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Report to the Governor and the General Assembly of Virginia

Impact of Regulations on Virginia's Manufacturing Sector

2016

JLARC
JOINT LEGISLATIVE AUDIT
AND REVIEW COMMISSION

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COMMONWEALTH of VIRGINIA

Joint Legislative Audit and Review Commission
201 North 9th Street, General Assembly Building, Suite 1100
Richmond, Virginia 23219

Hal E. Greer
Director

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October 31, 2016

The Honorable Robert D. Orrock Sr., Chair
Joint Legislative Audit and Review Commission
General Assembly Building
Richmond, Virginia 23219

Dear Delegate Orrock:

In 2015, the General Assembly directed the Joint Legislative Audit and Review Commission (JLARC) to update its 2006 study of the impact of regulations on Virginia's manufacturing sector (SJR 274). The report, *Impact of Regulations on Virginia's Manufacturing Sector,* was briefed to the Commission and authorized for printing on September 12, 2016.

On behalf of Commission staff, I would like to express appreciation for the cooperation and assistance of the staff of the Department of Planning and Budget, Department of Environmental Quality, Department of Labor and Industry, Department of Agriculture and Consumer Services, Department of Taxation, and the Virginia Manufacturers Association.

Sincerely,

Hal E. Greer
Director

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Summary

Impact of Regulations on Virginia's Manufacturing Sector

WHAT WE FOUND

Most regulations that affect Virginia manufacturers are federal

Most of the more than 500 total regulations that affect manufacturers in Virginia are federal. Many of these federal regulations, such as vehicle safety standards, are enforced directly by federal agencies. JLARC staff and state agencies identified 98 state regulations that currently affect manufacturers. These include regulations Virginia has adopted on its own and those with a basis in federal regulations.

WHY WE DID THIS STUDY

In 2015, the General Assembly directed JLARC to update its 2006 report, *Impact of Regulations on Virginia's Manufacturing Sector*.

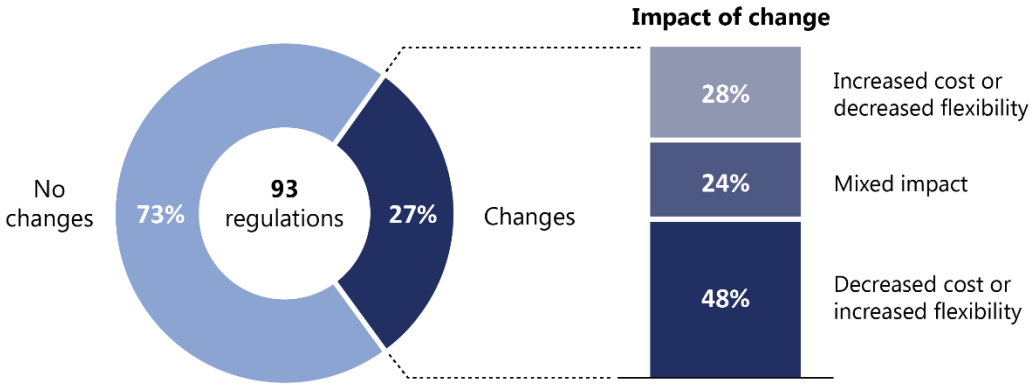
ABOUT VIRGINIA'S MANUFACTURING SECTOR

Manufacturing is a key sector of Virginia's economy, especially in the western and southern regions of the state. The sector is the state's fifth largest employer and third largest contributor to Virginia's total economic output.

Nearly three-fourths of Virginia regulations that affect manufacturers have not changed since 2005

During the past decade, nearly three-fourths of Virginia's regulations that affect manufacturers did not change. Changes to the remaining one-fourth had a variety of impacts. Almost half of the changes reduced manufacturers' costs or increased their flexibility in complying with the regulation. Others increased manufacturers' costs or decreased flexibility. Still others had a mixed impact on compliance cost and flexibility.

Just over one-fourth of manufacturing regulations were changed in a way that affected compliance cost and flexibility (2005-2014)



SOURCE: JLARC staff analysis of regulatory changes identified by state regulatory agencies and the Virginia Manufacturers Association.
NOTE: Regulations that were repealed (two) or adopted (five) since 2005 are excluded.

Financial impact of regulations on Virginia manufacturers has not changed substantially since 2005

The financial impact of regulations on Virginia manufacturers is not substantially different from the impact estimated in the 2006 JLARC report, adjusted for inflation. JLARC staff estimate the financial impact of regulations in 2014 was between $942 million and $4.84 billion, or between two percent and 12 percent of manufacturing's total economic output. As in 2006, the majority of this financial impact was attributable to federal regulations rather than Virginia regulations.

1 Manufacturing and Virginia's Economy

SUMMARY Manufacturing is a key contributor to Virginia's economy, accounting for eight percent of the state's private employment and nine percent of total economic output. The western and southern regions of Virginia rely more heavily than other regions do on manufacturing for employment and local revenue. While manufacturing employment has been undergoing a long-term decline, manufacturing value added has increased. These trends in manufacturing are the result of long-term global economic changes. These trends are not unique to Virginia and have occurred in the southeastern U.S., nationwide, and in other developed countries. Collectively, the evidence suggests that a number of different factors have resulted in the decline in manufacturing employment in Virginia and elsewhere.

In 2015 the General Assembly directed JLARC to update its 2006 report, *Impact of Regulations on Virginia's Manufacturing Sector*. As part of this update JLARC was directed to evaluate Virginia's expansions upon federal regulations, review major state regulatory actions since 2005, and estimate the current financial impact of regulatory compliance. (See Appendix A.) JLARC staff used several research methods to address the study mandate including data analysis, interviews, and document reviews. (See Appendix B for more on the research methods used for this study.)

Manufacturers transform materials into new products, such as wood into furniture or iron into steel beams. Manufacturing creates the goods that are necessary to develop and maintain residential, business, transportation, and other infrastructure.

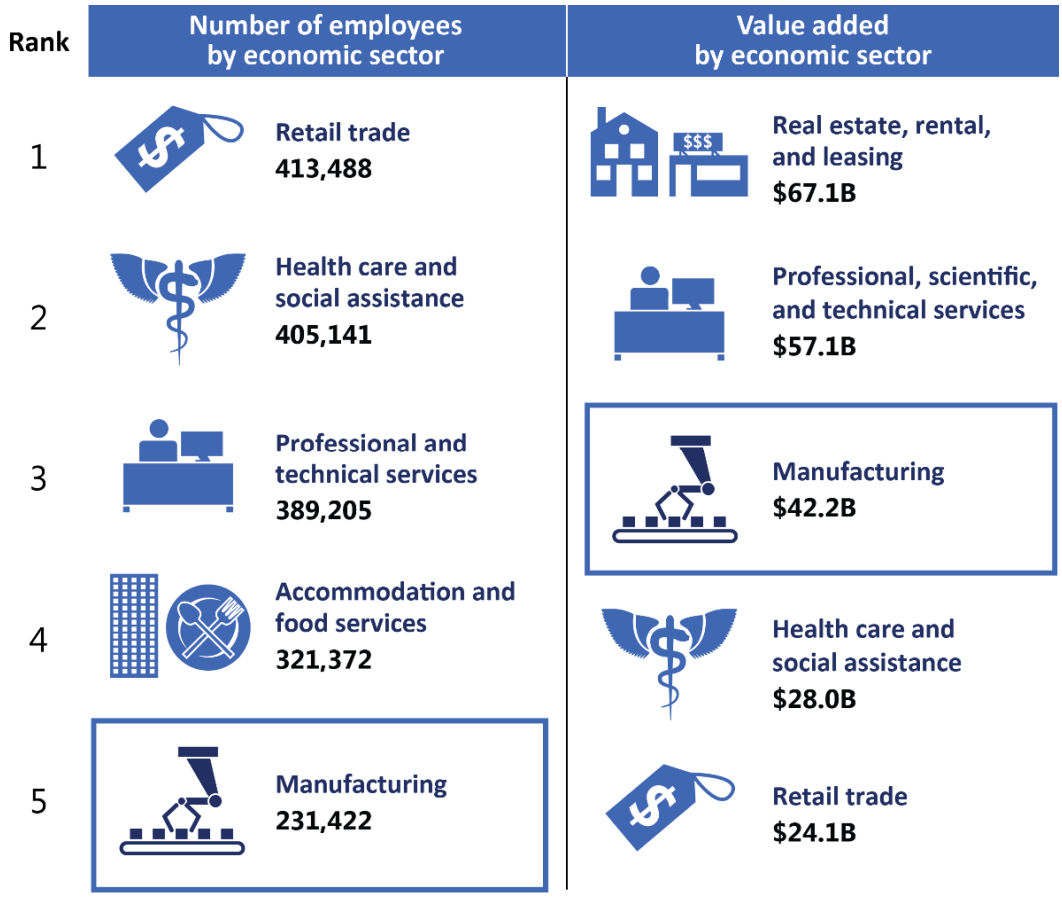
Value added is the difference between an industry's gross output (from sales and other income) and the cost of its intermediate inputs.

Gross domestic product is the sum of the value added from each industry sector in an economy.

Manufacturing is a key contributor to Virginia's economy

Even though manufacturing is often characterized as a declining economic sector across the U.S., it is still important to the Virginia economy, particularly in certain regions. Out of 19 private industry sectors, manufacturing is the fifth largest employer in Virginia and employs eight percent (231,422) of the state's private-sector employees (Figure 1-1). Manufacturing is the third largest contributor to Virginia's total economic output, measured by value added, and accounts for nine percent of Virginia gross domestic product ($42.2 billion). Manufactured goods represent 84 percent of the total goods exported from Virginia.

FIGURE 1-1
Manufacturing is a key sector of Virginia's economy (2014)



SOURCE: JLARC staff analysis of data from the Bureau of Economic Analysis (updated June 2016) and the Bureau of Labor Statistics.
NOTE: Private businesses are classified into 19 industry sectors. Other industry sectors include agriculture and forestry, mining, utilities, construction, information services, and finance and insurance.

Manufacturers tend to pay higher wages and employ more people per establishment. The annual manufacturing wage in Virginia in 2014 was $56,500, on average, compared to $52,200 for all other industry sectors. Manufacturers in Virginia employed 39 workers per establishment, on average, compared to only 12 workers per establishment across other private industry sectors.

