

The Benefits of Increased Efficiency

The Economic Impact of Reduced Permit Approval Times in South Carolina



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September 2017



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Prepared for the South Carolina Department Health and Environmental Control

EXECUTIVE SUMMARY

- *DHEC has significantly improved the efficiency with which it issues permits to South Carolina businesses over the past decade. Specifically, **since 2007 the average DHEC permit approval time has been reduced by approximately 40 percent – from 42.2 calendar days to 25.2 calendar days**. This faster processing time, in turn, has helped local businesses to speed up all production activity that requires DHEC permitting.*
- *Over the same time period, DHEC has increased the total number of permits issued by about 15.7 percent – from 13,096 permits in 2007 to 15,150 permits in 2016. Thus **the drop in average DHEC permit approval time has occurred even as the total number of annual permits being processed has simultaneously increased.***
- *DHEC has issued a total of 115,676 permits to 3,370 firms in South Carolina since 2007. This reflects approximately 2.8 percent of all South Carolina businesses. **The majority of DHEC permits issued since 2007 are those related to asbestos removal (54.3%), storm water permitting (16.6%), and coastal zone permitting (14.0%).***
- *All businesses that apply for DHEC permits were surveyed to determine how permit approval times affect their business activities. **Approximately 64 percent of survey respondents indicate that a reduction in DHEC permit approval time leads to a positive increase in ongoing business activity.** Additionally, these results suggest that smaller firms tend to benefit more from faster approval times than do larger firms.*
- ***The results that emerge from analyzing all survey responses reveal that a 50 percent reduction in DHEC permit approval times increases annual business activity among firms that require DHEC permits to operate by 0.7 percent.** Given that DHEC permit approval times dropped by approximately 40 percent between 2007 and 2016, this implies a 0.56 percent average gain in annual business activity across all firms working with DHEC.*
- ***Construction, manufacturing, and utility firms were among those most likely to need DHEC permitting in order to conduct regular business activities.** Survey results in this study suggest that 69 percent of all businesses that require permits from DHEC are contained within one of these three industries.*
- ***The total economic impact arising from the 40 percent reduction in DHEC permit approval times since 2007 is estimated to be between \$72.9 and \$103.9 million annually.** This dollar value reflects the net increase in statewide economic activity that can be attributed (either directly or indirectly) to increases in business operations that occurred as a result of these decreases in DHEC permit approval times. This total economic impact is associated with between 619 and 882 jobs and between \$35.6 and \$50.7 million in new labor income for South Carolinians that would not exist otherwise.*

TABLE OF CONTENTS


Executive Summary	2
Table of Contents	3
Introduction	4
Methodology	5
Table 1 – Categories of Economic Impacts	7
Profile of DHEC Permitting Trends in South Carolina	7
Table 2 – Total Number of DHEC Permits Issued by Major Category: 2007-2016	7
Figure 1 – Annual DHEC Permit Activity and S.C. Unemployment Rates: 2007-2016	9
Figure 2 – Annual Average DHEC Permit Approval Times (in calendar days): 2007-2016	10
The Economic Impact of Reductions in DHEC Permit Approval Times	10
Table 3 – Survey Responses Regarding Impact of Permit Approval Times on Business Activities	11
Figure 3 – Distribution of Survey Respondents by Industry	12
Table 4 – Economic Impact of Reduced DHEC Permit Approval Times on South Carolina: Lower Bound	13
Table 5 – Economic Impact of Reduced DHEC Permit Approval Times on South Carolina: Upper Bound	14
Conclusion	14
Appendix – DHEC Industry Permit Survey	16

INTRODUCTION

The primary mission of the Department of Health and Environmental Control (DHEC) in the state of South Carolina is to improve the quality of life for all South Carolinians by protecting and promoting the health of the public and the health of the environment – including all coastal resources and the state’s land, air, and water quality. In order to carry out this mission, DHEC enforces a variety of specific environmental standards with local businesses through the process of permitting.

While compliance with DHEC permitting standards helps to make business practices safer, the permitting process itself can also have an unintended consequence of slowing business activity. In many respects, permit approval time can be thought of as part of the production process. When one aspect of the production process slows, so too does the entire operation, which then leads to a lower volume of annual output or revenue. As such, one of DHEC’s main goals is to continually increase the efficiency of the permitting process in order to maximize business activity while maintaining critical safety practices.

