

MEMORANDUM | 28 MARCH 2016

TO William Zamula and Robert Franklin, Consumer Product Safety Commission (CPSC), Directorate for Economic Analysis
FROM Jane Israel, Matthew Baumann, and Jennifer Baxter, Industrial Economics, Incorporated (IEc)
SUBJECT Revised Final Table Saws Market Research Report

On April 15, 2003, Stephen Gass, David Fanning, and James Fulmer, representing SawStop, petitioned the Consumer Protection Safety Commission (CPSC) to promulgate a mandatory standard to reduce or prevent injuries from contact with the blade of a table saw. The petitioners alleged that table saws pose an unacceptable risk of severe injury because they lack an adequate safety system to protect the user from accidental contact with the spinning blade during operation. To mitigate this risk, the petitioners requested that CPSC require that table saws include an active injury mitigation (AIM) system that retracts the table saw blade instantly upon contact with human flesh. The request was docketed as CP03-2 and published for comment.¹

On July 11, 2006, CPSC voted to grant Petition CP03-2 and directed staff to draft an advance notice of proposed rulemaking (ANPR). The CPSC lost its quorum on July 15, 2006 and was unable to move forward with the publication of the ANPR at that time. The ANPR was ultimately published in 2011.² The goal of the ANPR is to reduce blade contact injuries from table saws.

To enhance CPSC's understanding of the market for table saws, IEc conducted market research relying on publicly available information and limited outreach to potentially affected entities. Our efforts are intended to supplement information and data previously collected by CPSC and provided via public comment. This memorandum summarizes the results of the market research task.

1.0 SCOPE OF THE MARKET RESEARCH

The research presented in this memorandum is intended to support CPSC in assessing the costs to the industry associated with meeting AIM performance standards. This information will assist CPSC and IEc in their subsequent efforts to estimate the incremental social costs of a rule requiring AIM systems that can ultimately be compared

¹ 68 FR 40912.

² CPSC. 2011. Table Saws Blade Contact Injuries; Advance Notice of Proposed Rulemaking. September 14.

to the likely benefits of such a rule. The remainder of this memorandum is organized as follows:

- **Section 2: Approach.** This section lays out the steps taken to conduct the market research.
- **Section 3: Table Saw Products Overview.** This section provides information on characteristics of table saws by product type, a summary of retail prices by table saw category, and a discussion of the factors differentiating between types of table saws typically purchased by consumer versus commercial entities or other professionals.
- **Section 4: U.S. Table Saw Sales and Saws in Use.** This section summarizes available information on the volume of sales of table saws in the United States and estimates of table saws currently in use.
- **Section 5: Table Saw Firms Overview.** This section discusses the number of firms supplying table saws to the U.S. market and market concentration levels.
- **Section 6: Table Saws Imports.** Here we provide a summary of estimated table saw imports, and information on imports by country of origin.
- **Section 7: Conformance with Voluntary Standards.** This section presents information on the whether saws supplied to the U.S. market currently conform to existing voluntary safety standards such as UL 987.
- **Section 8: Incremental Cost of Implementing AIM.** Here we discuss the potential incremental costs of a mandatory rule requiring AIM technology and the distribution of those costs across potentially affected entities.
- **Section 9: Conclusions.** In this final section, we present conclusions based on the findings of our market research.

2.0 APPROACH

Our market research effort included the following steps:

- **Market data collection.** To identify firms that manufacture or supply table saws for purchase in the United States, we first researched firms identified by CPSC and then conducted additional research online. We summarized our results in an Excel file containing two tabs: one summarizing information on the firms, and one containing data on table saw models. This Excel file, along with a memo describing the data fields, was provided to CPSC on October 30, 2015. A final version of the Excel file is provided with this report. Our data collection effort identified a total of 25 table saw firms and their major brands, including 157 table saw models. The primary sources for our research included company websites, annual reports for public companies, and retailer websites providing product specifications and prices.