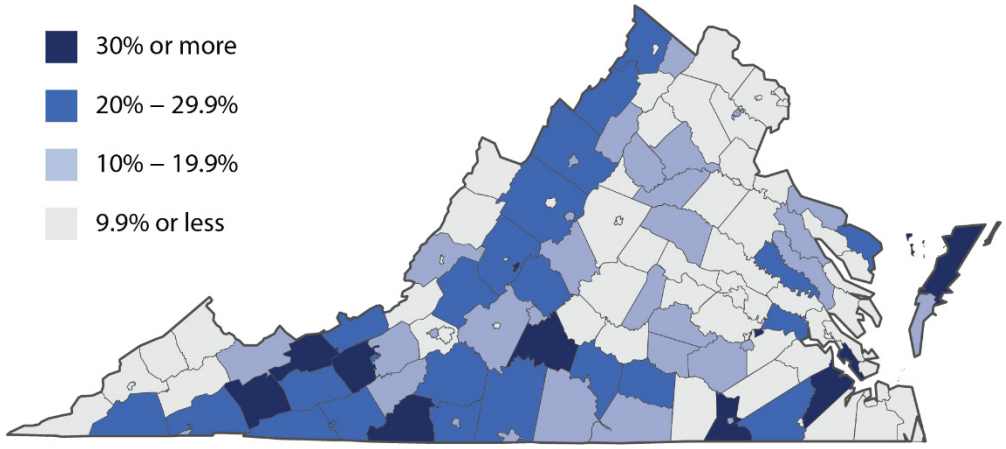
The manufacturing sector also supports employment in other sectors that provide raw materials and other inputs, and in sectors using its products. The median employment multiplier for manufacturing in Virginia is 1.6 (higher than the average of 1.3 for all other industries), which means that every manufacturing job in the state

supports another 0.6 jobs. Manufacturers of food, beverage, and tobacco products; chemical products; petroleum and coal products; and motor vehicles tend to have employment multipliers of 2.0 or higher.

Virginia's manufacturing employment and value added are both concentrated in a few subsectors. Transportation equipment; food, beverage, and tobacco products; and fabricated metal products manufacturing are the three largest subsectors for employment, making up 42 percent of total manufacturing employment. Food, beverage, and tobacco products; chemical products; and transportation equipment manufacturing are the three largest subsectors for value added, making up 63 percent of total manufacturing value added. (See Appendix C for employment and value added by manufacturing subsector.)

The western and southern regions of Virginia rely more heavily on manufacturing than other regions. More than 35 localities rely on manufacturing for 20 percent of local employment; 11 localities rely on manufacturing for more than 30 percent (Figure 1-2). Twenty-four localities rely on the machinery and tools tax, a business personal property tax paid exclusively by manufacturers, for more than five percent of local revenue. (See Appendix D.)

FIGURE 1-2
Western and southern Virginia rely more heavily on manufacturing for employment (2014)



SOURCE: JLARC staff analysis of Virginia data from the Bureau of Labor Statistics.
NOTE: Alexandria, Charlottesville, Covington, Craig, Fredericksburg, Poquoson, and Surry reported no manufacturing employment.

Employment has declined but manufacturing activity continues to increase

Manufacturing has experienced a long-term trend of declining employment, but may have stabilized in recent years. Employment in Virginia has declined 40 percent since 1990, a loss of more than 150,000 jobs. Nearly half (46 percent) of job losses across Virginia's manufacturing sector were concentrated in three subsectors: apparel, textiles, and furniture manufacturing. These three subsectors are also among the most labor-intensive manufacturing subsectors. Manufacturing employment continued to decline over the past decade (22 percent between 2005 and 2014). (See Appendix E for the change in employment across all manufacturing subsectors since 2005.) Since 2010, however, manufacturing employment increased by about one percent, or just over 1,500 jobs.

Other measures of manufacturing activity have increased. Economic activity—measured by value added, output per manufacturing worker, and exports—has increased over the past decade and over the longer term (Table 1-1). Even though the manufacturing sector as a whole experienced only modest increases in total output in the past decade, some subsectors experienced sizable increases: chemical manufacturing increased 52 percent; food, beverage, and tobacco manufacturing increased 34 percent; and electrical equipment and appliance manufacturing increased 27 percent.

TABLE 1-1
Manufacturing activity in Virginia has increased over time

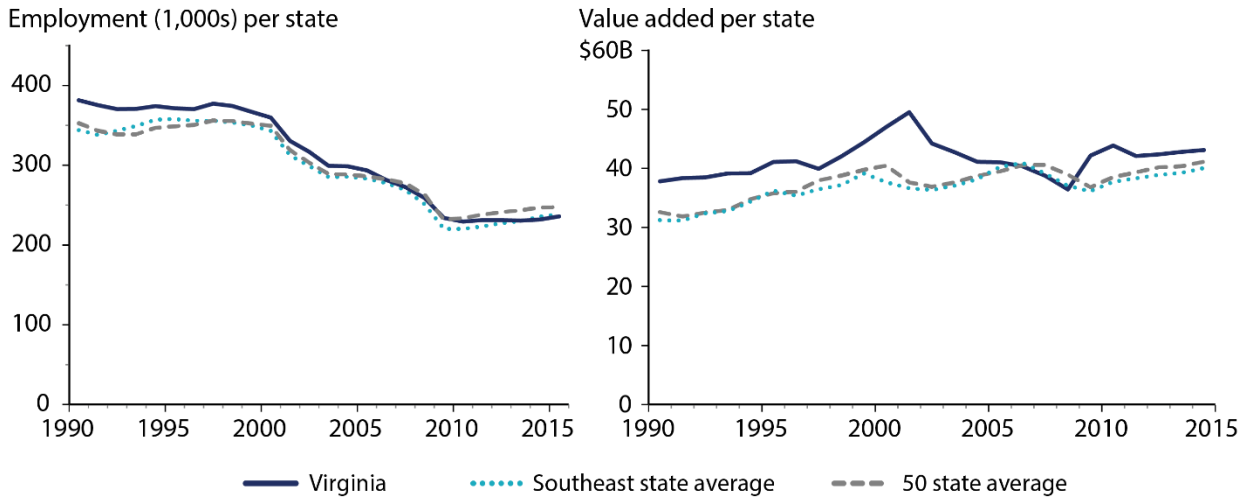
Measure	Past 10 years	Past 25 years
Total output (value added)	**3%**	**12%**
Output per worker	**31**	**86**
Exports	**9**	**29**

SOURCE: JLARC staff analysis of data from the Bureau of Labor Statistics, Bureau of Economic Analysis, and International Trade Administration.
NOTE: Past 10 years is 2005 to 2014 and past 25 years is 1990 to 2014 (with the exception of export data, which is 2006 to 2015 and 1999 to 2015). Total output, output per worker, and exports are adjusted for inflation.

Similar manufacturing trends have occurred in other states and developed countries

These trends of declining employment but increasing economic output are the result of long-term global economic changes not unique to Virginia, and manufacturing regulations are probably not the primary cause of these widespread changes. Over the past few decades, manufacturing employment has declined and value added has increased across the U.S. and in the Southeast (Figure 1-3). Similar trends also occurred in other developed countries, including Japan and Germany. (See Appendixes F and G for more about regional, national, and global trends.)

FIGURE 1-3
Similar trends in manufacturing employment and value added have occurred in Virginia, the Southeast, and nationwide (1990–2015)



SOURCE: JLARC staff analysis of data from the Bureau of Labor Statistics (month of November 1990–2015) and the Bureau of Economic Analysis (1990–2014).
NOTE: Southeast average excludes Virginia. Value added is adjusted for inflation.

Multiple factors have led to declining manufacturing employment in Virginia, across the U.S., and in other developed countries over the past several decades. Technological advancements over time have improved manufacturing processes and equipment, so that fewer workers are needed for the same output. As processes have become partially or entirely automated, manufacturing output per worker has increased and the number of workers needed has decreased. These technological advancements have allowed manufacturing value added (output) to increase as employment declined. Output per manufacturing worker in Virginia increased 31 percent between 2005 and 2014, and it increased by nearly 50 percent in food, beverage, and tobacco and 76 percent in chemical manufacturing. This, too, appears to be part of a global trend in developed countries; output per manufacturing worker increased 22 percent in the U.S. and 18 percent in Germany and Japan.

Employers began relying more heavily on lower-cost labor in developing countries. Labor-intensive manufacturing industries, in particular, moved production from the U.S. and other developed countries to developing economies to capitalize on lower labor costs. Relying more on labor in developing countries has enabled manufacturers to reduce production costs. Average hourly employee compensation paid by manufacturers in 2012 was substantially higher in developed countries ($36 per hour in U.S., $35 per hour in Japan, and $46 per hour in Germany) than compensation paid in developing countries ($6 per hour in Mexico and $11 per hour in Brazil).

Employment declines in manufacturing have corresponded with the gradual shift from a goods-based economy to a service-based economy. U.S. consumer demand has shifted toward services, which has also caused a shift in jobs toward the service sector. In 1950, manufacturing represented 27 percent of U.S. gross domestic product and the service sector represented 24 percent. By 2014, manufacturing had dropped to 12 percent and the service sector had grown to 51 percent of U.S. gross domestic product.

2 Virginia's Regulatory Environment

SUMMARY Virginia government has a long-standing interest in and reputation for ensuring that regulations do not impose unnecessary costs on businesses. Most of the regulations imposed on Virginia manufacturers are federal and cannot be influenced by the state. During the past decade, about 73 percent of Virginia's regulations affecting manufacturers have remained unchanged. For about half of the state regulations that did change, the result benefited manufacturers because it increased flexibility or decreased costs. For the other half, the result was either an increase in costs or a mix of impacts.

Regulations are adopted by agencies, boards, or other designated entities to specify how laws adopted by Congress (at the federal level) or the General Assembly (at the state level) are to be implemented and followed. Laws and regulations that impact manufacturers are designed to protect consumers, the environment, and workers, as well as to provide rules to collect tax revenue (Table 2-1).

TABLE 2-1
Four regulatory areas included in this review

Regulatory area	General purpose	Specific purpose
Economic	Protect consumers from unsafe products, food, and drugs	Ensure food, beverages, and other products are processed, packaged, and labeled appropriately
Environmental	Protect environment and human health from harmful pollutants	Improve air and water quality by reducing discharge of toxic pollutants and ensuring hazardous wastes are safely contained and disposed
Workplace	Govern employer-employee relationships	Protect employees' wages, benefits, safety, health, and civil rights
Tax	Clarify rules to collect taxes sufficient to fund government services	Provide guidance to businesses on how to calculate and pay income, sales, property, payroll, and other taxes

SOURCE: JLARC staff review of federal and Virginia regulations and regulatory literature.
NOTE: Four regulatory areas used in the 2006 JLARC report, as directed by the study mandate.