Over the past decade DHEC’s efforts towards increasing efficiency in the permitting process have been successful, with the average permit approval time having been reduced by approximately 40 percent. Furthermore, this drop has occurred even as the total number of annual permits being processed by DHEC has risen over the same time period. Because faster processing helps local businesses to speed up any production activity that requires DHEC permitting, this increased permit efficiency generates significant economic gains for the state of South Carolina. The purpose of this study is to conduct an analysis that specifically quantifies the economic impact on South Carolina that has arisen as a result of reductions in DHEC permit approval times over the past decade (2007-2016).



The study begins with a description of the economic impact methodology, including a description of direct, indirect, and induced impacts. The study then examines current DHEC permitting trends in South Carolina and the degree to which DHEC has improved the efficiency of this process. Next, this study presents statewide estimates detailing the total economic impact that has arisen as a result of these increased efficiencies – as quantified through job creation, income levels, and overall economic activity for the state. Finally, the study concludes with a brief summary of all results.

METHODOLOGY

The economic impact of any industry is determined by estimating how the expenditures of firms within that industry increase the demand for various goods and services in the local region over what it would have been otherwise. In a standard economic impact analysis, there are three types of economic impacts that can be measured: *direct*, *indirect*, and *induced*. The direct impact simply refers to any initial change in economic activity. For example, in a manufacturing firm, this would include direct expenditures on the part of the firm itself, including employee wages and benefits, various machinery, computer equipment, vendors, and overhead and administrative costs. This initial increase in spending leads to the creation of new jobs and incomes for employees and suppliers of this manufacturing firm.

The indirect effect refers to the additional rounds of spending activity that occur due to inter-industry linkages between other local firms within South Carolina. For example, if a manufacturing firm experiences an increase in demand, it may need to purchase transportation equipment to haul additional materials to and from its facilities as it produces additional goods to be sold. The transportation equipment producer, which will experience an increase in demand, will then be required to purchase additional materials from its suppliers to accommodate its increase in demand, and so on. If the increase in demand is high enough, suppliers may also have to hire new workers in addition to buying more supplies. These indirect effects spread across many industries in South Carolina. The total indirect effect is a function of the size of the in-state supplier network.

The induced effect refers to the additional economic impact that results from increases in household spending activity. For example, when the manufacturing firm cited above purchases additional transportation equipment from an in-state producer, the transportation equipment provider may hire additional workers to satisfy this increase in demand. These workers then spend part of their wages in the local economy on (for example) food, entertainment, and housing. The food, entertainment, and housing industries then experience an increase in demand, causing them to hire additional workers, which in turn leads to further spending activity. Once again, these induced effects spread across the state.

These successive rounds of indirect and induced spending activity do not go on forever, which is why each of these impacts can be quantified. In each round of spending, money is “leaked out” of the local economy for a variety of reasons. For example, firms may buy inputs from out-of-state vendors or workers may choose to save a portion of their incomes.

In order to calculate the indirect and induced effects, economic multipliers are used. For example, if a manufacturing firm spends \$1,000,000 on transportation equipment and this leads to a total spending increase of \$2,500,000 in the local economy, then the economic multiplier would be said to be 2.5. Economic multipliers vary by industry and by geographic region. To estimate the economic impacts resulting from increases in business activity due to reductions in DHEC permit approval times, a customized structural model (also known as an input-output model) of the South Carolina economy was used by the Division of Research – this model contains specific linkages between all industries in South Carolina and can thus accurately capture all economic multiplier effects. The input-output modeling software *IMPLAN* was used to calculate all reported estimates. In this study, the economic activity that is generated by additional activity among firms in South Carolina resulting from reduced permit approval times is estimated via three categories of impacts: total economic activity (value added), employment, and labor income. Each of these is summarized in Table 1 below.

Table 1 – Categories of Economic Impacts

Impact Type	Definition
Total Economic Activity (Value Added)	The dollar value representing the net contribution to economic activity – or the estimated contribution to gross regional product
Employment	The total number of full-time equivalent jobs necessary to produce and deliver the goods and services as measured by total economic activity
Labor Income	The dollar value representing all wages, salaries, and benefits associated with total employment

A PROFILE OF DHEC PERMITTING TRENDS IN SOUTH CAROLINA

In 2016, DHEC issued 15,150 permits to 3,370 firms in South Carolina – or to approximately 2.8 percent of all South Carolina businesses. Since 2007, DHEC has issued a total of 115,676 permits. Table 2 breaks these permits down by major category. The majority of permits issued by DHEC are asbestos related (54.3%). This is followed by various permit categories related to storm water permitting (16.6%) and coastal zone permitting (14.0%).