- **Review of previous research efforts.** We reviewed previous research prepared by CPSC, as well as additional sources provided by CPSC or identified by IEC. Examples of these data sources include the ANPR briefing package prepared by CPSC, comment letters submitted in response to the ANPR, the Power Tool Institute (PTI) “Facts at a Glance,” and other publicly available information.
- **Interviews with table saw firms.** As part of our market research effort, we contacted 12 firms, and of these we spoke with representatives of four.³ We attempted to interview a cross-section of entities including firms supplying each of the table saw product types, private labelers and manufacturing firms, and small and large firms.

3.0 TABLE SAW PRODUCT OVERVIEW

3.1 TABLE SAW PRODUCT CATEGORIES

A table saw is a stationary power tool consisting of a circular saw blade, mounted on an arbor, which is driven by an electric motor (either belt driven or gear driven). The blade protrudes through the surface of a table, which provides support for the material, usually wood, being cut. Table saws generally fall into three product types: *bench saws, contractor saws, and cabinet (e.g., stationary) saws*. While there is no exact dividing line, the distinction between these types of saws is generally based on size, weight, portability, power transmission and price. These characteristics are summarized below in Exhibit 1. In addition to these three primary product types, we note two additional types of table saws available in the U.S. market, including sliding table saws and hybrid table saws.

Bench saws (e.g., benchtop and portable saws; see Figure 1) tend to be lightweight and portable, weighing as little as 34 pounds. Two bench saw models incorporating AIM technology are heavier: SawStops’s JSS-MCA weighs 79 pounds (108 pounds with stand) and the Bosch GTS1041A-09 weighs 78 pounds (133 pounds with stand).⁴ Bench saws are popular with professional carpenters due to the ease of transporting them to job sites where they can be placed on a work bench or stand. Most of the bench saw models (25 out of 34) come with some form of stand, either a rolling, folding, or fixed stand. For models including a stand, the stand is included in the retail price. Bench saws generally require only 110- 120 volts and thus can run on ordinary household electric wiring (most home outlets are wired for



Figure 1. Typical Bench Saw

³ In addition, CPSC attempted to arrange interviews with the Power Tools Institute and one additional table saw manufacturer.

⁴ Note the Bosch model is not currently available due to litigation.

110-120 volts). Most bench saws are gear driven; that is, no belts are used to transmit power from the electric motor to the blade.

Based on available information, bench saws account for approximately 75 percent of the table saw market by unit volume; estimates of bench saws as a segment of the table saw market range from 70 percent to 85 percent.⁵

EXHIBIT 1. TABLE SAW CHARACTERISTICS

PRODUCT TYPE	RETAIL PRICE (USD) ¹	WEIGHT (LBS) ²	AMPERAGE (AMPS)	VOLTAGE (VOLTS)	HORSE-POWER (HP)	NO. OF MODELS
Bench ³	\$129-\$1,490 ⁴	34-233	5.7-15	110-240	1.5-4.4	34
Contractor	\$529-\$2,049	198-414	5.7-16	110-240	1.5-3	23
Cabinet (e.g., stationary)	\$1,199-\$5,349	321-1,040	4.7-34	115-600	1.75-10	71
Sliding	\$2,850-\$24,995	606-2,932	10-28	220-440	3-10	22
Hybrid	\$675-\$1,595	225-432	6.5-16	110-240	1.75-2	7

Notes:

1. Across all product types, retail price includes the stand for models that have this accessory. For the bench saw category, 25 of the 34 (74 percent) models have a stand included with the saw unit. Stands are either included or part of the tool for all contractor, cabinet, sliding, and hybrid models.
2. For all product types except bench saws, weight includes the both the saw and the stand. For bench saws, it was not always clear whether the reported weight included both the saw and the stand; however, both the lower and upper bound bench saw weights are based on models where the reported weights appear to include the stand.
3. Bosch has developed a bench saw model incorporating AIM technology (Bosch GTS1041A-09) that reportedly would have a Manufacturer's Suggested Retail Price (MSRP) of \$1,499. This model is not currently available due to litigation. As such, it is not included in the data presented in this exhibit.
4. Of the 34 bench saw models, only three have prices above \$1,000; Dewalt's DWE7499GD (\$799 - \$1,165), General's 50-090RK (\$1,490) and the SawStop model that incorporates AIM technology, SawStop JSS-MCA (\$1,299 - \$1,399).