The 2006 JLARC report found that Virginia's regulatory agencies tended to engage and partner with manufacturers through the state's regulatory process. The report also concluded that Virginia's regulations largely mirrored federal requirements and did not add substantially to the requirements with which manufacturers must comply. This 2016 update seeks to characterize the state's current regulatory environment for manufacturers, reassess the extent to which Virginia's regulations go beyond federal requirements, and summarize major changes to Virginia's regulations since the 2006 JLARC report.

Virginia's regulatory environment still favorable to manufacturers

For many years, Virginia has taken steps to ensure state regulations do not impose unnecessary costs on businesses. Since the mid-1990s, executive orders from the governors of Virginia have directed agencies not to adopt regulations for policy objectives that can be accomplished through other means. The current executive order governing Virginia's regulatory policy states:

- Only regulations necessary to interpret the law or protect the public health, safety, or welfare shall be promulgated;
- Regulations shall be clearly written and easily understandable; and
- Regulations shall be designed to achieve their intended objective in the most efficient, cost effective manner.

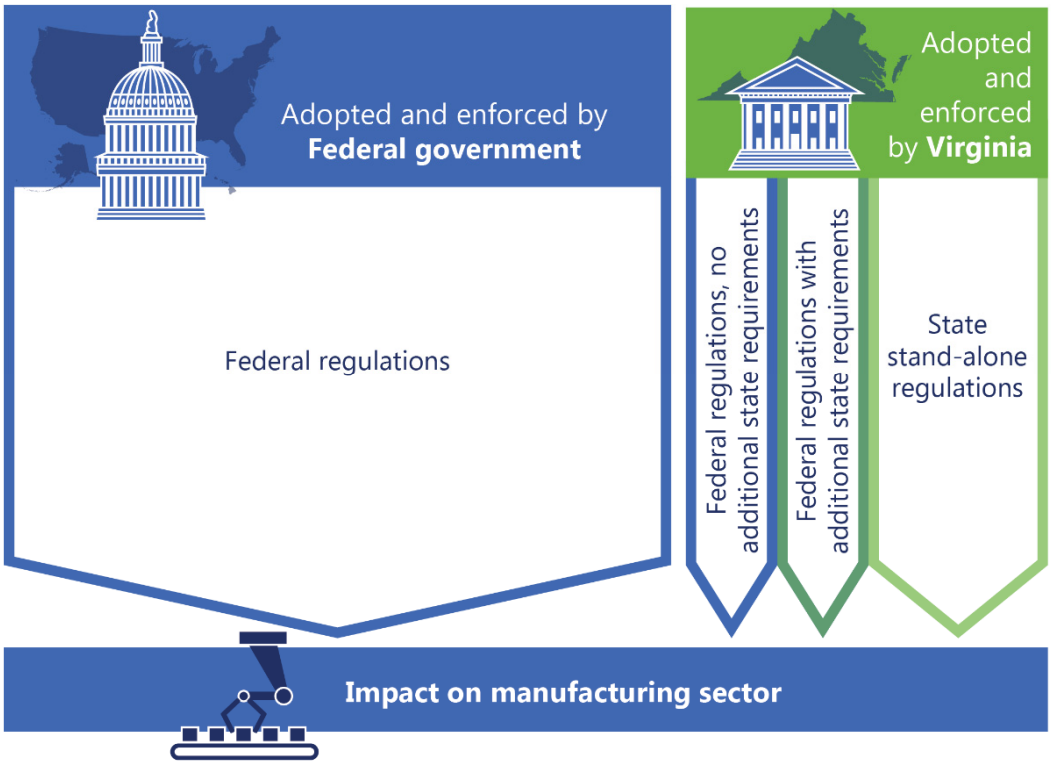
Virginia's regulatory environment is often characterized as "business friendly" in the national business media. In the regulatory environment section of its "Best States for Business" for 2015, Forbes magazine ranked Virginia first of the 50 states because the state's regulatory environment is relatively favorable to the interests of business. CNBC rated Virginia third in the U.S. for "business friendliness" in 2016 because its regulatory and legal framework is favorable to businesses. According to Virginia Economic Development Partnership staff, this reputation can be useful in persuading businesses to locate in Virginia.

Several recent executive and legislative initiatives have sought to reduce unnecessary or burdensome regulations. For example, the Regulatory Reform Initiative was created in 2012 to review and repeal Virginia regulations that were no longer in use or imposed unnecessary costs. This initiative led to the repeal of approximately 900 sections of regulations. The 2015 General Assembly required the Department of Planning and Budget to notify the Joint Commission on Administrative Rules, the House Committee on Appropriations, and the Senate Committee on Finance of regulatory actions that would impose a significant adverse economic impact on a locality, business, or other entity, based on its economic impact analysis. The joint commission can object to a proposed regulation and, in concurrence with the governor, suspend its adoption.

As reported in 2006, most of the regulations that affect Virginia manufacturers are federal

There are more than 500 federal and state regulations that affect Virginia manufacturers; the vast majority are federal (Figure 2-1). Although the exact number of federal regulations impacting manufacturers is difficult to determine, a report by NERA Economic Consulting identified more than 450 federal regulations that impacted manufacturers between 2000 and 2012. Many of these regulations, such as vehicle safety standards for rearview mirrors or airbags, have not been adopted by Virginia or other states and are enforced by federal rather than state agencies.

FIGURE 2-1
Majority of regulations impacting manufacturers in Virginia are federal



SOURCE: JLARC staff review of Virginia and federal regulations and regulatory literature; interviews with agency staff.

Of the 98 Virginia regulations identified as currently impacting manufacturers (including the five that were adopted after 2005), less than half (43) are "stand-alone" regulations adopted solely under the statutory authority of the General Assembly, without federal requirement. (See Appendix H.) Most of these stand-alone regulations are economic or environmental. These stand-alone regulations are usually adopted to address a specific circumstance, according to agency staff. For example, Virginia has

adopted its own groundwater management regulations to protect the groundwater aquifer in the eastern part of the state. Virginia has Alcoholic Beverage Control regulations because it is one of 18 states that control the distribution of liquor. Another reason for stand-alone regulations is to adopt uniform practices that are used in all or nearly all states, such as building and fire codes issued by the International Code Council. Uniform regulations are often favored by businesses because they allow businesses to standardize compliance across facilities in different states.

More than half (55) of Virginia regulations have some basis in federal regulations. Twenty-four Virginia regulations are federal regulations that Virginia has adopted verbatim into its administrative code and enforces on behalf of the federal government. Virginia could choose not to adopt these regulations, and the relevant federal agencies would enforce them. However, according to staff from state agencies and the Virginia Manufacturers Association, Virginia manufacturers prefer state oversight to federal oversight. The remaining 31 Virginia regulations are federal regulations the state has adopted with certain modifications that either add Virginia-specific requirements or clarify the federal regulation.

The **Virginia Administrative Code** is the compilation of all regulations adopted by the state. It is organized by title (Environment), agency (Air Pollution Control Board), chapter (Hazardous Air Pollutant Sources), and section (Designated emission standards).

For this study, regulations are counted at the chapter level.

See Appendix H for a list of Virginia stand-alone regulations.

Nearly three-fourths of Virginia regulations have not changed in past decade

Virginia has taken a variety of regulatory actions during the past decade, including amending and repealing existing regulations. Nearly three-fourths of Virginia's 93 regulations in effect from 2005 to 2014 did not change (Figure 2-2). Changes to the remaining 25 regulations had a variety of impacts, ranging from granting additional flexibility that likely lowered compliance costs to increasing administrative or capital costs.

Changes to 12 (48 percent) regulations benefited manufacturers by increasing flexibility in compliance, decreasing the administrative or financial costs, or decreasing the length of time to obtain a permit. For example, changes to the alternative discharge regulation (12 VAC 5-640) simplified the permitting process to make it easier for manufacturers to gain general approval for use of their products in the state. (See Appendix I for detail on each regulatory change.)

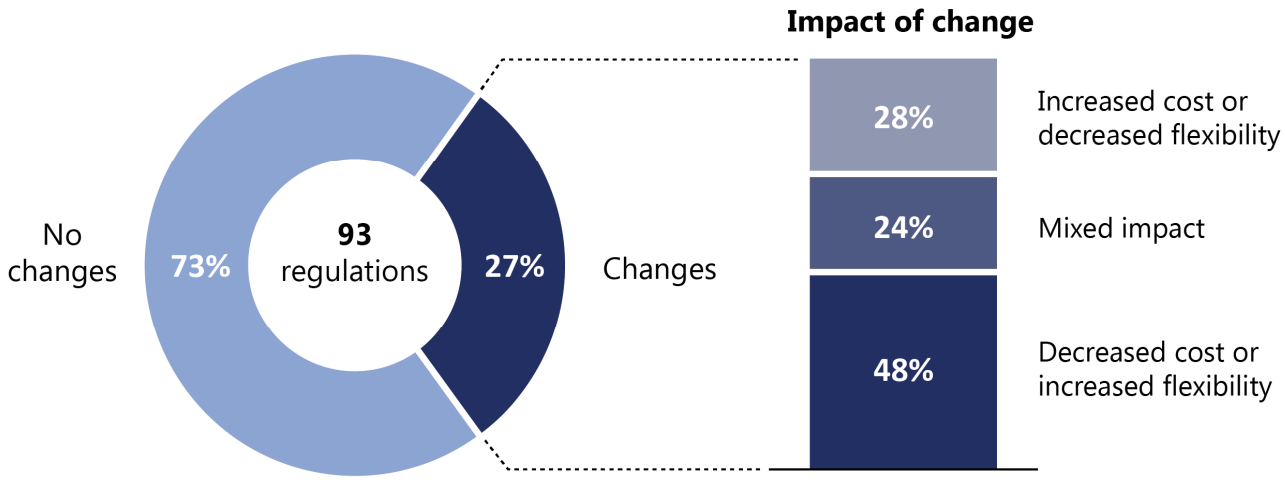
Changes to seven (28 percent) regulations either decreased flexibility in compliance or increased the cost of compliance by increasing administrative costs, capital costs, or both. Only one of these was a Virginia stand-alone regulation, and it involved a change to an ABC regulation (3 VAC 5-70) that required breweries and wineries to file a monthly report on alcohol shipments to consumers. Statutory changes in 2007 allowed out-of-state wineries and breweries to ship alcohol to Virginia consumers, necessitating a regulatory requirement for this monthly report, which is used as the basis to collect state excise taxes.

Changes to six (24 percent) regulations had a mixed impact on compliance activity. For example, changes to regulations governing permits for stationary sources of air

pollution (9 VAC 5-80) increased compliance flexibility but also added a permit application fee.

