then made to convert part-time hours to FTEs by dividing the total number of part-time hours reported for a given business by 2,080. FTEs and converted FTEs were then summed and small businesses were determined to be those in which the sum of these two fields was equal to or less than 50 FTEs. One caveat is that if respondents did not complete the question asking how many FTEs they had in 2006, they were not included as part of the 433 respondents supplying sufficient information. If, however, only the field for part-time annual hours was missing or a legitimate skip, the reported number of FTEs was used to determine if the business was small or not.

2. ASSESSING ECONOMIC IMPACT BY SIZE OF BUSINESS

This Small Business Economic Impact Statement (SBEIS) considers the median cost per FTE per business for each component of the proposed HRI rule. Upper bound cost estimates were obtained using data from survey respondents who reported there would be an additional cost of a given component of the rule, provided a quantitative cost estimate, and also provided enough information such that the Department could calculate firm size. Lower bound cost estimates were obtained using this same data, but also including data from respondents who reported that a given component would cost the same or less to implement in the future. For respondents reporting that cost would be the same or less, the Department assigned a \$0 cost. Given the greater data requirements per respondent (e.g., number of FTEs) required for the SBEIS, the sample sizes will not match up exactly with those presented in the cost-benefit analysis. This is because there was greater opportunity for missing data due to item non-response in the case of the SBEIS.

The Regulatory Fairness Act, RCW 19.85.040(1), requires that in determining whether a proposed rule will disproportionately impact small businesses, the Department compare “the cost of compliance for small businesses with the cost of compliance for the ten percent of businesses that are the largest businesses required to comply with the proposed rules...” This comparison can be made based on the cost per FTE. Conveniently, the number of returned surveys with outdoor workers L&I received was 483 and the number of businesses that reported having 51 or more employees was 48. Since 48 is approximately 10% of 483, the costs to all of these bigger businesses have been included in this analysis and are compared to all the other businesses that responded (the latter of whom had 50 or fewer employees).

The upper bound estimates in the following sections are distinct from the upper bound estimates presented in the cost-benefit analysis in that those presented here include respondents who provided inconsistent responses (suggesting bias). This is because the

purpose here is to get the best estimate of the extent to which there may be a disproportionate impact on small businesses rather than to get the most accurate cost estimate. As a result, the upper bound estimates presented here are likely inflated but work from the assumption that they are inflated in the same direction and to the relatively same extent for both small and big businesses.

2.1. IDENTIFYING AND EVALUATING TEMPERATURE AND OTHER FACTORS

2.1.1. UPPER BOUND COST PER FTE ESTIMATE

On the survey sent to employers, question 6b asked respondents whether there would be a cost to put in place measures to identify and evaluate temperature and environmental factors if this proposed rule component were adopted. Approximately 34 employers reported that there would be an additional cost to their business to take steps to identify and evaluate temperature and environmental factors if the draft proposed HRI rule were adopted. Of these 34 respondents, only 3 businesses had more than 50 employees, while 31 of these respondents had 50 or fewer employees. Of the 3 businesses with 51 or more employees who reported an additional cost, the median daily cost per FTE was \$1.48. The corresponding cost for the 31 small businesses was \$2.20 per FTE per day. In light of this, the upper bound cost per FTE is estimated to be approximately 1.5 times greater for small businesses compared to businesses with 51 or more employees.

<i>Upper Bound – Survey Questions 6b and 6c: Cost Per Day Per FTE to Identify and Evaluate Environmental Factors (Employers Responding ‘MORE’ to 6b)</i>		
	Small Businesses	Not Small Businesses
Mean	11.50	1.19
Standard Error	4.41	0.39
Median	2.20	1.48
Standard Deviation	24.58	0.67
Sample Variance	604.14	0.45
Skewness	3.00	-1.58
Range	99.98	1.25
Minimum	0.03	0.42
Maximum	100.00	1.67
Sum	356.57	3.58
Count	31.00	3.00
Confidence Level (95.0%)	9.02	1.68

2.1.2. LOWER BOUND COST PER FTE ESTIMATE

The lower bound estimate is also based on question 6b from the survey, which asked respondents whether there would be a cost to put in place measures to identify and evaluate temperature and environmental factors. Approximately 414 employers with outdoor workers answered the question and reported that it would cost “less,” the “same,” or “more” if the

draft proposed HRI rule were adopted. Of these 414 respondents, 46 businesses had more than 51 or more employees, while 368 of these respondents had 50 or fewer employees. Of the 46 businesses with 51 or more employees, the median daily cost per FTE was \$0. The corresponding cost for the 368 small businesses was also \$0 per FTE per day. In light of this, the lower bound cost per FTE is estimated to be approximately the same for small businesses as compared to businesses with 51 or more employees.

<i>Lower Bound: Survey Questions 6, 6b, and 6c: Cost Per Day Per FTE to Identify and Evaluate Environmental Factors (Employers Responding 'LESS,' 'SAME' or 'MORE' to 6b)</i>		
	Small Businesses	Not Small Businesses
Mean	1.09	0.08
Standard Error	0.42	0.05
Median	0.00	0.00
Mode	0.00	0.00
Standard Deviation	8.11	0.33
Sample Variance	65.81	0.11
Kurtosis	108.86	19.06
Skewness	10.06	4.44
Range	100.00	1.67
Minimum	0.00	0.00
Maximum	100.00	1.67
Sum	402.18	3.58
Count	368.00	46.00
Confidence Level(95.0%)	0.83	0.10

2.2. PREVENTING, CONTROLLING, AND CORRECTING HRI HAZARDS

2.2.1. UPPER BOUND COST PER FTE ESTIMATE

On the survey sent to employers, question 7b asked respondents whether there would be a cost to prevent, control, and correct HRI hazards if this draft proposed rule component were adopted. Approximately 42 employers reported that there would be an additional cost to their business to take steps to prevent, control, and correct HRI hazards if the draft proposed HRI rule were adopted. Of these 42 respondents, only 4 businesses had 51 or more employees, while 38 of these respondents had 50 or fewer employees. Of the 4 businesses with 51 or more employees who reported an additional cost, the median daily cost per FTE was \$3.15. The corresponding cost for the 38 small businesses was \$6.83 per FTE per day. In light of this, the upper bound cost per FTE is estimated to be approximately 2.2 times greater for small businesses compared to businesses with 51 or more employees.