Table 2 – Total Number of DHEC Permits Issued by Major Category: 2007-2016

Permit Category	Total Permits Issued (2007-2016)	Percentage of Total ¹
Asbestos Abatement License	45,040	38.9%
Asbestos Demolition License	17,732	15.3%
Coastal Zone Consistency Certification	13,744	11.9%
Stormwater Construction Permit (MS4 Review-Non Coastal)	8,338	7.2%
Water Line Construction Permit	7,448	6.4%
Sewer Line Construction Permit	4,939	4.3%
Stormwater Construction Permit (DHEC Review-Non Coastal)	4,382	3.8%
Stormwater Construction Permit (MS4 Review-Coastal)	3,584	3.1%
Stormwater Construction Permit (DHEC Review-Coastal)	2,915	2.5%
401 Certification (Wetlands)	2,262	2.0%
Coastal Critical Area Permit (Minor)	2,191	1.9%
Air Permit (Minor NSR)	1,213	1.0%
Public Drinking Water System Construction Permit	571	0.5%
Air Permit (Expedited Minor-NSR)	368	0.3%

¹ Due to rounding, percentages will not sum to exactly 100 percent.

Permit Category	Total Permits Issued (2007-2016)	Percentage of Total ¹
National Pollutant Discharge Elimination System Permit	176	0.2%
Coastal Critical Area Permit (Major)	156	0.1%
Pretreatment System Construction Permit	142	0.1%
Air Permit (Synthetic Minor)	124	0.1%
Air Permit (Expedited Synthetic Minor)	97	0.1%
Wastewater Treatment Construction Permit	80	0.1%
Coastal Critical - Major	54	0.1%
Land Application Permit	43	0.1%
Air Permit (PSD-Non Class 1 Area)	23	0.1%
Air Permit (Expedited PSD-Non Class 1)	20	0.1%
Air Permit (Expedited Minor-Concrete)	13	0.1%
Air Permit (Expedited PSD-Class 1)	10	0.1%
Air Permit (Expedited Synthetic Minor-Asphalt)	6	0.1%
Air Permit (PSD-Class 1 Area)	3	0.1%
Air Permit (Expedited Synthetic Minor-Concrete)	2	0.1%

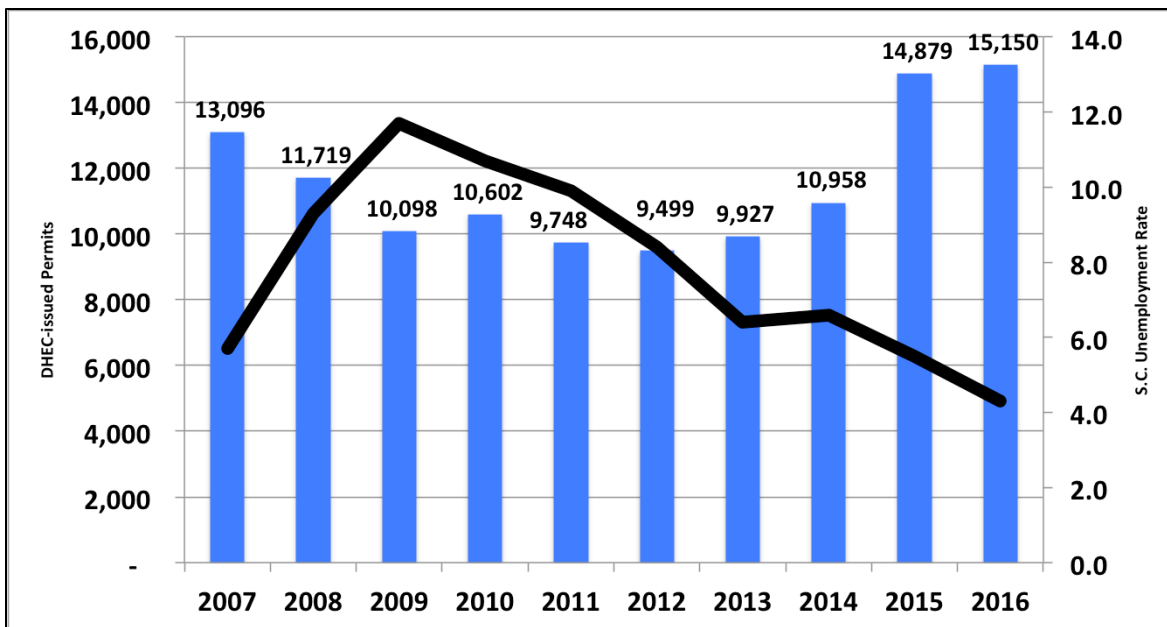
The growth trends in permit activity by DHEC over the past decade have closely paralleled that of broader statewide economic trends. Following the substantial decline in economic activity during the Great Recession that occurred from 2007 to 2009, South Carolina and the United States entered an economic expansion that is now in its 8th year. In South Carolina, for example, the unemployment rate dropped from its peak of 11.7 percent in December 2009 to 4.3 percent in December 2016 while wage growth recently reached its highest level since 2011.² Figure 1 compares the number of annual permits issued by DHEC with the state's overall annual unemployment rate.³ Notice that the growth in the number of permits is inversely correlated to the unemployment rate. Following a steady decline from 2007 to 2009, DHEC permit activity leveled off and by 2013 had begun to increase. Similarly, following a steady increase in unemployment from 2007 to 2009, the economy began to recover in 2010 as shown by a steady decline in the unemployment rate beginning in the same year. It is no coincidence that the highest