Virginia adopted five new regulations and repealed two existing regulations since 2005. These regulatory actions appear to have mostly benefited manufacturers. Four of the five new regulations were Virginia stand-alone regulations that clarified standards or streamlined permitting processes. The other new regulation increased the administrative cost of compliance but was a result of federal action to limit greenhouse gas emissions that Virginia was required to adopt. Two regulations were repealed because other standards were being used.

FIGURE 2-2
Just over one-fourth of manufacturing regulations were changed in a way that affected compliance cost and flexibility (2005–2014)



SOURCE: JLARC staff analysis of regulatory changes identified by state regulatory agencies and the Virginia Manufacturers Association.
NOTE: Regulations that were repealed (2) or adopted (5) since 2005 are excluded.

3 Financial Impact of Regulations

SUMMARY The financial impact of regulations on Virginia manufacturers is likely $1 billion to $5 billion annually. This equates to about two percent to 12 percent of the sector's total economic output. Most of this financial impact is driven by federal regulations. This estimated impact is not substantially different from JLARC's 2006 report estimate, adjusted for inflation. For a number of reasons, manufacturers are subject to more regulation than businesses in other sectors. Consequently, the financial impact of regulatory compliance tends to be higher for manufacturing than for other sectors.

Regulations are adopted to achieve a public purpose, but it is important that they do not impose costs on manufacturers, other businesses, and the public that are unnecessary or excessive relative to their benefits. For this review, JLARC staff estimated the financial impact to Virginia manufacturers of complying with federal and state regulations. The estimates were derived by a combination of methods, including adjusting the 2005 estimates to 2014 based on manufacturing output (value added) in Virginia and using updated data to estimate the impact for 2014.

As indicated in the 2006 JLARC report, estimates of the cost of regulatory compliance inevitably have a high degree of uncertainty. This uncertainty exists because it is difficult to measure

- the portion of compliance costs passed to consumers;
- how manufacturers would have behaved without regulation; and
- how much of their behavior can be attributed to regulation.

Furthermore, once developed, these estimates cannot be compared to actual data to confirm their accuracy, unlike other estimates, such as revenue projections, which can later be compared to actual revenue collections.

Other estimates of compliance costs

Several estimates of the nationwide costs of regulatory compliance have been prepared on behalf of industry associations.

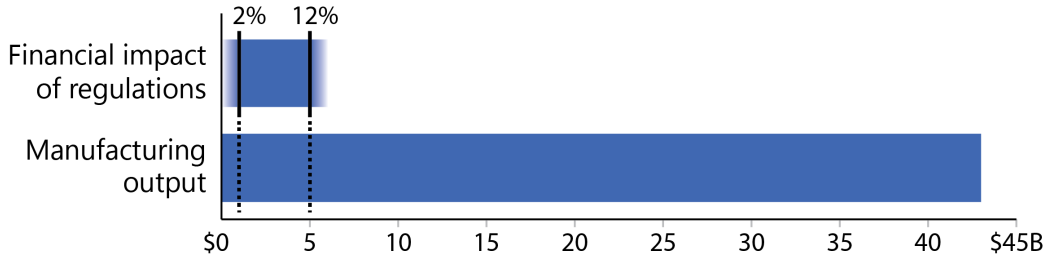
As an additional point of reference, JLARC adjusted these for Virginia. This analysis produced total compliance cost estimates of $3.7B and $4.4B for 2014.

National Association of Manufacturers, 2014, and NERA Economic Consulting, 2012.
(See Appendix B.)

Financial impact of regulations is estimated at $1 billion to $5 billion

The financial impact of regulations on Virginia manufacturers is estimated to have been between $943 million and $4.84 billion in 2014. These costs equate to between two percent and 12 percent of manufacturing output ($42.2 billion in value added) in Virginia (Figure 3-1). This wide range—with an upper bound that is about five times the lower bound—reflects the high degree of uncertainty associated with estimating the costs of regulatory compliance.

FIGURE 3-1
Financial impact of regulations likely equals 2% to 12% of output (2014)



SOURCE: JLARC staff adjustment of existing estimates of regulatory compliance costs for Virginia and the U.S.
Note: Output as measured by manufacturing value added.

The vast majority of the financial impact in Virginia is attributable to federal rather than state regulations. Very little information is available on the cost of complying with state regulations, primarily because it is difficult for businesses to differentiate between the costs imposed by federal and state regulations. However, the majority of regulations that impact Virginia manufacturers are federal, and the stand-alone regulations that Virginia adopts do not appear to add substantial costs.

The majority of the financial impact is attributable to environmental regulations, followed by economic regulations. Environmental regulations are responsible for 59 percent ($559 million) of the lower bound estimate and 49 percent ($2.4 billion) of the upper bound estimate. Economic regulations are responsible for 12 percent ($117 million) of the lower bound estimate and 36 percent ($1.8 billion) of the upper bound estimate. JLARC's findings are similar to those of an industry report, which estimated that environmental regulations accounted for approximately 70 percent of the financial impact of compliance, and economic regulations accounted for 18 percent (Manufacturers Alliance for Productivity and Innovation, 2015; see Appendix B for sources cited).

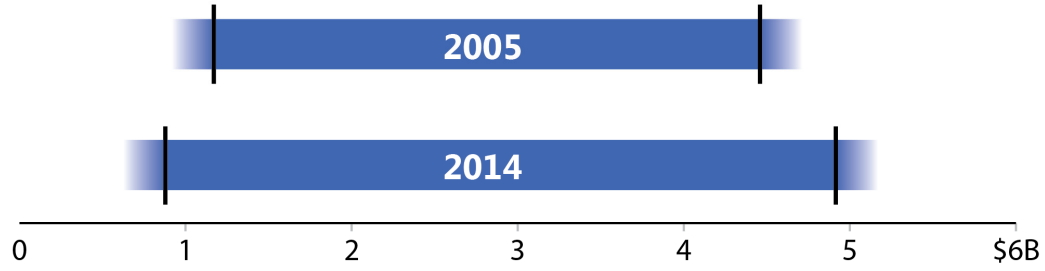
The current estimate is not substantially different from JLARC's 2006 report estimate. To provide a baseline for comparison, the 2006 report JLARC estimates were adjusted for inflation. The lower bound estimate was slightly less than the baseline estimate, while the upper bound estimate was slightly more than the baseline estimate (Figure 3-2). Given the inherent uncertainty associated with estimating regulatory compliance costs, it is difficult to conclude that compliance costs in 2014 are substantially above or below the prior JLARC estimate.

Other estimates of change in compliance costs

An economist at Lafayette College has periodically estimated the nationwide cost of regulatory compliance.

As an additional point of reference, JLARC staff adjusted these nationwide estimates for 2005 and 2014 for Virginia. According to this analysis, the cost of compliance increased over the decade by about 10 percent, adjusted for inflation.

FIGURE 3-2
Financial impact of regulations has not changed substantially (2005 to 2014)



SOURCE: JLARC staff analysis.
NOTE: The 2005 JLARC estimate of $923 million to $3.5 billion was adjusted to 2014 dollars. (See Appendix B for the indexes used to adjust for inflation.)

Financial impact of regulations is likely higher for manufacturers than most other industries

The financial impact of complying with regulations appears greater for manufacturers than firms in most other industry sectors, based on national estimates. For this update, as in the original 2006 report, regulations are sorted into four categories: environmental, economic, workplace, and tax regulations. Environmental regulations serve to protect the environment and human health from harmful pollutants; economic regulations include consumer safety regulations; workplace regulations include labor and worker safety regulations; and tax regulations clarify the laws under which people and businesses are taxed.

Environmental regulations

The impact of complying with environmental regulations is likely higher on manufacturing than other industry sectors, with the exception of energy producers. An industry report indicates that the financial impact of environmental regulations per manufacturer is eight times more than the impact on the average U.S. firm (National Association of Manufacturers, 2014). Environmental regulations affect the manufacturing sector more than other sectors because manufacturing processes often produce hazardous by-products. Manufacturers emitted more than half (56 percent) of total toxic releases regulated by the EPA in Virginia in 2014, and six of the 10 firms with the highest toxic releases were manufacturers.

Economic regulations

The financial impact of complying with economic regulations is likely higher for manufacturing than other industries. According to industry estimates, the financial impact of economic regulations on manufacturers is more than twice that on the

average U.S. business (National Association of Manufacturers, 2014). Economic regulations are imposed on the production of consumer goods to protect the safety of consumers and to meet other public objectives, such as energy efficiency of vehicles. For this reason, economic regulations affect the manufacturing sector more than other sectors.

Workplace regulations

The financial impact of complying with workplace regulations is also likely higher for manufacturers than other industries. An industry report estimates the financial impact of workplace regulations on manufacturers to be twice the impact on the average U.S. firm (National Association of Manufacturers, 2014). Workplace regulations affect manufacturing more than other sectors because manufacturing processes often involve some physical danger to workers. Manufacturers in Virginia had a higher rate of injuries (3.5 per 100 full-time workers) relative to the average private business (2.6 injuries per 100 full-time workers) in 2014. Manufacturers are also inspected more than firms in other industries in Virginia, with the exception of construction. One-fifth of the total inspections by the Virginia Department of Labor and Industry in January 2015 were of manufacturing firms.

Taxes paid by businesses

All private businesses are subject to federal and state income and payroll taxes, state sales taxes, and local property taxes.

Manufacturers are subject to the machinery and tools tax (a local property tax), but other businesses are subject to other local taxes: the business, professional and occupational license tax and the merchant's capital tax.

Tax regulations

In contrast, the financial impact of complying with tax regulations appears about the same or even less than other sectors. Although manufacturers pay a substantial proportion of total federal and state income taxes as well as local property taxes, their compliance activities—and consequently compliance costs—should be similar because they are subject to the same types of taxes. According to industry estimates, the cost of tax compliance was approximately $13,000 per manufacturer, but $18,000 for the average U.S. firm in 2014, on average (National Association of Manufacturers, 2014).

Appendix A: Study mandate

SENATE JOINT RESOLUTION NO. 274

Directing the Joint Legislative Audit and Review Commission to update its 2006 study of the impact of regulations on Virginia's manufacturing sector. Report.