<i>Upper Bound – Survey Questions 7b and 7c: Cost Per Day Per FTE to Prevent, Control, and Correct HRI Hazards (Employers Reporting ‘MORE’ to 7b)</i>		
	Small Businesses	Not Small Businesses
Mean	32.60	7.43
Standard Error	11.66	5.29
Median	6.83	3.15
Standard Deviation	71.86	10.57
Sample Variance	5163.55	111.80
Kurtosis	27.55	3.70
Skewness	4.96	1.90
Range	432.50	22.89
Minimum	0.83	0.27
Maximum	433.33	23.16
Sum	1238.90	29.72
Count	38.00	4.00
Confidence Level(95.0%)	23.62	16.82

2.2.2. LOWER BOUND COST PER FTE ESTIMATE

The lower bound estimate is also based on question 7b from the survey, which asked respondents whether there would be a cost to put in place measures to prevent, control, and correct HRI hazards if this draft proposed rule component were adopted. Approximately 413 employers reported that it would cost “less,” the “same,” or “more.” Of these 413 respondents, 44 businesses had 51 or more employees, while 369 of these respondents had 50 or fewer employees. Of the 44 businesses with 51 or more employees, the median daily cost per FTE was \$0. The corresponding cost for the 369 small businesses was also \$0 per FTE per day. In light of this, the lower bound cost per FTE is estimated to be approximately the same for small businesses as compared to businesses with 51 or more employees.

<i>Lower Bound – Survey Questions 7b and 7c: Cost Per Day Per FTE to Prevent, Control, and Correct HRI Hazards (Employers Reporting ‘LESS’, ‘SAME’, or ‘MORE’ to 7b)</i>		
	Small Businesses	Not Small Businesses
Mean	3.36	0.68
Standard Error	1.29	0.53
Median	0.00	0.00
Mode	0.00	0.00
Standard Deviation	24.85	3.53
Sample Variance	617.62	12.47
Kurtosis	245.97	40.73
Skewness	14.62	6.30
Range	433.33	23.16
Minimum	0.00	0.00
Maximum	433.33	23.16

<i>Lower Bound – Survey Questions 7b and 7c: Cost Per Day Per FTE to Prevent, Control, and Correct HRI Hazards (Employers Reporting ‘LESS’, ‘SAME’, or ‘MORE’ to 7b)</i>		
Sum	1238.90	29.72
Count	369.00	44.00
Confidence Level(95.0%)	2.54	1.07

2.3. DRINKING WATER

2.3.1. UPPER BOUND COST PER FTE ESTIMATE

On the survey sent to employers, question 11 asked respondents whether there would be an additional cost to provide 1 quart of water per employee per hour per day if this draft proposed rule component were adopted. Approximately 105 employers reported that there would be an additional cost to their business to provide this water. Of these 105 respondents, 13 businesses had 51 or more employees, while 92 of these respondents had 50 or fewer employees. Of the 13 businesses with 51 or more employees who reported an additional cost, the median daily cost per FTE was \$0.33. The corresponding cost for the 92 small businesses was \$2.48 per FTE per day. In light of this, the upper bound cost per FTE is estimated to be approximately 7.5 times greater for small businesses compared to businesses with 51 or more employees.

<i>Upper Bound – Survey Questions 11 and 11a: Cost Per Day Per FTE to Provide 1 Quart of Water Per Outdoor Employee Per Hour Per Day (Employers Reporting ‘MORE’ to 11)</i>		
	Small Businesses	Not Small Businesses
Mean	12.19	1.85
Standard Error	5.58	0.63
Median	2.48	0.33
Standard Deviation	53.50	2.28
Sample Variance	2862.77	5.18
Kurtosis	78.14	-0.89
Skewness	8.59	0.95
Range	499.98	5.85
Minimum	0.02	0.09
Maximum	500.00	5.93
Sum	1121.64	23.99
Count	92.00	13.00
Confidence Level(95.0%)	11.08	1.38

2.3.2. LOWER BOUND COST PER FTE ESTIMATE

The lower bound estimate is also based on question 11 from the survey, which asked respondents whether there would be a cost to provide 1 quart of water per employee per hour per day if this draft proposed rule component were adopted. Approximately 360

employers reported that it would cost “less,” the “same,” or “more.” Of these 360 respondents, 40 businesses had 51 or more employees, while 320 of these respondents had 50 or fewer employees. Of the 40 businesses with 51 or more employees, the median daily cost per FTE was \$0. The corresponding cost for the 320 small businesses was also \$0 per FTE per day. In light of this, the lower bound cost per FTE is estimated to be approximately the same for small businesses as compared to businesses with 51 or more employees.

<i>Lower Bound – Survey Questions 11 and 11a: Cost Per Day Per FTE to Provide 1 Quart of Water Per Outdoor Employee Per Hour Per Day (Employers Reporting ‘LESS’, ‘SAME’, or ‘MORE’ to 11)</i>		
	Small Businesses	Not Small Businesses
Mean	3.37	0.60
Standard Error	1.16	0.24
Median	0.00	0.00
Mode	0.00	0.00
Standard Deviation	20.67	1.54
Sample Variance	427.21	2.36
Kurtosis	129.97	6.25
Skewness	10.72	2.72
Range	288.00	5.93
Minimum	0.00	0.00
Maximum	288.00	5.93
Sum	1077.53	23.99
Count	320.00	40.00
Confidence Level(95.0%)	2.27	0.49

2.4. RESPONDING TO SIGNS AND SYMPTOMS OF HRI

2.4.1. UPPER BOUND COST PER FTE ESTIMATE

On the survey sent to employers, question 13 asked respondents whether there would be an additional cost to cool employees experiencing the signs of symptoms of heat-related illness if this proposed rule component were adopted. Approximately 25 employers reported that there would be an additional cost to their business. Of these 25 respondents, 5 businesses had 51 or more employees, while 20 of these respondents had 50 or fewer employees. Of the 5 businesses with 51 or more employees who reported an additional cost, the median daily cost per FTE was \$0.74. The corresponding cost for the 20 small businesses was \$5.78 per FTE per day. In light of this, the upper bound cost per FTE is estimated to be approximately 7.8 times greater for small businesses compared to businesses with 51 or more employees.