⁵ Power Tool Institute, Inc.. 2015. Facts at a Glance. January; and, interview with table saw manufacturer on November 24, 2015; Grizzly Industrial Inc. 2012. Letter to CPSC. Formal Response to Docket No. CPSC-2011-0074 Table Saw Blade Contact Injuries; ANPR. February 10; and Email communication from CPSC on February 24, 2016.

Contractor saws (see Figure 2) are larger and more powerful than bench saws, typically weighing 198 to 414 pounds. Most contractor saws come with a fixed or rolling stand. Contractor saws typically run on 120 or 240 volts; many models offer both configuration options. Power ratings are in horsepower and typically, ratings are in the 1.5 to two horsepower range. The blade is usually driven with a single belt.

Figure 2. Typical Contractor Saw



Cabinet saws (also called “stationary saws”, see Figure 3) are larger, heavier, and more powerful than contractor saws, and their blades are enclosed in a cabinet. Cabinet saws weigh from 321 to 1,040 pounds. Cabinet saws generally require 230-240-volt power, and some require three-phase wiring, which may make it difficult for these saws to run on typical household current. Power ratings are usually in the two to five horsepower range, but can sometimes exceed this range. Some cabinet saws can accommodate larger blade sizes than the 10-inch blade size available with bench and contractor saws. The blade is driven with one or more belts.

Figure 3. Typical Cabinet Saw



Sliding saws are similar to the cabinet saws in that they are belt driven, but typically are equipped with an extension that allows for cutting of large panels. This type of saw can be wired for either single phase or three phase operation; however, three phase wiring is a more common feature for sliding table saws. Sliding saws operate in the 220-440 volt range. A primary difference between the two types of saws is that sliding table saws have a greater rip capacity for processing plywood.

Finally, we found five suppliers offering a total of seven **hybrid saws**. This product type blends components of both contractor and cabinet saws. Specifically, hybrid saws have

the energy requirements, weight, and mobility of a contractor saw with the structure, accuracy, and dust control features of a cabinet saw. This product type typically operates in single phase with a voltage range of 110-240 volts generating 1.75 to two horsepower depending on the model.

3.2 RETAIL PRICES OF TABLE SAWS

As shown in Exhibit 1, the range of prices generally overlaps for three products: bench, contractor, and hybrid saws. Bench saws are the least expensive, ranging in price from \$129 to \$975, with the exception of Dewalt's DWE7499GD (\$799 - \$1,165), General's 50-090RK (\$1,490) and the SawStop JSS-MCA (\$1,299 - \$1,399).⁶ Prices for contractor saws range from \$529 to \$2,049, and prices for hybrid saws range from \$675-\$1,595.

Generally, cabinet and sliding saws are more expensive (see Exhibit 1). Prices for cabinet saws range from \$1,199 to \$5,349. The price range for sliding table saws (\$2,850-\$24,995) overlaps with the range for cabinet saws, but sliding saws are typically more expensive.

Adding AIM technology currently results in a significant increase the price of saws. The SawStop models are consistently priced at the upper end of the price range in each of the three primary table saw categories (bench, contractor, and cabinet). Aside from the General bench saw priced at \$1,490, the SawStop bench saw is most expensive in the bench saw category at \$1,299-\$1,399, depending on the distributor. Similarly, the three SawStop contractor saws, ranging in price from \$1,599-\$2,049, represent some of the most expensive models in that product category, including the highest-priced offering. The SawStop cabinet models range in price from \$2,299-\$5,349, depending on power and performance. The SawStop model priced at \$5,349 represents the highest priced cabinet saw.