Agreed to by the Senate, February 2, 2015
Agreed to by the House of Delegates, February 17, 2015

WHEREAS, Senate Joint Resolution No. 360 (2005) directed the Joint Legislative Audit and Review Commission (JLARC) to evaluate the total cost of compliance by Virginia manufacturers with state and federal environmental, economic, workplace, and tax regulations and to compare the cost of regulatory compliance borne by Virginia manufacturers with the costs of regulatory compliance borne by manufacturers in other Mid-Atlantic and Southern states; and

WHEREAS, the Joint Legislative Audit and Review Commission completed its study in November 2006 (Senate Document No. 18) and estimated that Virginia manufacturers spent between $923 million and $3.49 billion in 2005 in complying with state and federal regulations, which averages between $3,121 and $11,791 per employee as estimated by JLARC; and

WHEREAS, the Joint Legislative Audit and Review Commission study also concluded that Virginia's manufacturing sector lost approximately 66,000 jobs between 2000 and 2005; and

WHEREAS, while the Joint Legislative Audit and Review Commission concluded that Virginia's regulations do not greatly expand upon federal regulations, it is crucial for the economic vitality of Virginia's manufacturers that this remains the case; and

WHEREAS, updating the research and analysis performed by the Joint Legislative Audit and Review Commission in 2005 would provide General Assembly members with more current information for use in crafting regulatory policies in Virginia; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the Joint Legislative Audit and Review Commission be directed to update its 2005 study of the impact of regulations on Virginia's manufacturing sector.

In conducting its study, the Joint Legislative Audit and Review Commission shall (i) estimate the current costs to Virginia manufacturers to comply with federal and state regulations and provide an explanation of how current costs differ from costs evaluated in 2005; (ii) evaluate the degree to which Virginia expands upon federal regulations; (iii) review major actions taken by state agencies since 2005 that have either increased or decreased the costs of regulatory compliance for Virginia manufacturers; (iv) compare the costs of regulatory compliance by industry sectors in Virginia, including manufacturing; and (v) to the extent data is available, compare the costs of regulatory compliance borne by Virginia manufacturers with the costs of regulatory compliance borne by manufacturers in other Mid-Atlantic and Southern states.

All agencies of the Commonwealth shall provide assistance to the Joint Legislative Audit and Review Commission for this study, upon request.

The Joint Legislative Audit and Review Commission shall complete its meetings for the first year by November 30, 2015, and for the second year by November 30, 2016, and the Director shall submit to the Division of Legislative Automated Systems an executive summary of its findings and recommendations no later than the first day of the next Regular Session of the General Assembly for each year. Each executive summary shall state whether JLARC intends to submit to the General Assembly and the Governor a report of its findings and recommendations for publication as a House or Senate document. The executive summaries and reports shall be submitted as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents and reports and shall be posted on the General Assembly's website.

Appendix B: Research activities and methods

JLARC staff conducted the following primary research activities for this report:

- Structured interviews with state agency staff and staff from the Virginia Manufacturers Association;
- Review of documents, reports, and other research;
- Quantitative analysis of data on employment, wages, and output by industry;
- Identification of regulations and regulatory action impacting manufacturers; and
- Estimation of financial impact of regulations on Virginia manufacturers.

Structured interviews

Structured interviews were a key research method for this report. JLARC staff conducted in-depth interviews with staff at six state agencies that administer regulations, oversee the regulatory process, or are responsible for economic development:

- Department of Environmental Quality;
- Department of Labor and Industry;
- Department of Planning and Budget;
- Department of Taxation;
- Virginia Department of Agriculture and Consumer Services; and
- Virginia Economic Development Partnership.

Topics covered during these interviews included each agency's regulation development and enforcement policies and practices (where relevant), changes to the regulatory environment over the past decade, and other factors impacting manufacturers' business decisions.

The president of the Virginia Manufacturers Association was also interviewed to obtain a broad understanding of manufacturers' perspective of federal and state regulations and how changes to regulations in the past decade have impacted the manufacturing sector.

Review of documents, reports, and other research

Throughout this study, numerous documents, reports, and other research were reviewed, including

- federal and state regulations and regulatory documents;
- regulatory reports issued by the U.S. Office of Management and Budget; and
- economic and regulatory studies focusing on changes to the manufacturing sector in the U.S. and worldwide and/or the impact of regulations on manufacturing.

Sources cited in this report

Crain, W. Mark and Nicole V. Crain (2014). *The Cost of Federal Regulation to the U.S. Economy, Manufacturing, and Small Business*, National Association of Manufacturers (http://www.nam.org/Data-and-Reports/Reports/Cost-of-Federal-Regulations/The-Cost-of-Federal-Regulation/).

Crain, W. Mark (2005). *The Impact of Regulatory Costs on Small Firms*, U.S. Small Business Administration (https://www.sba.gov/sites/default/files/files/rs264tot.pdf).

Meckstroth, Dan (2015). *An International Comparison of Pollution Abatement and Waste Management Costs*, Arlington, VA: Manufacturers Alliance for Productivity and Innovation (https://www.mapi.net/forecasts-data/international-comparison-pollution-abatement-and-waste-management-costs).

NERA Economic Consulting (2012). *Macroeconomic Impacts of Federal Regulation of the Manufacturing Sector*, Manufacturers Alliance for Productivity and Innovation (https://www.mapi.net/forecasts-data/macroeconomic-impacts-federal-regulation-manufacturing-sector).

Quantitative analysis of employment, output, and other data (Chapter 1)

JLARC staff collected and analyzed a variety of data about employment, output, and other factors by industry and manufacturing subsector. This data was used to assess the manufacturing sector in Virginia (1) over time, (2) relative to other industry sectors, and (3) relative to the manufacturing sector in other states and countries.

Analysis results are generally reported through 2014 and, where subsector results are reported, for 19 manufacturing subsectors, with a few exceptions. Data on value added at the industry level is available for 2014 but the latest year it is available at the subsector level is 2013. Employment and output data are both available by industry and subsector and are organized according to North American Industry Classification System (NAICS) codes. This coding system divides businesses into 20 industry groups (manufacturing, mining, retail trade, etc.) and further divides manufacturing into 21 subsectors. The Bureau of Labor Statistics reports data for each subsector, but the Bureau of Economic Analysis combines several (such as food manufacturing with beverage and tobacco manufacturing) and reports only 19.

TABLE B-1
Data used for this study

Data source	Description of data	Analysis
Employment		
Quarterly Census of Employment and Wages, Bureau of Labor Statistics	Average annual number of employees by industry and manufacturing subsector, and by state (2005 and 2014)	Identify and compare current employment levels in Virginia by industry and manufacturing subsector; determine changes to manufacturing employment over time by state
	Monthly average number of manufacturing employees by state for month of November (1990–2015, seasonally adjusted)	Determine long-term changes to employment by state
	Average annual number of employees in Virginia, by county (2014)	Identify manufacturing's portion of total private employment by Virginia locality
	Annual wages of employees in Virginia by industry and manufacturing subsector (2014)	Identify and compare current wages in Virginia by industry and manufacturing subsector
International comparisons of hourly wages, Bureau of Labor Statistics	Compensation costs for select countries for manufacturing employees (2012)	Compare compensation costs for manufacturing employees in U.S. and other developed and developing countries
Labor statistics, International Labour Organization	Manufacturing employment for select countries (1998−2015)	Compare manufacturing employment changes in U.S. to changes in other developed and developing countries
Output / value added		
Gross Domestic Product, Bureau of Economic Analysis	Value added by industry and manufacturing subsector for the U.S. and by state (2005, 2014 updated June 2016)	Identify and compare current levels of value added in Virginia by industry and manufacturing subsector Determine changes to manufacturing value added over time by state
Manufacturing value added, World Bank	Manufacturing value added for select countries (2005–2014)	Compare manufacturing value added changes in U.S. to changes in other developed and developing countries
Other		
Local government comparative data, Auditor of Public Accounts	Revenue collected by Virginia localities by revenue source (FY14)	Determine portion of total local revenue generated by the machinery and tools tax paid by manufacturers, by Virginia locality
Subnational U.S. trade data, U.S. International Trade Administration	Value of exports from manufacturers in Virginia (1996, 2006, 2015)	Compare changes in export value over time
GDP deflator, Federal Reserve Bank of St. Louis	GDP implicit price deflator (1990–2014)	Adjust value added for inflation

Identification of regulations and regulatory changes (Chapter 2)

JLARC staff used the Virginia Regulatory Town Hall website and the 2006 JLARC report, Impact of Regulations on Virginia's Manufacturing Sector to create a list of regulations that likely impact manufacturers. Regulations were divided into four areas: economic, environmental, tax compliance, and workplace. These are the same groupings that were used in the 2006 JLARC report. Ten entities were identified as having regulations in these four areas that impacted manufacturers:

- Council on Human Rights,
- Department of Environmental Quality,
- Department of Housing and Community Development,
- Department of Labor and Industry,
- Virginia Department of Agriculture and Consumer Services,
- Virginia Department of Alcoholic Beverage Control,
- Virginia Department of Health,
- Virginia Department of Taxation,
- Virginia Employment Commission, and
- Worker's Compensation Commission.

Six of these entities were asked to complete a questionnaire identifying whether a regulation was federal and enforced by Virginia, federal and amended by Virginia, or created by Virginia. Agencies also indicated if a regulation had changed since 2005, and if so, whether that change increased, decreased, or had no impact on flexibility, administrative costs, the cost of equipment, the cost of permits, and the amount of time needed to obtain a permit. Agencies were asked to list additional regulations and provide other information accordingly for regulations that were not on the list. Members (eight manufacturers) of the Virginia Manufacturers Association were also given the opportunity to provide input.

The other four entities were not asked to complete the questionnaire. Their regulations impacting manufacturers have not changed in the past decade, according to a review of the Virginia Regulatory Town Hall and/or discussions with agency staff.

Estimation of financial impact of regulatory compliance on Virginia manufacturers (Chapter 3)

This review used the research for JLARC's 2006 report, *Impact of Regulations on Virginia's Manufacturing Sector*, as its basis for estimating the financial impact of regulations on Virginia manufacturers. JLARC staff adjusted the 2006 estimate where updated research was not available. Lower and upper bound estimates were calculated for each area of regulation (economic, environmental, tax compliance, and workplace) (Table B-2). The lower and upper bound estimates from 2005 were inflated to 2014 dollars for comparison purposes. Various indexes were used to inflate each (Table B-3).