<i>Upper Bound – Survey Questions 13b and 13c: Cost Per Day (in Dollars) to Cool Employees Experiencing Signs and Symptoms of HRI (Employers Reporting ‘MORE’ to 13b)</i>		
	Small Businesses	Not Small Businesses
Mean	193.30	1.27
Standard Error	169.15	0.60
Median	5.78	0.74
Standard Deviation	756.44	1.33
Sample Variance	572200.82	1.78
Kurtosis	19.79	0.41
Skewness	4.44	1.13
Range	3399.77	3.28
Minimum	0.23	0.05
Maximum	3400.00	3.33
Sum	3866.03	6.33
Count	20.00	5.00
Confidence Level(95.0%)	354.02	1.65

2.4.2. LOWER BOUND COST PER FTE ESTIMATE

The lower bound estimate is also based on question 13 from the survey, which asked respondents whether there would be a cost to cool employees experiencing the signs of symptoms of heat-related illness. Approximately 406 employers reported that it would cost “less,” the “same,” or “more.” Of these 406 respondents, 45 businesses had 51 or more employees, while 361 of these respondents had 50 or fewer employees. Of the 45 businesses with 51 or more employees, the median daily cost per FTE was \$0. The corresponding cost for the 361 small businesses was also \$0 per FTE per day. In light of this, the lower bound cost per FTE is estimated to be approximately the same for small businesses as compared to businesses with 51 or more employees.

<i>Lower Bound: Survey Questions 13b and 13c: Cost Per Day (in Dollars) to Cool Employees Experiencing Signs and Symptoms of HRI (Employers Reporting ‘LESS’, ‘SAME’, or ‘MORE’ to 13b)</i>		
	Small Businesses	Not Small Businesses
Mean	10.71	0.14
Standard Error	9.44	0.08
Median	0.00	0.00
Mode	0.00	0.00
Standard Deviation	179.33	0.57
Sample Variance	32160.34	0.32
Kurtosis	357.33	24.69
Skewness	18.86	4.84
Range	3400.00	3.33
Minimum	0.00	0.00

<i>Lower Bound: Survey Questions 13b and 13c: Cost Per Day (in Dollars) to Cool Employees Experiencing Signs and Symptoms of HRI (Employers Reporting 'LESS', 'SAME', or 'MORE' to 13b)</i>		
Maximum	3400.00	3.33
Sum	3866.03	6.27
Count	361.00	45.00
Confidence Level(95.0%)	18.56	0.17

2.5. INFORMATION AND TRAINING

2.5.1. UPPER BOUND COST PER FTE ESTIMATE

On the survey sent to employers, question 14 asked respondents whether there would be an additional cost to provide information and training on HRI if this proposed rule component were adopted. Question 14a asked those who responded “yes” how much they spent on information and training in 2006. Question 15 asked all respondents how much it would likely cost to provide HRI information and training in the future if the draft proposed rule were adopted. Approximately 260 employers provided sufficient information to subtract current costs from future costs (or use future costs alone for those who responded “no” to question 14). Of these 260 respondents, 33 businesses had 51 or more employees, while 227 of these respondents had 50 or fewer employees. Of the 33 businesses with 51 or more employees who reported an additional cost, the median *annual* cost per FTE was \$5.75. The corresponding cost for the 227 small businesses was \$50.00 per FTE per year. In light of this, the upper bound cost per FTE is estimated to be approximately 8.7 times greater for small businesses compared to businesses with 51 or more employees.

<i>Upper Bound – Survey Questions 14, 14a, and 15: Annual Cost (in Dollars) to Provide Training on the Prevention of Heat-Related Illness (Employers’ Future – Current Reported Costs)</i>		
	Small Businesses	Not Small Businesses
Mean	193.88	17.95
Standard Error	41.48	6.41
Median	50.00	5.75
Mode	0.00	0.00
Standard Deviation	624.91	36.83
Sample Variance	390511.03	1356.50
Kurtosis	55.54	13.57
Skewness	5.51	3.52
Range	9539.90	184.88
Minimum	-2901.60	-0.84
Maximum	6638.30	184.04
Sum	44010.08	592.41
Count	227.00	33.00
Confidence Level (95.0%)	81.73	13.06

2.5.2. LOWER BOUND COST PER FTE ESTIMATE¹⁰

The lower bound estimate is based on question 14 and 15 from the survey, which asked respondents whether there would be a cost to provide HRI information and training to employees if this draft proposed rule component were adopted. Approximately 154 employers reported that they were not providing information and training on HRI in 2006. Of these 154 respondents, 15 businesses had 51 or more employees, while 139 of these respondents had 50 or fewer employees. Of the 15 businesses with 51 or more employees, the median *annual* cost per FTE was \$12. The corresponding cost for the 139 small businesses was \$67 per FTE per year. In light of this, the lower bound cost per FTE is estimated to be approximately 5.6 times greater for small businesses as compared to businesses with 51 or more employees.

<i>Lower Bound – Survey Questions 14 and 15: Annual Cost (in Dollars) to Provide Training on the Prevention of Heat-Related Illness (Employers Reporting ‘NO’ to 14)</i>		
	Small Businesses	Not Small Businesses
Mean	341	15
Standard Error	115	5
Median	67	12
Standard Deviation	1352	18
Sample Variance	1827695	315
Kurtosis	55	10
Skewness	7	3
Range	12480	73
Minimum	0	1
Maximum	12480	74
Sum	47442	232
Count	139	15
Confidence Level (95.0%)	227	10

3. REDUCING THE COST FOR SMALL BUSINESSES

The department is taking the following steps to reduce the costs of the rule on small businesses:

- (1) **Reduced fines for small businesses.** RCW 49.17.180 addresses the civil penalties for WISHA citations. RCW 49.17.180(7) requires the Department give consideration in the penalty assessment to factors including the size of the

¹⁰ Note that the section of the survey that asked about training costs was structured differently than the other sections in that there was not an opportunity to answer that it would cost less, the same, or more. Rather, respondents were asked to estimate current costs if they were already providing HRI training. In addition, all respondents were asked to estimate future costs. The different structure of this question may explain why it, unlike the other questions, resulted in a median lower bound cost greater than \$0 for both small and non-small businesses.

employer's business. The WAC code that spells out the specific process for penalty adjustments including employer size is WAC 296-900-14015 (see Table 5).