3.3 TYPES OF TABLE SAWS COMMONLY USED BY CONSUMERS

Based on discussions with industry representatives, electrical requirements and power likely provide the best distinction between table saws typically used by consumers and those used most often in industrial settings.⁷ Two industry representatives we spoke with indicated that saws operating at 1.75 horsepower or greater likely cannot be run on typical household wiring.⁸ Most consumers do not have the necessary electrical wiring, specifically the specialized outlets and adapters, to accommodate power tools with horsepower ratings greater than 1.75 or requiring 220-240 volt power. Sliding table saws and many other cabinet saws require such electrical capabilities and, therefore, may be less likely to be used by typical consumers. However, one manufacturer indicated they have begun development of a sliding saw aimed at the high-end do-it-yourself (DIY)

⁶ As mentioned earlier, Bosch has developed a bench saw model incorporating AIM technology (Bosch GTS1041A-09) that reportedly would have an MSRP of \$1,499, but it is not currently available due to litigation.

⁷ Product type and price were considered and rejected as possible criteria for making a distinction between consumer and professional users due to the overlap in product type (i.e., bench, contractor, and cabinet) and prices, even in the \$2,000 to \$3,000 price range.

⁸ Interviews with table saw manufacturers, November 24 and 30, 2015.

market, and a representative from another firm indicated some serious woodworking hobbyists may wire their home workshops to accommodate the more powerful saws.⁹

Exhibit 2 summarizes the number of table saw models by voltage requirements. Of the 157 table saw models identified in our market research, 61 models run on 110 – 120 volts, including 27 bench saw, 23 contractor, six cabinet and five hybrid models. The cabinet saws that can run on 110 – 120 volts are supplied by four firms: DMT Holdings (General Manufacturing), Shopsmith, Inc., Steel City Tool Works, and Walter Meier, Ltd.¹⁰ A total of 89 cabinet, sliding, and hybrid models run solely on 220-240 volts.¹¹ Given wiring requirements, these 89 higher voltage models are less likely to be used by typical consumers.

EXHIBIT 2. BREAKDOWN OF TABLE SAW MODELS BASED ON VOLTAGE REQUIREMENTS

PRODUCT TYPE	NUMBER OF MODELS THAT RUN SOLELY ON 110-120 VOLTS	MODELS THAT RUN ON EITHER 110-120 OR 220 -240 VOLTS	NUMBER OF MODELS THAT RUN SOLELY ON 220 - 240 VOLTS	MODELS WHERE VOLTAGE UNKNOWN ¹
Bench	25	2	0	7
Contractor	3	20	0	0
Cabinet (e.g., stationary)	0	6	65	0
Sliding	0	0	22	0
Hybrid	1	4	2	0
TOTAL	29	32	89	7
Notes:				
1. For seven bench saw models, no information is available on voltage ratings.				

4.0 U.S. TABLE SAW SALES AND SAWS IN USE

This section provides estimates of table saw sales in the United States, as well as the number of table saws currently in use.

4.1 U.S. TABLE SAW SALES

According to PTI, total annual shipments of all table saws to the U.S. market from 2006 to 2014 have ranged from 429,000 to 850,000, with the last four years closer to 600,000, as shown in Exhibit 3. Estimates of sales revenue are not readily available industry-wide.

⁹ Interviews with table saw manufacturers, November 24 and 30, 2015.

¹⁰ Note, the Shopsmith Mark 7 is classified as a cabinet saw for purposes of our analysis; however, this is actually a multi-purpose tool including a table saw, lathe, disc sander, drill press, router, shaper, and boring machine.

¹¹ This does not include the models which run on 110 – 120 volts but come with the option of a higher voltage (e.g. 220-240), including two bench, 20 contractor, six cabinet and four hybrid models.

In addition, information regarding the breakdown of shipments by product type is not readily available. As indicated above, bench saws have been estimated to account for approximately 75 percent of the table saw market by unit volume.

EXHIBIT 3. ANNUAL SHIPMENTS OF TABLE SAWS TO THE U.S. MARKET

YEAR	TABLE SAW SHIPMENTS (UNITS SHIPPED)
2006	800,000
2007	850,000
2008	650,000
2009	589,000
2010	429,000
2011	600,000
2012	625,000
2013	600,000
2014	625,000

Source: Estimates of total annual shipments of table saws for the entire table saw market provided to CPSC by PTI.