TABLE B-2
Methods to develop lower and upper bounds of financial impact of regulations varied by regulatory area

Estimate	Information/source used	Steps to develop estimate
Economic regulations		
Lower bound	Lower bound estimate (2005) from 2006 JLARC report Manufacturing value added in Virginia from Bureau of Economic Analysis (2005 and 2014)	Calculate 2005 estimate as a proportion of manufacturing value added in Virginia in 2005 Apply this proportion to manufacturing value added in Virginia in 2014 to obtain the financial impact
Upper bound	Estimate of cost of economic regulations to manufacturers in U.S. in 2012 (in 2014 dollars) from National Association of Manufacturers report Manufacturing value added for U.S. and Virginia from Bureau of Economic Analysis (2014)	Calculate 2014 cost for U.S. as a proportion of manufacturing value added for the U.S. in 2014 Apply this proportion to manufacturing added in Virginia in 2014 to obtain the financial impact
Environmental regulations		
Lower bound	Costs for operating and capital expenses for pollution abatement and control by manufacturers in Virginia from the 2005 Pollution Abatement and Control Survey, U.S. Census Bureau Manufacturing value added in Virginia from Bureau of Economic Analysis (2005 and 2014) Capital expenditures by manufacturers in Virginia from American Survey of Manufacturers, U.S. Census Bureau (2005 and 2014)	Operating: Calculate operating expenses for pollution abatement equipment for Virginia manufacturers in 2005 as a proportion of manufacturing value added in Virginia in 2005 Apply this proportion to manufacturing value added in Virginia in 2014 to obtain estimate for operating expenses for pollution control and abatement in 2014 Capital: Calculate capital expenses for pollution abatement in Virginia in 2005 as a proportion of total capital expenditures in Virginia in 2005 Apply this proportion to capital expenditures in Virginia in 2014 to obtain estimate for capital expenses for pollution control and abatement in 2014 Combine 2014 estimates for operating and capital expenses
Upper bound	Estimate of cost of environmental regulations to manufacturers in U.S. for 2012 (in 2014 dollars) from National Assoc. of Manufacturers report	Calculate 2014 cost for U.S. as a proportion of manufacturing value added for the U.S. in 2014 Apply this proportion to manufacturing added in Virginia in 2014 to obtain the financial impact

Estimate	Information/source used	Steps to develop estimate
	Manufacturing value added for U.S. and Virginia from Bureau of Economic Analysis (2014)	
Tax compliance regulations		
Both upper and lower bound	Consumer Price Index – Urban consumers Bureau of Labor Statistics (2005–2014) Number of manufacturing firms in Virginia overall and by size of firm, U.S. Census Bureau and Bureau of Labor Statistics (2014) Cost of complying with state income taxes as a proportion of the cost of complying with federal income taxes from Gupta and Mills (2003), "Does Disconformity in State Corporate Income Tax Systems Affect Compliance Cost Burdens"	(Incorporated into steps for lower and upper bound)
Lower bound	Average cost of complying with federal income taxes from IRS and Department of Treasury, "Taxpayer Compliance Costs for Corporations and Partnerships: A New Look"	Federal income tax: Adjust the average cost of complying with federal income taxes per firm to 2014 dollars and multiply it by the number of manufacturing firms in Virginia in 2014 State income tax: Calculate the cost of complying with state income taxes as a proportion (30%) of complying with federal income taxes and add to above estimate Payroll taxes: From upper bound estimate Combine the costs for federal income, state income, and payroll taxes (federal)
Upper bound	Hours spent to file taxes by type of staff (tax professionals and other executives) and firm size; other out-of-pocket expenditures for tax preparation from IBM Consulting Services, "Measuring the Tax Compliance Burden of Small Businesses" Hourly wages for various tax and executive staff responsible for filing taxes, Bureau of Labor Statistics (2014)	Federal income and payroll: Calculate the average costs for time spent on complying with each tax by firm size by multiplying the average hours spent to file taxes by the average hourly wage for each type of staff and by firm size Adjust out-of-pocket expenditures for each firm size to 2014 dollars and add to the average cost for time spent by firm size (from step above) Multiply the average cost per firm size by the number of manufacturing firms in Virginia in 2014 by firm size

Estimate	Information/source used	Steps to develop estimate
		State income: Calculate the cost of complying with state income taxes as a proportion (30%) of complying with federal income taxes from above step
		Combine the costs for federal income, state income, and payroll taxes (federal)
Workplace regulations		
Lower bound	Lower bound estimate (2005) from 2006 JLARC report	Calculate the 2005 estimate as a proportion of manufacturing value added in Virginia in 2005
	Manufacturing value added in Virginia from Bureau of Economic Analysis (2005 and 2014)	Apply this proportion to manufacturing value added in Virginia in 2014 to obtain the financial impact
Upper bound	Upper bound estimate (2005) from 2006 JLARC report	Calculate the 2005 estimate as a proportion of manufacturing value added in Virginia in 2005
	Manufacturing value added in Virginia from Bureau of Economic Analysis (2005 and 2014)	Apply this proportion to manufacturing value added in Virginia in 2014 to obtain the financial impact

TABLE B-3
Several indexes were used to inflate the 2005 cost estimates to 2014

Estimate	Inflation index	Source
Economic	GDP implicit price deflator	Federal Reserve Bank of St. Louis
Environmental	Producer Price Index for manufacturing	Bureau of Labor Statistics
Tax	Consumer Price Index for all urban consumers	Bureau of Labor Statistics
Workplace	Employment Cost Index Producer Price Index for manufacturing (for compliance with health and safety regulations) Consumer Price Index for all urban consumers	Bureau of Labor Statistics

Appendix C: Manufacturing employment and output by subsector

About one-fifth of manufacturing jobs are in the transportation equipment subsector (Table C-1). Shipbuilding is one of the largest industries in the transportation equipment subsector. The second largest subsector for employment is food, beverage, and tobacco manufacturing, which includes cigar/cigarette production, wineries, and breweries. These two subsectors make up more than half of manufacturing output (value added) in the state.

TABLE C-1
Manufacturing jobs and value added in Virginia (2014)

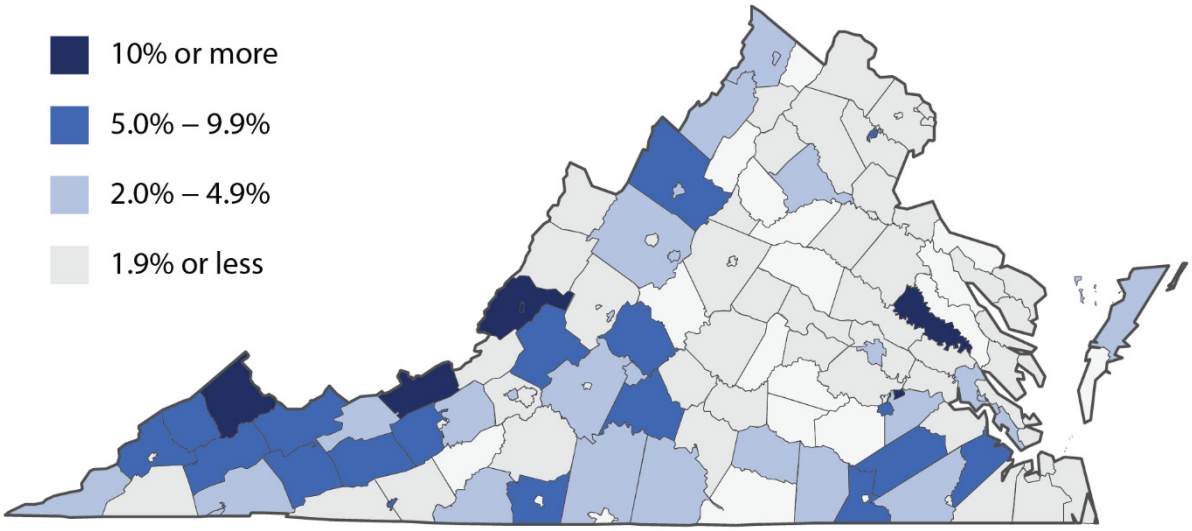
	Jobs		Output (value added)	
Manufacturing subsector	**Number**	**Percent**	**Amount**	**Percent**
Transportation equipment	42,152	18%	$4.8B	11%
Food, beverage, and tobacco products	36,760	16	16.7	40
Fabricated metal products	18,144	8	2.2	5
Plastics and rubber products	15,658	7	2.2	5
Machinery	15,581	7	1.9	4
Chemical products	14,477	6	4.9	12
Wood products	13,659	6	1.1	3
Computer and electronic products	11,302	5	2.3	6
Printing and related support activities	10,240	4	0.7	2
Furniture and related products	9,468	4	0.6	1
Nonmetallic mineral products	8,394	4	1.1	2
Paper products	7,819	3	1.0	2
Electrical equipment, appliance, components	7,804	3	0.9	2
Miscellaneous	6,991	3	0.6	1
Textile mills and textile product mills	6,977	3	0.4	1
Primary metals	3,698	2.0	0.5	1
Apparel and leather and allied products	1,700	1.0	0.1	0.2
Petroleum and coal products	599	0.3	0.3	1
Total, all subsectors	**231,423**	**100%**	**$42.2B**	**100%**

SOURCE: JLARC staff analysis of data from the Bureau of Labor Statistics and Bureau of Economic Analysis (updated June 2016).
NOTE: 2013 is the latest year for which value added data for manufacturing subsectors is available. Numbers may not equal total due to rounding. Some subsectors are grouped together because the two sources group subsectors slightly differently.

Appendix D: Machinery and tools tax revenue in Virginia

Manufacturers located in Virginia are responsible for paying the local machinery and tools tax. Twenty-four localities rely on this tax for at least five percent of their revenue. Five localities rely on this tax for at least 10 percent. Most of these localities are concentrated in the southwest and southeastern regions of the state (Figure D-1).

FIGURE D-1
Twenty-four localities rely on machinery and tools tax for more than five percent of revenue (FY14)



SOURCE: JLARC staff analysis of the Auditor of Public Accounts Local Government Comparative Reports, FY14.

Appendix E: Employment changes in Virginia by manufacturing subsector

Across all subsectors, manufacturing employment declined by more than 64,000 jobs. All subsectors with the exception of transportation equipment experienced job losses. More than half the jobs lost were in three subsectors: furniture, apparel, and textiles.