- (2) **Enhanced outreach and education to small businesses.** The Department will make a concerted effort to focus its education and outreach campaign on small businesses. This will include providing employers with materials, such as draft language to insert in their Accident Prevention Plans (APPs) and free HRI training materials and train-the-trainer meetings.

4. SMALL BUSINESS INVOLVEMENT IN THE RULEMAKING PROCESS

The Department has made a considerable effort to involve small businesses and their representative agencies at various points in the rulemaking process, beginning in 2005. Most recently, the Department held stakeholder meetings in Tumwater, Bellevue, Yakima, and Spokane to hear from the business community, many of whom were small businesses. There was also a public comment period around this time. In addition, L&I recently held two separate stakeholder meetings in Tumwater in November 2007.

5. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE RULE

Table A-1 in the appendix of this SBEIS includes a list of all the industries included in the sampling frame for the cost survey. Some of these industries, and some businesses within industries, will not have outdoor workers and thus will not be required to comply with the draft proposed HRI rule. Moreover, the rule was revised after the survey was conducted such that employees with only incidental exposure to outdoor HRI hazards are not covered by this rule. As a result, this list likely overstates the scope of the rule with respect to covered industries.

6. NUMBER OF JOBS CREATED OR LOST

The Department does not anticipate that any jobs will be created or lost as a result of compliance with the proposed HRI rule. This is because the requirements are such that employers will be able to meet them using existing staff and without the need to hire additional staff. Similarly, there is no reason to suspect that employers would need to dismiss employees as a result of the draft proposed HRI rule.

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**TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT
PROPOSED HEAT-RELATED ILLNESS RULE
(N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)**

Naics Code	Naics Code Description
11	AGRICULTURE, FORESTRY, FISHING, AND HUNTING
111110	SOYBEAN FARMING
111120	OILSEED (EXCEPT SOYBEAN) FARMING
111130	DRY PEA AND BEAN FARMING
111140	WHEAT FARMING
111150	CORN FARMING
111160	RICE FARMING
111191	OILSEED AND GRAIN COMBINATION FARMING
111199	ALL OTHER GRAIN FARMING
111211	POTATO FARMING
111219	OTHER VEGETABLE (EXCEPT POTATO) AND MELON FARMING
111310	ORANGE GROVES
111320	CITRUS (EXCEPT ORANGE) GROVES
111331	APPLE ORCHARDS
111332	GRAPE VINEYARDS
111333	STRAWBERRY FARMING
111334	BERRY (EXCEPT STRAWBERRY) FARMING
111335	TREE NUT FARMING
111336	FRUIT AND TREE NUT COMBINATION FARMING
111339	OTHER NONCITRUS FRUIT FARMING
111411	MUSHROOM PRODUCTION
111419	OTHER FOOD CROPS GROWN UNDER COVER
111421	NURSERY AND TREE PRODUCTION
111422	FLORICULTURE PRODUCTION
111910	TOBACCO FARMING
111920	COTTON FARMING
111930	SUGARCANE FARMING
111940	HAY FARMING
111991	SUGAR BEET FARMING
111992	PEANUT FARMING
111998	ALL OTHER MISCELLANEOUS CROP FARMING
112111	BEEF CATTLE RANCHING AND FARMING
112112	CATTLE FEEDLOTS
112120	DAIRY CATTLE AND MILK PRODUCTION
112210	HOG AND PIG FARMING
112310	CHICKEN EGG PRODUCTION
112320	BROILERS AND OTHER MEAT TYPE CHICKEN PRODUCTION
112330	TURKEY PRODUCTION
112340	POULTRY HATCHERIES
112390	OTHER POULTRY PRODUCTION
112410	SHEEP FARMING

**TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT
PROPOSED HEAT-RELATED ILLNESS RULE
(N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)**

112420	GOAT FARMING
112511	FINFISH FARMING AND FISH HATCHERIES
112512	SHELLFISH FARMING
112519	OTHER ANIMAL AQUACULTURE
112910	APICULTURE
112920	HORSE AND OTHER EQUINE PRODUCTION
112930	FUR-BEARING ANIMAL AND RABBIT PRODUCTION
112990	ALL OTHER ANIMAL PRODUCTION
113110	TIMBER TRACT OPERATIONS
113210	FOREST NURSERIES AND GATHERING OF FOREST PRODUCTS
113310	LOGGING
114111	FINFISH FISHING
114112	SHELLFISH FISHING
114119	OTHER MARINE FISHING
114210	HUNTING AND TRAPPING
115111	COTTON GINNING
115112	SOIL PREPARATION, PLANTING, AND CULTIVATING
115113	CROP HARVESTING, PRIMARILY BY MACHINE
115114	POSTHARVEST CROP ACTIVITIES (EXCEPT COTTON GINNING)
115115	FARM LABOR CONTRACTORS AND CREW LEADERS
115116	FARM MANAGEMENT SERVICES
115210	SUPPORT ACTIVITIES FOR ANIMAL PRODUCTION
115310	SUPPORT ACTIVITIES FOR FORESTRY
22	UTILITIES
221111	HYDROELECTRIC POWER GENERATION
221112	FOSSIL FUEL ELECTRIC POWER GENERATION
221113	NUCLEAR ELECTRIC POWER GENERATION
221119	OTHER ELECTRIC POWER GENERATION
221121	ELECTRIC BULK POWER TRANSMISSION AND CONTROL
221122	ELECTRIC POWER DISTRIBUTION
221210	NATURAL GAS DISTRIBUTION
221310	WATER SUPPLY AND IRRIGATION SYSTEMS
221320	SEWAGE TREATMENT FACILITIES
221330	STEAM AND AIR-CONDITIONING SUPPLY
23	CONSTRUCTION
236115	NEW SINGLE-FAMILY HOUSING CONSTRUCTION (EXCEPT OPERATIVE)
236116	NEW MULTIFAMILY HOUSING CONSTRUCTION (EXCEPT OPERATIVE B)
236117	NEW HOUSING OPERATIVE BUILDERS
236118	RESIDENTIAL REMODELERS
236210	INDUSTRIAL BUILDING CONSTRUCTION
236220	COMMERCIAL AND INSTITUTIONAL BUILDING CONSTRUCTION

**TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT
PROPOSED HEAT-RELATED ILLNESS RULE
(N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)**

237110	WATER AND SEWER LINE AND RELATED STRUCTURES CONSTRUCTION
237120	OIL AND GAS PIPELINE AND RELATED STRUCTURES CONSTRUCTION
237130	POWER AND COMMUNICATION LINE AND RELATED STRUCTURES CONS
237210	LAND SUBDIVISION
237310	HIGHWAY, STREET, AND BRIDGE CONSTRUCTION
237990	OTHER HEAVY AND CIVIL ENGINEERING CONSTRUCTION
238110	POURED CONCRETE FOUNDATION AND STRUCTURE CONTRACTORS
238120	STRUCTURAL STEEL AND PRECAST CONCRETE CONTRACTORS
238130	FRAMING CONTRACTORS
238140	MASONRY CONTRACTORS
238150	GLASS AND GLAZING CONTRACTORS
238160	ROOFING CONTRACTORS
238170	SIDING CONTRACTORS
238190	OTHER FOUNDATION, STRUCTURE, AND BUILDING EXTERIOR CONTR
238210	ELECTRICAL CONTRACTORS
238220	PLUMBING, HEATING, AND AIR-CONDITIONING CONTRACTORS
238290	OTHER BUILDING EQUIPMENT CONTRACTORS
238310	DRYWALL AND INSULATION CONTRACTORS
238320	PAINT AND WALL COVERING CONTRACTORS
238330	FLOORING CONTRACTORS
238340	TILE AND TERRAZZO CONTRACTORS
238350	FINISH CARPENTRY CONTRACTORS
238390	OTHER BUILDING FINISHING CONTRACTORS
238910	SITE PREPARATION CONTRACTORS
238990	ALL OTHER SPECIALTY TRADE CONTRACTORS
42	WHOLESALE TRADE
423110	AUTOMOBILE AND OTHER MOTOR VEHICLE MERCHANT WHOLESALERS
423120	MOTOR VEHICLE SUPPLIES AND NEW PARTS MERCHANT WHOLESALER
423130	TIRE AND TUBE MERCHANT WHOLESALERS
423140	MOTOR VEHICLE PARTS (USED) MERCHANT WHOLESALERS
423210	FURNITURE MERCHANT WHOLESALERS
423220	HOME FURNISHING MERCHANT WHOLESALERS
423310	LUMBER, PLYWOOD, MILLWORK, AND WOOD PANEL MERCHANT WHOLE
423320	BRICK, STONE, AND RELATED CONSTRUCTION MATERIAL MERCHANT
423330	ROOFING, SIDING, AND INSULATION MATERIAL MERCHANT WHOLES
423390	OTHER CONSTRUCTION MATERIAL MERCHANT WHOLESALERS

**TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT
PROPOSED HEAT-RELATED ILLNESS RULE
(N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)**

423410	PHOTOGRAPHIC EQUIPMENT AND SUPPLIES MERCHANT WHOLESALERS
423420	OFFICE EQUIPMENT MERCHANT WHOLESALERS
423430	COMPUTER AND COMPUTER PERIPHERAL EQUIPMENT AND SOFTWARE
423440	OTHER COMMERCIAL EQUIPMENT MERCHANT WHOLESALERS
423450	MEDICAL, DENTAL, AND HOSPITAL EQUIPMENT AND SUPPLIES MER
423460	OPHTHALMIC GOODS MERCHANT WHOLESALERS
423490	OTHER PROFESSIONAL EQUIPMENT AND SUPPLIES MERCHANT WHOLE
423510	METAL SERVICE CENTERS AND OTHER METAL MERCHANT WHOLESALE
423520	COAL AND OTHER MINERAL AND ORE MERCHANT WHOLESALERS
423610	ELECTRICAL APPARATUS AND EQUIPMENT, WIRING SUPPLIES, AND
423620	ELECTRICAL AND ELECTRONIC APPLIANCE, TELEVISION, AND RAD
423690	OTHER ELECTRONIC PARTS AND EQUIPMENT MERCHANT WHOLESALER
423710	HARDWARE MERCHANT WHOLESALERS
423720	PLUMBING AND HEATING EQUIPMENT AND SUPPLIES (HYDRONICS)
423730	WARM AIR HEATING AND AIR-CONDITIONING EQUIPMENT AND SUPP
423740	REFRIGERATION EQUIPMENT AND SUPPLIES MERCHANT WHOLESALER
423810	CONSTRUCTION AND MINING (EXCEPT OIL WELL) MACHINERY AND
423820	FARM AND GARDEN MACHINERY AND EQUIPMENT MERCHANT WHOLESA
423830	INDUSTRIAL MACHINERY AND EQUIPMENT MERCHANT WHOLESALERS
423840	INDUSTRIAL SUPPLIES MERCHANT WHOLESALERS
423850	SERVICE ESTABLISHMENT EQUIPMENT AND SUPPLIES MERCHANT WH
423860	TRANSPORTATION EQUIPMENT AND SUPPLIES (EXCEPT MOTOR VEHI
423910	SPORTING AND RECREATIONAL GOODS AND SUPPLIES MERCHANT WH
423920	TOY AND HOBBY GOODS AND SUPPLIES MERCHANT WHOLESALERS
423930	RECYCLABLE MATERIAL MERCHANT WHOLESALERS
423940	JEWELRY, WATCH, PRECIOUS STONE, AND PRECIOUS METAL MERCH
423990	OTHER MISCELLANEOUS DURABLE GOODS MERCHANT WHOLESALERS
425110	BUSINESS TO BUSINESS ELECTRONIC MARKETS
425120	WHOLESALE TRADE AGENTS AND BROKERS
44-45	RETAIL TRADE

**TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT
PROPOSED HEAT-RELATED ILLNESS RULE
(N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)**