² Source: U.S. Bureau of Labor Statistics (QCEW)

³ Each unemployment rate shown is the value for December of that year. Source: U.S. Bureau of Labor Statistics

rate of economic growth that South Carolina has experienced during this current expansion occurred in 2015, the same year in which DHEC permit activity experienced its largest annual increase during this time period (+35.8%).⁴ Overall, DHEC permit activity has increased by approximately 15.7 percent since 2007.

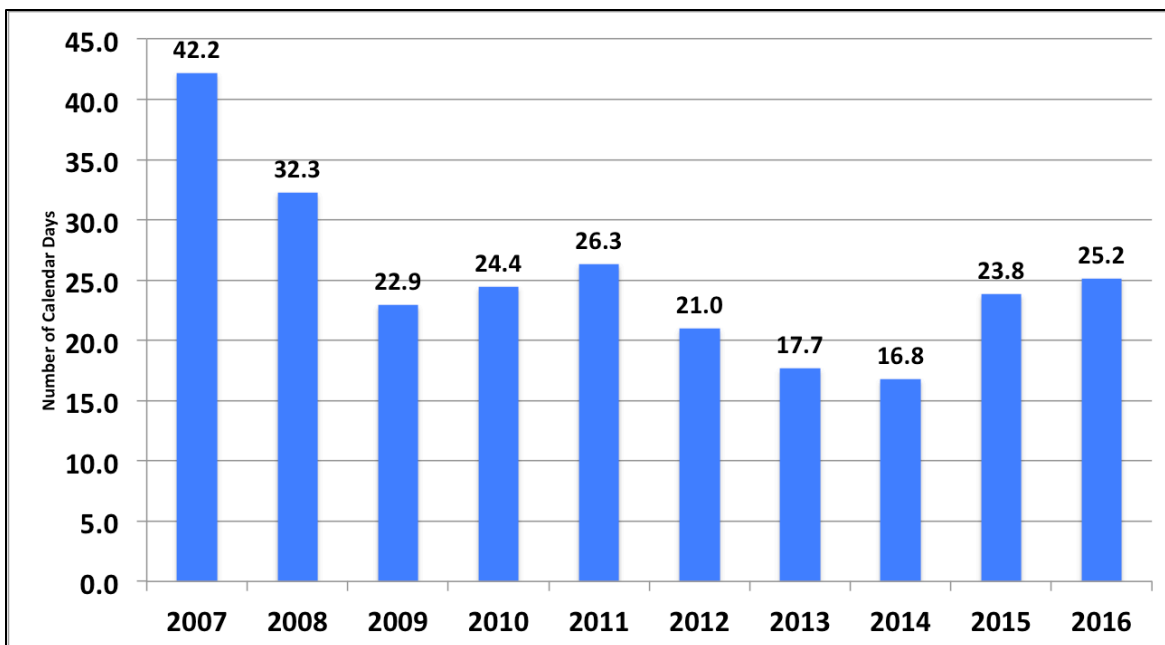
Figure 1 – Annual DHEC Permit Activity and S.C. Unemployment Rates: 2007-2016