TABLE E-1
Most manufacturing subsectors experienced job losses between 2005 and 2014

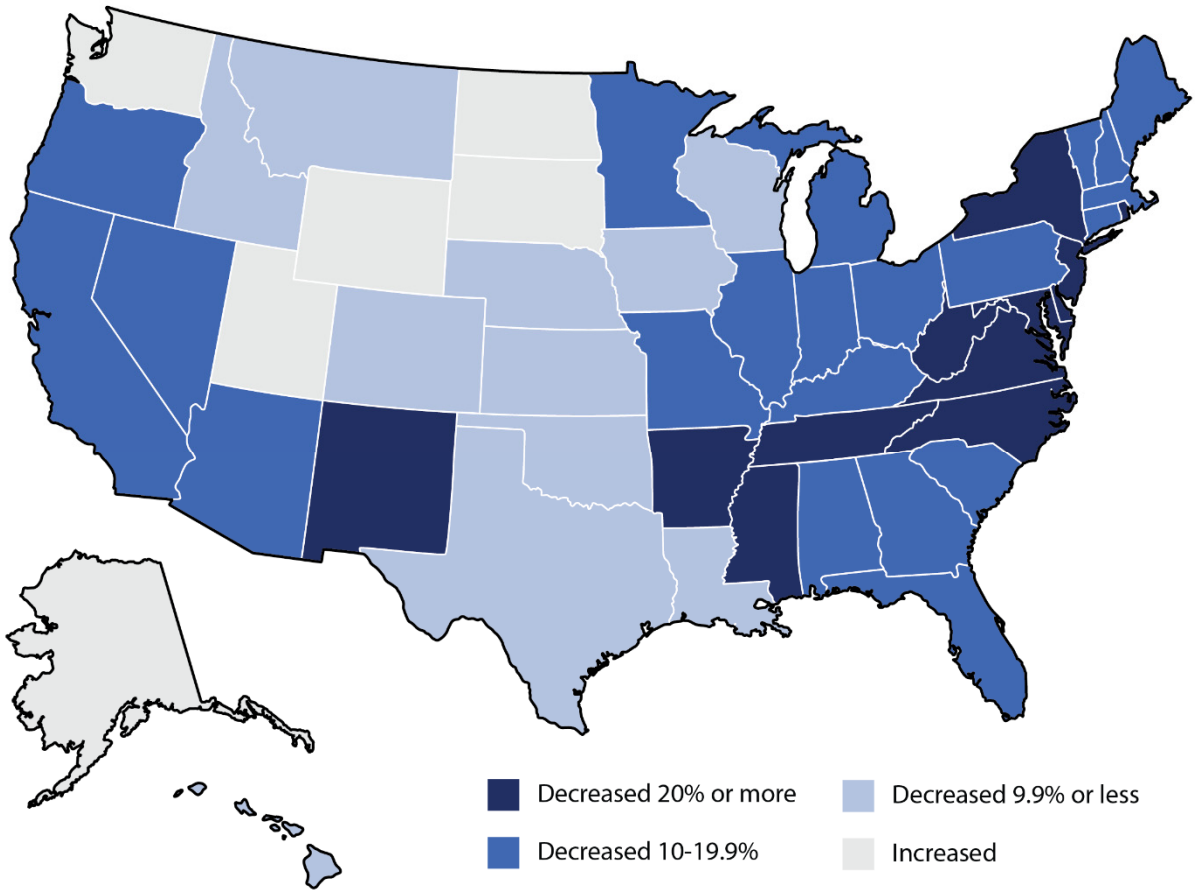
	Number of jobs		Change	
Subsector	**2005**	**2014**	**Number**	**Percent**
Transportation equipment	40,994	42,152	1,158	2.8%
Food	32,036	29,064	(2,972)	−9.3
Plastics and rubber products	21,596	15,658	(5,938)	−27.5
Fabricated metal products	21,114	18,144	(2,970)	−14.1
Wood products	20,082	13,659	(6,423)	−32.0
Furniture and related products	19,649	9,468	(10,181)	−51.8
Machinery	18,638	15,581	(3,057)	−16.4
Chemical	16,738	14,477	(2,261)	−13.5
Computer and electronic products	16,017	11,302	(4,715)	−29.4
Printing and related support activities	15,732	10,240	(5,492)	−34.9
Nonmetallic mineral products	12,006	8,394	(3,612)	−30.1
Paper	11,795	7,819	(3,976)	−33.7
Textile mills	9,869	3,863	(6,006)	−60.9
Beverage and tobacco products	8,608	7,696	(912)	−10.6
Electrical equipment and appliances	7,962	7,804	(158)	−2.0
Miscellaneous	7,804	6,991	(813)	−10.4
Primary metal	5,973	3,698	(2,275)	−38.1
Textile product mills	4,453	3,114	(1,339)	−30.1
Apparel	3,510	1,421	(2,089)	−59.5
Petroleum and coal products	799	599	(200)	−25.0
Leather and allied products	337	279	(58)	−17.2
Grand total	**295,712**	**231,423**	**(64,289)**	**−21.7%**

SOURCE: JLARC staff analysis of Bureau of Labor Statistics data.

Appendix F: Changes in manufacturing employment by state

During the past decade, manufacturing employment declined for most states in the U.S. (Figure F-1). Of the 44 states that saw a decline, 33 lost more than 10 percent of manufacturing jobs. States with manufacturing jobs that declined by at least 20 percent are located mostly in the eastern region of the country. States that saw an increase in manufacturing jobs are in the middle and western regions.

FIGURE F-1
Manufacturing employment declined in 44 states from 2005 to 2014



SOURCE: JLARC staff analysis of Bureau of Labor Statistics data.

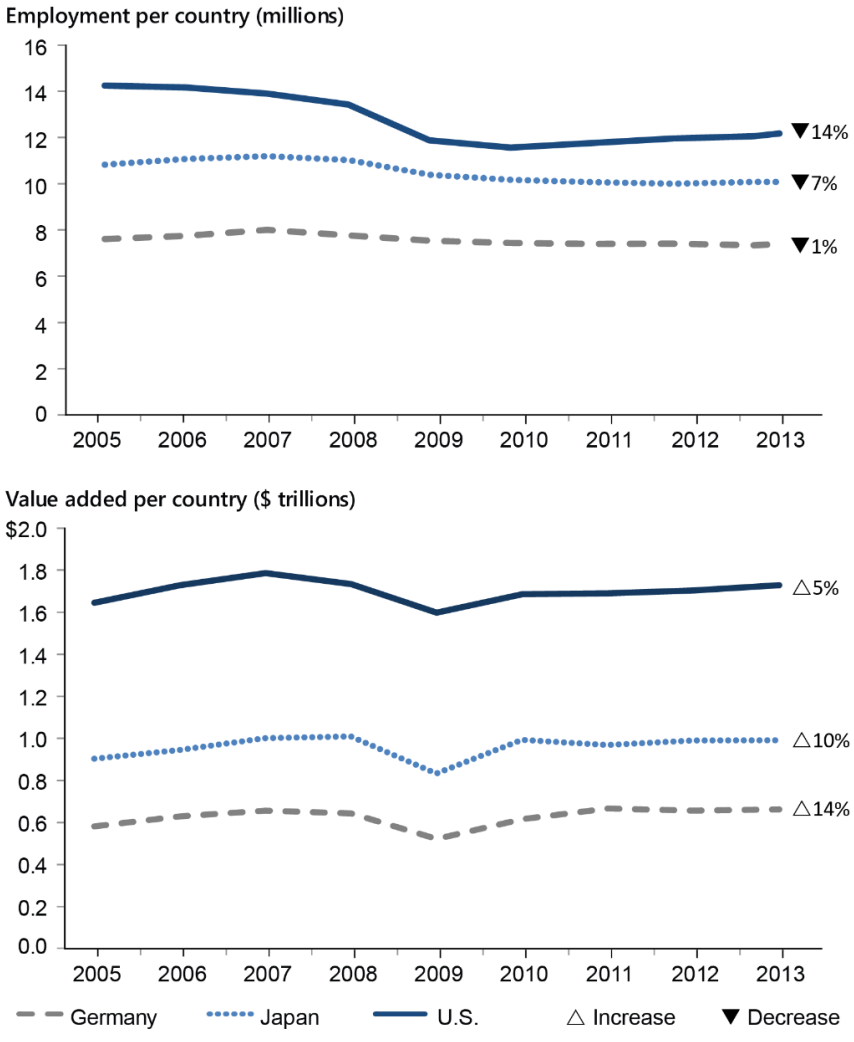
Most states lost manufacturing jobs in six or more subsectors. About 45 states saw a decline in labor-intensive jobs such as apparel, leather and allied products, and furniture and related product manufacturing. More than half of states saw employment increase in food, beverage and tobacco products manufacturing.

Appendix G: Changes to manufacturing employment and value added in the U.S. and other developed countries

Developed countries such as Germany and Japan have experienced similar trends in employment (declined) and value added (increased) over time (Figure G-1). These trends are primarily the result of long-term, global economic changes that have occurred in developed countries: shifting from an industrial-based to a service-based economy, moving labor-intensive production to countries with lower labor costs, and increasing technological advancements in manufacturing processes and equipment.

FIGURE G-1

Germany and Japan have experienced similar trends in manufacturing employment and value added as the U.S. in the past decade



SOURCE: JLARC staff analysis of World Bank and International Labour Organization data.
NOTE: Employment levels by year are shown for 2005 to 2014. Value added amounts are shown for 2005 to 2013.

Appendix H: Virginia stand-alone regulations

Regulations created solely through the state's regulatory process are responsible for about half of Virginia's regulations that currently impact manufacturers. While some of these Virginia "stand-alone" regulations are designed to serve unique aspects of Virginia, such the Chesapeake Bay, others are standard regulations that are adopted by many states, such as building and fire codes, and still others are related to permits and fee collection. Most of Virginia's stand-alone regulations are economic or environmental. The agencies or entities that oversee and enforce these regulations include the following:

- Council on Human Rights;
- Virginia Department of Alcohol and Beverage Control (ABC);
- Virginia Department of Agriculture and Consumer Services (VDACS);
- Virginia Department of Environmental Quality (DEQ);
- Virginia Department of Health (VDH);
- Virginia Department of Housing and Community Development (DHCD);
- Virginia Department of Labor and Industry (DOLI);
- Virginia Department of Taxation (TAX); and
- Worker's Compensation Commission.