4.2 EXPECTED USEFUL LIVES AND SAWS IN USE

As noted in the ANPR, a PTI consultant provided CPSC with information regarding the product life or expected useful life for the three primary table saw product categories.¹² These values indicate bench saws have the shortest life expectancy of six to 10 years, while contractor saws and cabinet saws may have expected useful lives of 17 and 24 years, respectively. One commenter, Grizzly Industrial, a manufacturer of contractor and cabinet saws, indicated that these values may be understated. Their comments indicate that much older saws can be found in the used saw marketplace, including contractor saws in working condition over 25 years old, and cabinet saws from 30 to 50 years old.¹³ The expected useful life represents an estimated lifespan of an asset, but it is important to recognize that some individual products will have longer useful lives, while others will have shorter useful lives. For example, products that are used infrequently may outlast the manufacturer’s expected useful life. Thus, anecdotal evidence of older saws in working condition beyond their expected useful life does not lead us to conclude that the useful life applied by CPSC is understated.

¹² Estimates presented by Peter Domeny on behalf of PTI at meeting with Commissioner Adler on March 2, 2011, and included in the CPSC’s 2011 ANPR.

¹³ Grizzly Industrial Inc. 2012. Letter to CPSC. Formal Response to Docket No. CPSC-2011-0074 Table Saw Blade Contact Injuries; ANPR. February 10.

Depending on the useful life assumption applied, the estimated number of table saws in use can vary. Based on its estimates of expected useful lives and sales, PTI has previously estimated that the number of table saws in use in 2001/2002 was 8.0 million and increased to 9.5 million in 2007/2008. In its ANPR, CPSC noted that these estimates are consistent with estimates from the Product Population Model used by CPSC to estimate products in use.¹⁴

5.0 TABLE SAW FIRMS OVERVIEW

In this section, we present a summary of firms that supply table saws to the U.S. market. As data allow, we include information describing each company’s share of the U.S. market and the importance of table saws to overall corporate sales.

5.1 TABLE SAW FIRMS AND BRANDS

A total of 22 firms currently supply table saws to the U.S. market. A list of these firms along with their associated brands is presented in Exhibit 4. Three additional firms (Hitachi Koki, USA, Ltd.; Jepson Power Tools, Inc.; and Jiangsu Jinfeida Power Tools Co., Ltd) are also potentially relevant suppliers. Hitachi Koki and Jepson do not appear to be manufacturing any table saws at this time, although one Jepson model was identified for sale in the United States on a retail website. One Jiangsu Jinfeida model was identified for sale on Amazon; however, this model was not listed on the firm’s website.

EXHIBIT 4. LIST OF TABLE SAW FIRMS AND BRAND NAMES

FIRM	ASSOCIATED BRANDS	NO. OF MODELS	FIRM MEETS SBA SMALL BUSINESS SIZE STANDARDS? ⁽¹⁾
Current Suppliers			
Baileigh Industrial	Baileigh	12	Yes
DMT Holdings	General, General International	5	Yes
Felder Group USA	Hammer	5	?
Grizzly Industrial, Inc.	Grizzly, Shop Fox	26	Yes
Harbor Freight	Central Machinery, Chicago Electric	1	No
Laguna Tools	Laguna	10	Yes
Makita USA, Inc.*	Makita	2	No
Oliver Machinery	Oliver	3	?
Rexon Industrial Corp., Ltd.	Tradesman, Task Force	2	No

¹⁴ CPSC. 2011. Table Saws Blade Contact Injuries; Advance Notice of Proposed Rulemaking. September 14. Note that additional information on shipments of table saws by product type is needed to estimate current numbers of table saws in use.