One trend that has not fluctuated with the state of the economy has been the decline in permit approval times. Figure 2 highlights the relatively steady drop from 42.2 days in 2007 to 25.2 days in 2016. *In other words, a 15.7 percent increase in permit activity over the past decade has been accompanied by a decline in the average permit approval time of approximately 40.0 percent over the same time period.* Taken together, these two trends illustrate the dramatic increase in efficiency that has occurred at DHEC.

⁴ Economic growth, in this case, is measured by annual employment gains.

Figure 2 – Annual Average DHEC Permit Approval Times (in calendar days): 2007-2016



THE ECONOMIC IMPACT OF REDUCTIONS IN DHEC PERMIT APPROVAL TIMES

In order to estimate the total economic impact that arises from reductions in DHEC permit approval times, the link between a reduction in permit approval times and individual business activity must first be established. For the purposes of this study, this link was established through the use of a business survey that was distributed to all firms in South Carolina that applied for a DHEC permit within the most recent 12 month period. Each business was contacted by DHEC through email and the survey was distributed via Google Forms. The full survey instrument, which was written and assembled by the DOR, appears in the Appendix.

Of particular importance was the question (and accompanying response set) described below in Table 3. Nearly 64 percent of all survey respondents indicated that a reduction in DHEC permit approval time would lead to a positive increase in ongoing business activity. Additionally, these data suggest that *smaller firms tend to benefit more from faster permit approval times than do larger firms*. For example, the average firm size among businesses reporting that a decline in

DHEC permit approval time of 50 percent would generate a 3 percent or higher increase in business activity was 81 employees. By contrast, the average firm size was 214 employees for businesses reporting that a decline in DHEC permit approval time of 50 percent would generate no change in business activity.

Table 3 – Survey Responses Regarding Impact of Permit Approval Times on Business Activities

If your average DHEC permit approval time were reduced by 50%, what impact (if any) would you estimate for this to have on your facility's annual total business activities?		
Response Options	Pct. of Respondents	Avg. Firm Size of Respondents
No change in Business Activity	36.2%	214 employees
A small increase in business activity (less than 1%)	19.0%	401 employees
A moderate increase in business activity (1%-3%)	19.0%	154 employees
A large increase in business activity (3% or more)	25.8%	81 employees
Sample Size: n = 58		

After appropriately weighting all survey responses by firm size, the results suggest that for the average South Carolina firm that requires DHEC permits to operate, a 50 percent reduction in DHEC permit approval time will increase annual business activity by 0.7 percent.⁵ Given that DHEC permit approval times dropped by approximately 40 percent between 200 and 2016 this implies a 0.56 percent gain in annual business activity across all firms working with DHEC that result from this decline in permit approval times.