TABLE H-1
Most Virginia stand-alone regulations are economic or environmental

VAC citation	VAC title	Regulatory area	Virginia agency
3 VAC 5-20	Advertising	Economic	ABC
3 VAC 5-30	Tied-House	Economic	ABC
3 VAC 5-40	Requirements for Product Approval	Economic	ABC
3 VAC 5-60	Manufacturers and Wholesalers Operations	Economic	ABC
3 VAC 5-70	Other Provisions	Economic	ABC
13 VAC 5-51	Virginia Statewide Fire Prevention Code	Economic	DHCD
13 VAC 5-63	Virginia Uniform Statewide Building Code	Economic	DHCD
13 VAC 5-91	Virginia Industrialized Building Safety Regulations	Economic	DHCD
13 VAC 6-20	Manufactured Housing Licensing and Transaction Recovery Fund Regulations	Economic	DHCD
2 VAC 5-360	Regulations for the Enforcement of the Virginia Commercial Feed Act	Economic	VDACS
2 VAC 5-370	Rules and Regulations for Enforcement of the Virginia Animal Remedies Law	Economic	VDACS
2 VAC 5-400	Rules and Regulations for the Enforcement of the	Economic	VDACS

VAC citation	VAC title	Regulatory area	Virginia agency
	Virginia Fertilizer Law		
2 VAC 5-670	Rules and Regulations for Enforcement of the Virginia Pesticide Law	Economic	VDACS
11 VAC 15-40	Charitable Gaming Regulations	Economic	VDACS
12 VAC 5-125	Regulations for Bedding and Upholstered Furniture Inspection Program	Economic	VDH
12 VAC 5-150	Regulations for the Sanitary Control of Storing, Processing, Packing or Repacking of Oysters, Clams and Other Shellfish	Economic	VDH
12 VAC 5-160	Regulations for the Sanitary Control of the Picking, Packing and Marketing of Crab Meat for Human Consumption	Economic	VDH
12 VAC 5-165	Regulations for the Repacking of Crabmeat	Economic	VDH
12 VAC 5-640	Alternative Discharging Regulations	Economic	VDH
9 VAC 5-520	Biomass Energy Generator General Permit for a Pilot Test Facility	Environmental	DEQ
9 VAC 5-530	Electric Generator Voluntary Demand Response General Permit	Environmental	DEQ
9 VAC 5-540	Emergency Energy Generator General Permit	Environmental	DEQ
9 VAC 15-30	Regulations for the Certification of Recycling Machinery and Equipment for Local Tax Exemption Purposes (formerly 9 VAC 20-140)	Environmental	DEQ
9 VAC 20-90	Solid Waste Management Permit Action Fees	Environmental	DEQ
9 VAC 20-160	Voluntary Remediation Regulations	Environmental	DEQ
9 VAC 25-20	Fees for Permits and Certificates	Environmental	DEQ
9 VAC 25-91	Facility and Above-ground Storage Tank (AST) Regulation	Environmental	DEQ
9 VAC 25-280	Ground Water Standards	Environmental	DEQ
9 VAC 25-390	Water Resources Policy	Environmental	DEQ
9 VAC 25-600	Designated Ground Water Management Areas	Environmental	DEQ
9 VAC 25-610	Ground Water Withdrawal Regulations	Environmental	DEQ
9 VAC 25-840	Erosion and Sediment Control Regulations (formerly 4VAC50-30)	Environmental	DEQ
9 VAC 25-870	Virginia Storm water Management Program (VSMP) Regulations (formerly 4VAC50-60)	Environmental	DEQ
12 VAC 5-610	Sewage Handling and Disposal Regulations	Environmental	VDH
12 VAC 5-613	Regulations for Alternative Onsite Sewage Systems	Environmental	VDH
23 VAC 10-210	Retail Sales and Use Tax	Tax compliance	TAX
23 VAC 10-350	Forest Products Tax Regulations	Tax compliance	TAX

VAC citation	VAC title	Regulatory area	Virginia agency
16 VAC 15-21	Maximum Garnishment Amounts	Workplace	DOLI
16 VAC 15-30	Virginia Rules and Regulations Declaring Hazardous Occupations	Workplace	DOLI
16 VAC 25-50	Boiler and Pressure Vessel Rules and Regulations	Workplace	DOLI
16 VAC 30-80	Regulations Governing Individual Self-Insurance Under the Virginia Workers' Compensation Act	Workplace	Worker's Compensation Commission
16 VAC 30-90	Procedural Regulations for Filing First Reports Under the Virginia Workers' Compensation Act	Workplace	Worker's Compensation Commission
22 VAC 25-10	Regulations to Safeguard Virginian's Human Rights from Unlawful Discrimination	Workplace	Council on Human Rights

SOURCE: JLARC staff analysis of information from state agencies and review of regulations, Virginia Regulatory Town Hall website.

Appendix I: Changes to Virginia regulations impacting manufacturers, 2005–2015

Between 2005 and 2015, agencies reported that 25 regulations experienced changes that impacted the compliance activity of manufacturers, two regulations were repealed, and five new regulations were adopted. Over half of the regulations that changed were to regulations that Virginia adopts to conform with federal requirements. Most changes were to economic or environmental regulations. Other regulations that impact manufacturers experienced changes during this time period but the changes did not have a material impact on compliance activity for manufacturers. It is also important to note that the specific impact will differ based on the size of the manufacturer, the type of product manufactured, and the level of production. In some cases, a regulatory change can have different impacts by manufacturer. For example, a change that is intended to reduce manufacturers' compliance costs may actually increase the costs for some manufacturers.

TABLE I-1
Most changes occurred to economic and environmental regulations

VAC citation	VAC title	Regulatory area	Impact of change to compliance activity
Federal regulations adopted by Virginia			
2 VAC 5-210	Rules and Regulations Pertaining to Meat and Poultry Inspection Under the Virginia Meat and Poultry Products Inspection Act	Economic	Mixed impact: increased administrative cost; increased flexibility in complying
9 VAC 5-85	Permits for Stationary Sources of Pollutants Subject to Regulation	Environmental	New regulation. Increased administrative cost
9 VAC 25-151	Virginia Pollutant Discharge Elimination System (VPDES) General Permit Regulation for Storm water Discharges Associated with Industrial Activity	Environmental	Mixed impact: increased administrative cost and cost of equipment may increase; increased flexibility in complying
9 VAC 25-260	Water Quality Standards	Environmental	Increased administrative cost
9 VAC 25-660	Virginia Water Protection General Permit for Impacts Less Than One-Half Acre	Environmental	Increased flexibility in complying, decreased administrative cost, cost of permits, and time to get permits
16 VAC 25-90	Federal Identical General Industry Standards	Workplace	Mixed impact: Increased flexibility in compliance; increased costs for equipment or other capital
Federal regulation with state changes			
2 VAC 5-490	Regulations Governing Grade "A" Milk	Economic	Increased flexibility in complying
2 VAC 5-531	Regulations Governing Milk for Manufacturing Purposes	Economic	Increased flexibility in complying

VAC citation	VAC title	Regulatory area	Impact of change to compliance activity
9 VAC 5-50	New and Modified Stationary Sources	Environmental	Expanded requirements in place to additional manufacturers
9 VAC 5-60	Hazardous Air Pollutant Sources	Environmental	Decreased flexibility in compliance; increased administrative costs, costs for equipment and other capital, costs of permits or other fees, and length of time to obtain required permits
9 VAC 5-80	Permits for Stationary Sources	Environmental	Mixed impact: increased flexibility in compliance; increased cost of permit
9 VAC 20-60	Hazardous Waste Regulations	Environmental	Increased flexibility in complying, decreased administrative costs
9 VAC 20-81	Solid Waste Management Regulations	Environmental	Mixed impact: increased administrative cost and cost of equipment or other capital; increased flexibility in complying
9 VAC 25-880	General Permit for Discharges of Storm water from Construction Activities (formerly Part XIV, 4VAC50-60)	Environmental	Increased administrative cost, cost of equipment or other capital, costs of permits or other fees, and length of time to obtain permit
16 VAC 25-60	Administrative Regulation for the Virginia Occupational Safety and Health (VOSH) Program	Workplace	Increased cost of fees (potential)
State stand-alone regulations			
3 VAC 5-20	Advertising	Economic	Increased flexibility in complying, decreased administrative cost
3 VAC 5-40	Requirements for Product Approval	Economic	Increased flexibility in complying; decreased administrative cost and cost of permit
3 VAC 5-60	Manufacturers and Wholesalers Operations	Economic	Increased flexibility in complying
3 VAC 5-70	Other Provisions	Economic	Increased administrative cost
13 VAC 5-51	Virginia Statewide Fire Prevention Code	Economic	Increased flexibility in complying
13 VAC 5-63	Virginia Uniform Statewide Building Code	Economic	Increased flexibility in complying, decreased administrative cost
13 VAC 5-91	Virginia Industrialized Building Safety Regulations	Economic	Decreased cost to obtain permit
11 VAC 15-40	Charitable Gaming Regulations	Economic	New regulation
12 VAC 5-610	Sewage Handling and Disposal Regulations	Economic	Decreased length of time to obtain permit for systems designed by licensed engineers
12 VAC 5-613	Regulations for Alternative Onsite	Economic	Mixed impact: increased administrative

VAC citation	VAC title	Regulatory area	Impact of change to compliance activity
	Sewage Systems		cost; increased flexibility in complying, decreased length of time to obtain approval for treatment devices
9 VAC 5-520	Biomass Energy Generator General Permit for a Pilot Test Facility	Environmental	New regulation
9 VAC 5-530	Electric Generator Voluntary Demand Response General Permit	Environmental	New regulation
9 VAC 5-540	Emergency Energy Generator General Permit	Environmental	New regulation
9 VAC 25-610	Ground Water Withdrawal Regulations	Environmental	Decreased flexibility and increased administrative cost
12 VAC 5-640	Alternative Discharging Regulations	Environmental	Increased flexibility in complying and decreased length of time to obtain permit

SOURCE: JLARC staff analysis of information provided by state agencies and Virginia Manufacturers Association.

Appendix J: Agency responses

As part of an extensive validation process, the state agencies and other entities that are subject to a JLARC assessment are given the opportunity to comment on an exposure draft of the report. JLARC staff sent an exposure draft of this report to the Virginia Secretary of Finance and the Department of Planning and Budget. The Virginia Manufacturers Association was also given an opportunity to review and comment on a draft. Appropriate corrections resulting from technical and substantive comments are incorporated in this version of the report.

This appendix includes a response letter from the Virginia Manufacturers Association.

VMA

2108 W. Laburnum Ave., Suite 230, Richmond, VA 23227

August 25, 2016

Mr. Hal Greer
Director
Joint Legislative Audit and Review Commission
General Assembly Building, Suite 1100
201 N. 9th St.
Richmond, VA 23219

Dear Mr. Greer:

The Virginia Manufacturers Association commends JLARC, particularly Justin Brown and Ellen Miller, on the update to the cost of regulatory compliance study for the manufacturing sector. To our knowledge, this is the first longitudinal assessment of manufacturing regulatory costs of its kind. It is an impressive body of work spanning a decade.

This report also more clearly demonstrates the impact of Federal regulations on the manufacturing sector. When compared to the 2006 study, it is indisputable that manufacturing regulatory costs are Federally driven. It also points out the compounding effect that state stand-alone regulations have on the manufacturing sector since there is no relief from Federal regulatory costs. More importantly, this report should demonstrate to the General Assembly that despite a net loss of over 60,000 manufacturing jobs since 2006, overall regulatory costs have not been substantially reduced for manufacturers. Readers can make their own judgment about the causality between these two factors.

In closing, it has been a pleasure working with JLARC and its remarkable staff on the cost of regulatory compliance report. It is the defining reference on the subject matter and will continue to be an invaluable public policy tool for the next decade.

Sincerely,

Brett A. Vassey

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