441110	NEW CAR DEALERS
441120	USED CAR DEALERS
441210	RECREATIONAL VEHICLE DEALERS
441221	MOTORCYCLE DEALERS
441222	BOAT DEALERS
441229	ALL OTHER MOTOR VEHICLE DEALERS
444110	HOME CENTERS
444190	OTHER BUILDING MATERIAL DEALERS
444210	OUTDOOR POWER EQUIPMENT STORES
444220	NURSERIES, GARDEN CENTERS, AND FARM SUPPLY STORES
453930	MANUFACTURED (MOBILE) HOME DEALERS
48	TRANSPORTATION AND WAREHOUSING
481111	SCHEDULED PASSENGER AIR TRANSPORTATION
481112	SCHEDULED FREIGHT AIR TRANSPORTATION
481211	NONSCHEDULED CHARTERED PASSENGER AIR TRANSPORTATION
481212	NONSCHEDULED CHARTERED FREIGHT AIR TRANSPORTATION
481219	OTHER NONSCHEDULED AIR TRANSPORTATION
482111	LINE-HAUL RAILROADS
482112	SHORT LINE RAILROADS
483111	DEEP SEA FREIGHT TRANSPORTATION
483112	DEEP SEA PASSENGER TRANSPORTATION
483113	COASTAL AND GREAT LAKES FREIGHT TRANSPORTATION
483114	COASTAL AND GREAT LAKES PASSENGER TRANSPORTATION
483211	INLAND WATER FREIGHT TRANSPORTATION
483212	INLAND WATER PASSENGER TRANSPORTATION
484110	GENERAL FREIGHT TRUCKING, LOCAL
484121	GENERAL FREIGHT TRUCKING, LONG-DISTANCE, TRUCKLOAD
484122	GENERAL FREIGHT TRUCKING, LONG-DISTANCE, LESS THAN TRUCK
484210	USED HOUSEHOLD AND OFFICE GOODS MOVING
484220	SPECIALIZED FREIGHT (EXCEPT USED GOODS) TRUCKING, LOCAL
484230	SPECIALIZED FREIGHT (EXCEPT USED GOODS) TRUCKING, LONG-D
485111	MIXED MODE TRANSIT SYSTEMS
485112	COMMUTER RAIL SYSTEMS
485113	BUS AND OTHER MOTOR VEHICLE TRANSIT SYSTEMS
485119	OTHER URBAN TRANSIT SYSTEMS
485210	INTERURBAN AND RURAL BUS TRANSPORTATION
485310	TAXI SERVICE
485320	LIMOUSINE SERVICE
485410	SCHOOL AND EMPLOYEE BUS TRANSPORTATION
485510	CHARTER BUS INDUSTRY
485991	SPECIAL NEEDS TRANSPORTATION
485999	ALL OTHER TRANSIT AND GROUND PASSENGER TRANSPORTATION
486110	PIPELINE TRANSPORTATION OF CRUDE OIL

**TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT
PROPOSED HEAT-RELATED ILLNESS RULE
(N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)**

486210	PIPELINE TRANSPORTATION OF NATURAL GAS
486910	PIPELINE TRANSPORTATION OF REFINED PETROLEUM PRODUCTS
486990	ALL OTHER PIPELINE TRANSPORTATION
487110	SCENIC AND SIGHTSEEING TRANSPORTATION, LAND
487210	SCENIC AND SIGHTSEEING TRANSPORTATION, WATER
487990	SCENIC AND SIGHTSEEING TRANSPORTATION, OTHER
488111	AIR TRAFFIC CONTROL
488119	OTHER AIRPORT OPERATIONS
488190	OTHER SUPPORT ACTIVITIES FOR AIR TRANSPORTATION
488210	SUPPORT ACTIVITIES FOR RAIL TRANSPORTATION
488310	PORT AND HARBOR OPERATIONS
488320	MARINE CARGO HANDLING
488330	NAVIGATIONAL SERVICES TO SHIPPING
488390	OTHER SUPPORT ACTIVITIES FOR WATER TRANSPORTATION
488410	MOTOR VEHICLE TOWING
488490	OTHER SUPPORT ACTIVITIES FOR ROAD TRANSPORTATION
488510	FREIGHT TRANSPORTATION ARRANGEMENT
488991	PACKING AND CRATING
488999	ALL OTHER SUPPORT ACTIVITIES FOR TRANSPORTATION
491110	POSTAL SERVICE
492110	COURIERS
492210	LOCAL MESSENGERS AND LOCAL DELIVERY
493110	GENERAL WAREHOUSING AND STORAGE
493120	REFRIGERATED WAREHOUSING AND STORAGE
493130	FARM PRODUCT WAREHOUSING AND STORAGE
493190	OTHER WAREHOUSING AND STORAGE
51	INFORMATION
511110	NEWSPAPER PUBLISHERS
511120	PERIODICAL PUBLISHERS
511130	BOOK PUBLISHERS
511140	DIRECTORY AND MAILING LIST PUBLISHERS
511191	GREETING CARD PUBLISHERS
511199	ALL OTHER PUBLISHERS
511210	SOFTWARE PUBLISHERS
512110	MOTION PICTURE AND VIDEO PRODUCTION
512120	MOTION PICTURE AND VIDEO DISTRIBUTION
512131	MOTION PICTURE THEATERS (EXCEPT DRIVE-INS)
512132	DRIVE-IN MOTION PICTURE THEATERS
512191	TELEPRODUCTION AND OTHER POSTPRODUCTION SERVICES
512199	OTHER MOTION PICTURE AND VIDEO INDUSTRIES
512210	RECORD PRODUCTION
512220	INTEGRATED RECORD PRODUCTION/DISTRIBUTION
512230	MUSIC PUBLISHERS

TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT PROPOSED HEAT-RELATED ILLNESS RULE (N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)	
512240	SOUND RECORDING STUDIOS
512290	OTHER SOUND RECORDING INDUSTRIES
515111	RADIO NETWORKS
515112	RADIO STATIONS
515120	TELEVISION BROADCASTING
515210	CABLE AND OTHER SUBSCRIPTION PROGRAMMING
516110	INTERNET PUBLISHING AND BROADCASTING
517110	WIRED TELECOMMUNICATIONS CARRIERS
517211	PAGING
517212	CELLULAR AND OTHER WIRELESS TELECOMMUNICATIONS
517310	TELECOMMUNICATIONS RESELLERS
517410	SATELLITE TELECOMMUNICATIONS
517510	CABLE AND OTHER PROGRAM DISTRIBUTION
517910	OTHER TELECOMMUNICATIONS
518111	INTERNET SERVICE PROVIDERS
518112	WEB SEARCH PORTALS
518210	DATA PROCESSING, HOSTING, AND RELATED SERVICES
519110	NEWS SYNDICATES
519120	LIBRARIES AND ARCHIVES
519190	ALL OTHER INFORMATION SERVICES
53	REAL ESTATE AND RENTAL AND LEASING
532111	PASSENGER CAR RENTAL
532112	PASSENGER CAR LEASING
532120	TRUCK, UTILITY TRAILER, AND RV (RECREATIONAL VEHICLE) RE
532210	CONSUMER ELECTRONICS AND APPLIANCES RENTAL
532220	FORMAL WEAR AND COSTUME RENTAL
532230	VIDEO TAPE AND DISC RENTAL
532291	HOME HEALTH EQUIPMENT RENTAL
532292	RECREATIONAL GOODS RENTAL
532299	ALL OTHER CONSUMER GOODS RENTAL
532310	GENERAL RENTAL CENTERS
532411	COMMERCIAL AIR, RAIL, AND WATER TRANSPORTATION EQUIPMENT
532412	CONSTRUCTION, MINING, AND FORESTRY MACHINERY AND EQUIPME
532420	OFFICE MACHINERY AND EQUIPMENT RENTAL AND LEASING
532490	OTHER COMMERCIAL AND INDUSTRIAL MACHINERY AND EQUIPMENT
54	PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES
541310	ARCHITECTURAL SERVICES
541320	LANDSCAPE ARCHITECTURAL SERVICES
541330	ENGINEERING SERVICES
541340	DRAFTING SERVICES
541350	BUILDING INSPECTION SERVICES

**TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT
PROPOSED HEAT-RELATED ILLNESS RULE
(N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)**

541360	GEOPHYSICAL SURVEYING AND MAPPING SERVICES
541370	SURVEYING AND MAPPING (EXCEPT GEOPHYSICAL) SERVICES
541710	RESEARCH AND DEVELOPMENT IN THE PHYSICAL, ENGINEERING, A
56	ADMINISTRATIVE & SUPPORT & WASTE MANAGEMENT & REMEDICATION SERVICES
561110	OFFICE ADMINISTRATIVE SERVICES
561210	FACILITIES SUPPORT SERVICES
561310	EMPLOYMENT PLACEMENT AGENCIES
561320	TEMPORARY HELP SERVICES
561330	PROFESSIONAL EMPLOYER ORGANIZATIONS
561410	DOCUMENT PREPARATION SERVICES
561421	TELEPHONE ANSWERING SERVICES
561422	TELEMARKETING BUREAUS
561431	PRIVATE MAIL CENTERS
561439	OTHER BUSINESS SERVICE CENTERS (INCLUDING COPY SHOPS)
561440	COLLECTION AGENCIES
561450	CREDIT BUREAUS
561491	REPOSSESSION SERVICES
561492	COURT REPORTING AND STENOGRAPHY SERVICES
561499	ALL OTHER BUSINESS SUPPORT SERVICES
561510	TRAVEL AGENCIES
561520	TOUR OPERATORS
561591	CONVENTION AND VISITORS BUREAUS
561599	ALL OTHER TRAVEL ARRANGEMENT AND RESERVATION SERVICES
561611	INVESTIGATION SERVICES
561612	SECURITY GUARDS AND PATROL SERVICES
561613	ARMORED CAR SERVICES
561621	SECURITY SYSTEMS SERVICES (EXCEPT LOCKSMITHS)
561622	LOCKSMITHS
561710	EXTERMINATING AND PEST CONTROL SERVICES
561720	JANITORIAL SERVICES
561730	LANDSCAPING SERVICES
561740	CARPET AND UPHOLSTERY CLEANING SERVICES
561790	OTHER SERVICES TO BUILDINGS AND DWELLINGS
561910	PACKAGING AND LABELING SERVICES
561920	CONVENTION AND TRADE SHOW ORGANIZERS
561990	ALL OTHER SUPPORT SERVICES
562111	SOLID WASTE COLLECTION
562112	HAZARDOUS WASTE COLLECTION
562119	OTHER WASTE COLLECTION
562211	HAZARDOUS WASTE TREATMENT AND DISPOSAL
562212	SOLID WASTE LANDFILL
562213	SOLID WASTE COMBUSTORS AND INCINERATORS

TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT PROPOSED HEAT-RELATED ILLNESS RULE (N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)	
562219	OTHER NONHAZARDOUS WASTE TREATMENT AND DISPOSAL
562910	REMEDIATION SERVICES
562920	MATERIALS RECOVERY FACILITIES
562991	SEPTIC TANK AND RELATED SERVICES
562998	ALL OTHER MISCELLANEOUS WASTE MANAGEMENT SERVICES
61	EDUCATION SERVICES
611110	ELEMENTARY AND SECONDARY SCHOOLS
611210	JUNIOR COLLEGES
611310	COLLEGES, UNIVERSITIES, AND PROFESSIONAL SCHOOLS
611410	BUSINESS AND SECRETARIAL SCHOOLS
611420	COMPUTER TRAINING
611430	PROFESSIONAL AND MANAGEMENT DEVELOPMENT TRAINING
611511	COSMETOLOGY AND BARBER SCHOOLS
611512	FLIGHT TRAINING
611513	APPRENTICESHIP TRAINING
611519	OTHER TECHNICAL AND TRADE SCHOOLS
611610	FINE ARTS SCHOOLS
611620	SPORTS AND RECREATION INSTRUCTION
611630	LANGUAGE SCHOOLS
611691	EXAM PREPARATION AND TUTORING
611692	AUTOMOBILE DRIVING SCHOOLS
611699	ALL OTHER MISCELLANEOUS SCHOOLS AND INSTRUCTION
611710	EDUCATIONAL SUPPORT SERVICES
71	ARTS, ENTERTAINMENT, AND RECREATION
711110	THEATER COMPANIES AND DINNER THEATERS
711120	DANCE COMPANIES
711130	MUSICAL GROUPS AND ARTISTS
711190	OTHER PERFORMING ARTS COMPANIES
711211	SPORTS TEAMS AND CLUBS
711212	RACETRACKS
711219	OTHER SPECTATOR SPORTS
711310	PROMOTERS OF PERFORMING ARTS, SPORTS, AND SIMILAR EVENTS
711320	PROMOTERS OF PERFORMING ARTS, SPORTS, AND SIMILAR EVENTS
711410	AGENTS AND MANAGERS FOR ARTISTS, ATHLETES, ENTERTAINERS,
711510	INDEPENDENT ARTISTS, WRITERS, AND PERFORMERS
712120	HISTORICAL SITES
712130	ZOOS AND BOTANICAL GARDENS
712190	NATURE PARKS AND OTHER SIMILAR INSTITUTIONS
713110	AMUSEMENT AND THEME PARKS
713120	AMUSEMENT ARCADES
713290	OTHER GAMBLING INDUSTRIES
713910	GOLF COURSES AND COUNTRY CLUBS
713930	MARINAS

TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT PROPOSED HEAT-RELATED ILLNESS RULE (N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)	
713990	ALL OTHER AMUSEMENT AND RECREATION INDUSTRIES
72	ACCOMODATION AND FOOD SERVICES
721211	RV (RECREATIONAL VEHICLE) PARKS AND CAMPGROUNDS
721214	RECREATIONAL AND VACATION CAMPS (EXCEPT CAMPGROUNDS)
722330	MOBILE FOOD SERVICES
81	OTHER SERVICES, EXCEPT PUBLIC ADMINISTRATION
811111	GENERAL AUTOMOTIVE REPAIR
811112	AUTOMOTIVE EXHAUST SYSTEM REPAIR
811113	AUTOMOTIVE TRANSMISSION REPAIR
811118	OTHER AUTOMOTIVE MECHANICAL AND ELECTRICAL REPAIR AND MA
811121	AUTOMOTIVE BODY, PAINT, AND INTERIOR REPAIR AND MAINTENA
811122	AUTOMOTIVE GLASS REPLACEMENT SHOPS
811191	AUTOMOTIVE OIL CHANGE AND LUBRICATION SHOPS
811192	CAR WASHES
811198	ALL OTHER AUTOMOTIVE REPAIR AND MAINTENANCE
811310	COMMERCIAL AND INDUSTRIAL MACHINERY AND EQUIPMENT (EXCEP
811411	HOME AND GARDEN EQUIPMENT REPAIR AND MAINTENANCE
812191	DIET AND WEIGHT REDUCING CENTERS
812210	FUNERAL HOMES AND FUNERAL SERVICES
812220	CEMETERIES AND CREMATORIES
812930	PARKING LOTS AND GARAGES
92	PUBLIC ADMINISTRATION
921110	EXECUTIVE OFFICES
921130	PUBLIC FINANCE ACTIVITIES
921140	EXECUTIVE AND LEGISLATIVE OFFICES, COMBINED
921150	AMERICAN INDIAN AND ALASKA NATIVE TRIBAL GOVERNMENTS
921190	OTHER GENERAL GOVERNMENT SUPPORT
922110	COURTS
922120	POLICE PROTECTION
922140	CORRECTIONAL INSTITUTIONS
922150	PAROLE OFFICES AND PROBATION OFFICES
922160	FIRE PROTECTION
922190	ALL OTHER JUSTICE, PUBLIC ORDER, AND SAFETY ACTIVITIES
923110	ADMINISTRATION OF EDUCATION PROGRAMS
923120	ADMINISTRATION OF PUBLIC HEALTH PROGRAMS
923130	ADMINISTRATION OF HUMAN RESOURCE PROGRAMS (EXCEPT EDUCAT
924110	ADMINISTRATION OF AIR AND WATER RESOURCE AND SOLID WASTE
924120	ADMINISTRATION OF CONSERVATION PROGRAMS
925110	ADMINISTRATION OF HOUSING PROGRAMS
925120	ADMINISTRATION OF URBAN PLANNING AND COMMUNITY AND

TABLE A-1. INDUSTRIES LIKELY TO BE REQUIRED TO COMPLY WITH THE DRAFT PROPOSED HEAT-RELATED ILLNESS RULE (N = 391 INDUSTRIES AT 6-DIGIT NAICS LEVEL)	
	RURAL
926110	ADMINISTRATION OF GENERAL ECONOMIC PROGRAMS
926120	REGULATION AND ADMINISTRATION OF TRANSPORTATION PROGRAMS
926130	REGULATION AND ADMINISTRATION OF COMMUNICATIONS, ELECTRI
926140	REGULATION OF AGRICULTURAL MARKETING AND COMMODITIES
926150	REGULATION, LICENSING, AND INSPECTION OF MISCELLANEOUS C
927110	SPACE RESEARCH AND TECHNOLOGY

HRI Upper Bound SBEIS Estimates (in Dollars)

Size of Business	Daily Costs per FTE				Annual Cost per FTE
	ID Temp	Prevent	Water	Respond	Training
50 or fewer FTEs	2.20 (n=31)	6.83 (n=38)	2.48 (n=92)	5.78 (n=20)	50 (n=227)
51 or greater FTEs	1.48 (n=3)	3.15 (n=4)	0.33 (n=13)	0.74 (n=5)	5.75 (n=33)
Total Number of Respondents (n)	34	42	105	25	260
How many X's greater is cost for small businesses?	1.5	2.2	7.5	7.8	8.7

HRI Lower Bound SBEIS Estimates (in Dollars)

Size of Business	Daily Costs per FTE				Annual Cost per FTE
	ID Temp	Prevent	Water	Respond	Training
50 or fewer FTEs	0 (n=368)	0 (n=369)	0 (n=320)	0 (n=361)	66.67 (n=139)
51 or greater FTEs	0 (n=46)	0 (n=44)	0 (n=40)	0 (n=45)	11.96 (n=15)
Total Number of Respondents (n)	414	413	360	406	154
How many X's greater is cost for small businesses?	0	0	0	0	5.6

Note: all estimates include the median reported cost. For ID temp, prevent, water, and respond, upper bound estimates include only those respondents who reported that a given component of the proposed HRI rule would cost "more" while lower bound estimates included those who reported it would cost less, the same, or more. For training, upper bound includes all respondents' estimates of future minus current costs, while lower bound includes only the cost estimates for those who said they were *not* providing water currently.