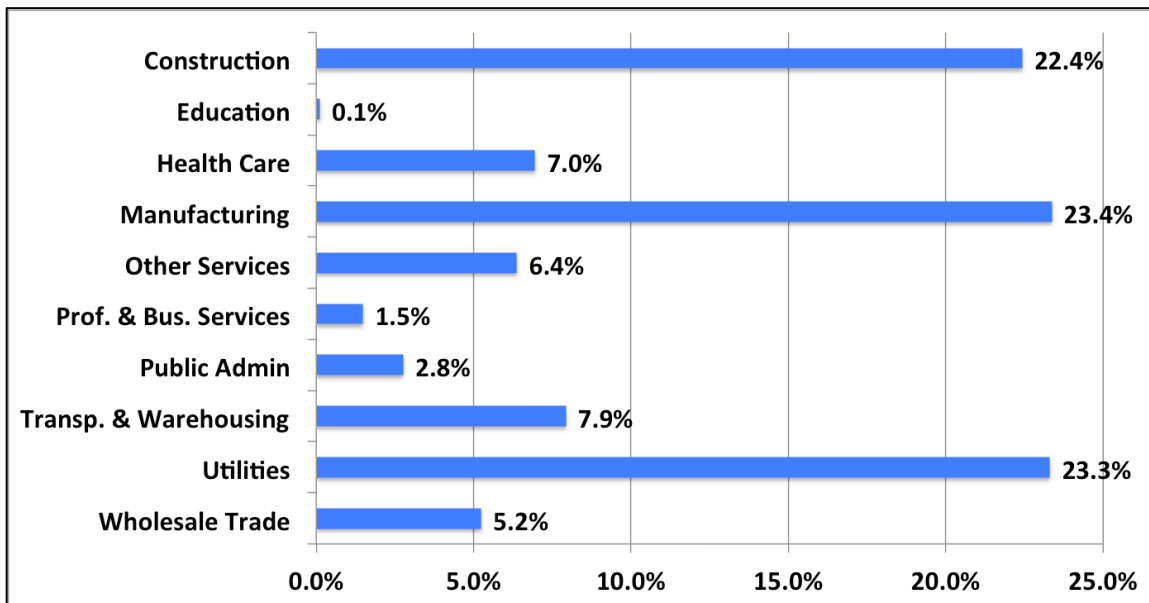
In addition to gains in annual business activity, estimating the economic impact of reduced permit times also requires some basic knowledge about the distribution of firms that require DHEC permits. Put simply different industries have different effects on regional economic activity and economic growth. For example, a given increase in business activity within a manufacturing firm will have a different effect on South Carolina's economy than if this same increase in activity

⁵ To calculate this estimate, the assumption was made that firms indicating an increase in business activity of less than 1 percent experienced an increase of 0.5 percent; for firms indicating an increase in business activity of between 1 and 3 percent, the assumption was made that they experienced an increase of 2 percent; for firms indicating an increase in business activity of greater than 3 percent, the conservative assumption was made that they experienced an increase of exactly 3 percent

were to occur in an engineering or healthcare-related firm. This would largely result from differences within the supply chains of each firm as well as differences among spending patterns of employees at different wage and occupation levels.

The survey conducted for this study requested that each business identify the industry in which it primarily operates. Figure 3 displays the results by listing the distribution of all survey respondents by industry. Perhaps not surprisingly, construction, manufacturing, and utility firms were among those most likely to need DHEC permitting to conduct regular business activities. These survey results indicate that approximately 69 percent of all businesses that require permits from DHEC are contained within one of these three industries.

Figure 3 – Distribution of Survey Respondents by Industry



As of this writing, the average firm in South Carolina employs approximately 13.7 full-time workers.⁶ Given that DHEC approved permits for 3,370 businesses during the last twelve months, this translates into a total of 46,169 employees affiliated with businesses requiring DHEC permits to operate. If these businesses experience an average increase in total output (or revenue) of 0.56

⁶ Source: U.S. Bureau of Labor Statistics, QCEW, q117

percent resulting from a decline in DHEC permit approval times, then this would translate into 25 additional employees – *all else being equal*. As such, the direct increase in employment activity resulting from a 0.56 percent increase in firms requiring DHEC permits is 258.

As noted in Table 4, using input-output models for the state of South Carolina, this level of increased employment translates into \$47.4 million in annual gains in direct economic activity and approximately \$20.2 million in labor income. After incorporating all economic multiplier effects, we can see that the total annual economic impact resulting from reduced DHEC permit approval times is approximately \$72.9 million. This is associated with 619 jobs and \$35.6 million in labor income for South Carolinians.

Table 4 – Economic Impact of Reduced DHEC Permit Approval Times on South Carolina: Lower Bound

	Employment	Labor Income	Economic Activity (Value Added)
Direct Effect	258	\$20,227,189	\$47,412,001
Indirect Effect	189	\$8,675,165	\$13,028,088
Induced Effect	173	\$6,702,570	\$12,486,454
Total Effect	619	\$35,604,923	\$72,926,542

The set of estimates summarized in Table 4 assumes that the industry distribution among all 3,370 firms affected by a reduction in DHEC permit approval times is identical to the distribution among all 120,824 firms currently operating in South Carolina.⁷ However, the estimates in Table 4 can also be generated under the assumption that the distribution among the 3,370 firms that obtain permits from DHEC instead reflects what is shown in Figure 3. In this case, the total economic impact of reduced DHEC permit approval times is estimated to be significantly higher – which is reflected in Table 5. Thus, in this report the results highlighted in Tables 4 and 5 are denoted as being the *lower* and *upper bounds* on the true impact of reduced DHEC permit approval times on South Carolina.