FIRM	ASSOCIATED BRANDS	NO. OF MODELS	FIRM MEETS SBA SMALL BUSINESS SIZE STANDARDS? ⁽¹⁾
Richpower Industries	Genesis	1	Yes
Rikon Power Tools	Rikon	1	Yes
Robert Bosch Tool Corp.*	Bosch, Skil	5	No
SawStop, LLC	SawStop	9	Yes
Sears Holdings Corp.	Craftsman	6	No
Shopsmith, Inc.	Shopsmith	1	Yes
Stanley Black and Decker, Inc.*	Dewalt, Delta, Porter-Cable, Rockwell	17	No
Steel City Tool Works	Steel City, Orion	6	?
Techtronic Industries Co., Ltd., One World Technologies*	Ryobi, Milwaukee, Ridgid	3	No
Terratek	Terratek	3	?
True Value Company	Master Mechanic	1	No
Walter Meier, Ltd.	Jet, Powermatic	32	No
Woodworker's Supply	Woodtek	5	?
Other Potentially Relevant Suppliers			
Hitachi Koki, USA, Ltd.*	Hitachi	0	No
Jepson Power Tools, Inc.	Jepson	1	?
Jiangsu Jinfeida Power Tools Co., Ltd.	Jiangsu	1**	?
<p>Notes:</p> <p>(1) Where information was available, this determination was based on the Small Business Administration (SBA) size standard of 500 employees for firms in the NAICS Code 333242 (Sawmill, Woodworking, and Paper Machinery Manufacturing) for all companies except for Harbor Freight and True Value (applied standard of revenue less than of \$7.5 million based on NAICS Code: 444130 Hardware Store) and Sears Holdings (applied standard of revenue less than \$32.5 million based on NAICS Code 452111: Department Stores or less than \$11 million based on NAICS Code 443141: Household Appliance Stores). "?" represents firms for which not enough information was available to make a determination.</p> <p>* Denotes firms that are members of PTI.</p> <p>**It is unclear whether this Jiangsu Jinfeida model is currently supplied in the U.S. It was identified for sale on Amazon; however it is not listed on the firm's website.</p>			

5.2 TABLE SAW MARKET CONCENTRATION

Members of the Power Tools Institute (PTI) account for approximately 80 percent of sales of all table saws sold in the U.S. market.¹⁵ According to its website, PTI currently

¹⁵ PTI. 2012. U.S. Consumer Product Safety Commission [Docket No. CPSC-2011-0074] Table Saw Blade Injuries; Advance Notice of Proposed Rulemaking. Comment of Power Tool Institute. March 16.

has eight members, five of whom are or have been involved in manufacturing table saws: Hitachi Koki, USA, Ltd.; Makita, USA, Inc.; Robert Bosch Tool Corp.; Stanley Black and Decker, Inc.; and Techtronic Industries, Co., Ltd., One World Technologies.¹⁶ PTI member firms are primarily larger firms supplying bench saws, while many of the smaller suppliers are in the cabinet and contractor saw market segments. SawStop indicated that it is the leader in the cast iron table saws market, which we assume refers to the contractor and cabinet saw segments.¹⁷

5.3 CONTRIBUTION OF TABLE SAWS TO FIRMS' OVERALL SALES

Firms supplying table saws to the U.S. market range in size from large, diversified, multinational corporations with annual revenues in the billions of dollars to small companies with tens of millions of dollars in annual revenues. To understand whether table saws make up a significant portion of firms' overall sales, we first considered the firms that account for the majority of the table saw market, the four PTI members firms who currently supply table saws. The most recent annual revenue figures for these firms range from \$3.2 to \$59.2 billion, as shown in Exhibit 5. Each of these large firms are well diversified, and table saws likely represent a small fraction of total revenues each of these companies.¹⁸ In particular the Bosch Group is highly diversified, with business groups ranging from Mobility Solutions (formerly Automotive Technology), Industrial Technology, Consumer Goods, to Energy and Building Technology. As another example, Makita is focused on power tools, but offers a wide range, including many hand tools; Makita indicates that its goal is "consolidating a strong position in the global power tool industry as a global supplier of a comprehensive range of power tools."¹⁹

¹⁶ Based on our research, we were unable to identify any table saw models currently manufactured by Hitachi Koki.

¹⁷ Interview with Dr. Stephen Gass, SawStop, November 6, 2015.

¹⁸ If one assumes that all 600,000 units shipped in 2015 (estimates from PTI, see Exhibit 3) had an average price of \$500, this results in total shipment value of \$300 million, which equates to roughly nine percent of Makita's revenues or less than one percent of Bosch's worldwide revenues.

¹⁹ Makita Corporation. Consolidated Financial Results for the year ended March 31, 2015 (U.S. GAAP Financial Information) (English translation of "Kessan Tanshin" originally issued in Japanese).

EXHIBIT 5. REVENUES OF SELECTED PUBLICLY-HELD TABLE SAW FIRMS

FIRM	ANNUAL REVENUES
Makita USA, Inc.	\$3.2 billion
Robert Bosch Tool Corp.	\$59.2 billion worldwide/ \$11.3 billion North America
Stanley Black and Decker, Inc.	\$11.3 billion
Techtronic Industries Co., Ltd., One World Technologies	\$4.8 billion
Sources: 1. Bosch Annual Report 2014 and Bosch website accessed January 28, 2016 at: http://www.bosch.us/en/us/our_company_1/our-company-1p.html . 2. Makita Corporation. Consolidated Financial Results for the year ended March 31, 2015 (U.S. GAAP Financial Information) (English translation of “Kessan Tanshin” originally issued in Japanese). Results were converted from Yen using an exchange rate of 120.04 yen to 1 USD. 3. Stanley Black & Decker 2014 Annual Report. 4. Techtronic Industries Annual Report 2014.	

With the exception of two firms that sell only table saws or multi-purpose tools incorporating table saws (i.e., SawStop and Shopsmith), for smaller, more specialized firms supplying table saws to the U.S. market, anecdotal information suggests that table saws are generally not a large percentage of firms’ sales. One company stated that table saw sales contribute a negligible fraction of its \$15 million annual revenue.²⁰ Another company with an annual revenue of \$20 to \$40 million stated that table saws represent approximately five percent of total sales.²¹ Similarly, a third business we interviewed attributed seven to eight percent of total revenue to table saw sales.²²

6.0 TABLE SAW IMPORTS

While design and engineering of table saws may occur in the United States, interviews and public comments indicate that currently most table saws are manufactured overseas; several firms we spoke with indicated that their saws are manufactured in Taiwan.²³ As an example, Grizzly Industrial indicated that it operates quality control offices in Taiwan and China, and imports saws from Asia.²⁴ This is supported by data from the U.S. International Trade Commission, which indicates that in 2014 approximately 93 percent of imported table saws are built in Taiwan and China (see Exhibit 6; note the exhibit shows rounded estimates). It is interesting to note that while approximately seven percent of import value relates to table saw imports from countries other than China and Taiwan, only 0.6 percent of table saw units imported were attributed to countries other than China and Taiwan. This implies that the table saw imports from countries such as Germany, Canada, Austria and Italy tend to be more expensive.

²⁰ Interviews with table saw manufacturer November 24, 2015.

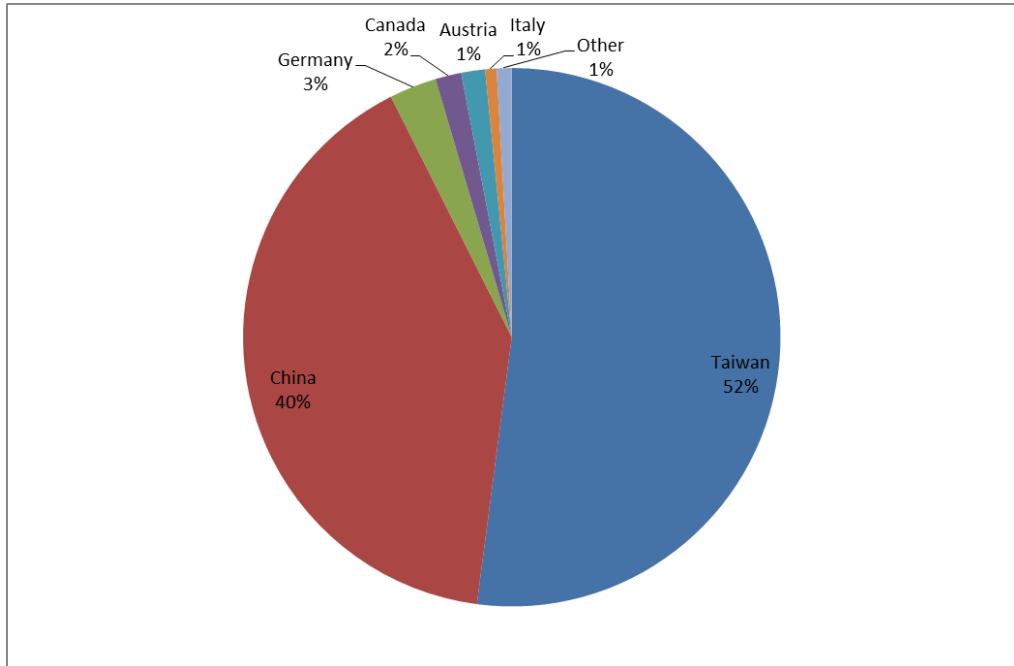
²¹ Interviews with table saw manufacturer November 24, 2015.