⁷ Source: U.S. Bureau of Labor Statistics, QCEW, q117

Table 5 – Economic Impact of Reduced DHEC Permit Approval Times on South Carolina: Upper Bound


	Employment	Labor Income	Economic Activity (Value Added)
Direct Effect	367	\$28,823,744	\$67,562,101
Indirect Effect	269	\$12,362,110	\$18,565,025
Induced Effect	246	\$9,551,162	\$17,793,197
Total Effect	882	\$50,737,015	\$103,920,322

Tables 4 and 5 show that the true economic impact on South Carolina from the reduction in DHEC permit approval times that have occurred since 2007 is between \$72.9 and \$103.9 million in economic activity, which is associated with between 619 and 882 jobs and between \$35.6 and \$50.7 million in labor income.

CONCLUSION

Over the past decade, DHEC has significantly improved the efficiency with which it issues permits to South Carolina businesses. For example, since 2007 the average DHEC permit approval time has dropped by approximately 40 percent. Over the same time period, the number of annual permits that DHEC issues has risen by over 15 percent. These increased efficiencies have allowed DHEC to continue to carry out its primary mission of protecting and promoting the health of the public and the health of the environment while simultaneously minimizing the unintended consequences associated with slower business activity that results from a lengthy permitting process needed to enforce DHEC environmental standards.

This purpose of this study has been to quantify the economic impact to South Carolina that has resulted from the decline in DHEC permit approval times since 2007. Specifically, the 40 percent reduction in DHEC permit approval times is estimated to generate between \$72.9 and \$103.9 million in economic activity for the state of South Carolina annually. This corresponds to between 61 jobs and 88 jobs and between \$35.6 million and \$50.7 million in new labor income for South Carolinians that would not exist otherwise.




This study also estimates that approximately 64 percent of businesses that require DHEC permits in order to operate benefit from reduced permit approval times. Additionally, these results suggest that smaller firms tend to benefit more from faster approval times than do larger firms. Construction, manufacturing, and utility firms are among those most likely to need DHEC permitting to conduct regular business activities.

DHEC's mission to improve the quality of life for South Carolina residents by protecting and promoting the health of the public and the health of the environment is critically important. By continuing to develop new strategies that will allow DHEC to better fulfill its mission while simultaneously minimizing any associated slowdown of business activity, South Carolina will continue to pursue the goals of being both business friendly and environmentally responsible.

APPENDIX – DHEC INDUSTRY PERMIT SURVEY

Please answer the questions below to the best of your ability (best guess). Although all responses will be kept strictly confidential, you may skip any questions you are uncomfortable with and answer the rest.

- (1) What are the products produced or services offered at your business facility?
- (2) What markets does your business facility serve? (Check all that apply)
 - a. Utilities
 - b. Construction
 - c. Manufacturing
 - d. Wholesale Trade
 - e. Retail Trade
 - f. Transportation and Warehousing
 - g. Information
 - h. Finance and Insurance
 - i. Real Estate
 - j. Professional, Scientific, and Technical Services
 - k. Administration and Support Services
 - l. Educational Services
 - m. Health Care and Social Assistance
 - n. Arts, Entertainment, and Recreation
 - o. Accommodation and Food Services
 - p. Other Services
 - q. Public Administration
- (3) How many employees work at your business facility, including contract employment?
- (4) Which (if any) DHEC permits are required for your business facility to maintain its operations?
- (5) How many employee hours does it take your business facility to prepare and complete your most complicated DHEC permit application?
- (6) What percentage of total business activities at your business facility would you estimate require a DHEC permit?
 - a. Less than 10%
 - b. 10% to 30%
 - c. 30% to 50%
 - d. 50% to 70%
 - e. Greater than 70%

- 
- (7) How many permits (not renewals) has your business facility applied for from DHEC in the last twelve months?
- (8) What is the total dollar value anticipated from the new business activity requiring these new permits?
- (9) If your average DHEC permit approval time were reduced by 50%, what impact (if any) would you estimate for this to have on your facility's annual total business activities?
- a. No change in total business activity
 - b. small increase in business activity (less than 1%)
 - c. moderate increase in business activity (1%-3%)
 - d. large increase in business activity (3% or more)