²² Interviews with table saw manufacturers November 30, 2015.

²³ Interviews with table saw manufacturer s November 24 and November 30, 2015. Also, Interview with Dr. Stephen Gass, SawStop, November 6, 2015.

²⁴ Grizzly Industrial Inc. 2012. Letter to CPSC. Formal Response to Docket No. CPSC-2011-0074 Table Saw Blade Contact Injuries; ANPR. February 10.

EXHIBIT 6. 2014 SAW IMPORTS BY COUNTRY (BASED ON VALUE OF IMPORTS)



Source: Based on 2014 cost, insurance and freight (CIF) values for U.S. imports for consumption. Data compiled from tariff and trade data from the U.S. Department of Commerce and the U.S. International Trade Commission for Harmonized Tariff Schedule classification numbers 8465910036 (Tilting arbor table saw, woodworking) and 8465910078 (Sawing machines, woodworking, NESOI). Data accessed on January 29, 2016 at: https://dataweb.usitc.gov/scripts/user_set.asp.

Based on data for 2005 to 2014, the estimated annual value of table saw imports has ranged from a low of \$109 million in 2011 to \$206 million in 2005 (see Exhibit 7), and was approximately \$162 million in 2014. The estimated quantity of table saw imports is 825,940 for 2014, and ranges from a low of 590,909 in 2011 to a high of approximately 1.3 million in 2005. The estimated table saw import value and quantity are likely overstated because they include all “Sawing machines, woodworking, NESOI” (i.e., not elsewhere specified or indicated). As shown in Exhibit 7, Harmonized Tariff Schedule (HTS) classification number 8465910036 (Tilting arbor table saw, woodworking) accounts for approximately 40 to 90 percent of the total depending on the year, for both units and value.

Given our understanding (based on interviews with U.S. table saw suppliers) that most table saws sold in the U.S. are manufactured overseas (and therefore imported), we would expect that the PTI estimates of table saws shipments provided in Exhibit 3 would closely match the import figures. However, when we compare the quantity of imports of HTS 8465910036 (Tilting arbor table saw, woodworking) to the PTI estimates, the PTI estimates appear low in 2006 and 2007, roughly equal in 2008, and high in 2009 through 2014. Thus, it is likely that some portion of the saws included in HTS 8465910078 (Sawing machines, woodworking, NESOI) are table saws; however, information is not available to determine the exact portion.

EXHIBIT 7. ESTIMATED TABLE SAW IMPORTS

YEAR	VALUE OF IMPORTS (U.S. DOLLARS IN THOUSANDS) ⁽¹⁾			QUANTITY OF IMPORTS (UNITS) ⁽²⁾		
	TILTING ARBOR TABLE SAW, WOODWORKING (HTS CODE 8465910036)	SAWING MACHINES, WOODWORKING, NESOI (HTS CODE 8465910078) ⁽³⁾	TOTAL	TILTING ARBOR TABLE SAW, WOODWORKING (HTS CODE 8465910036)	SAWING MACHINES, WOODWORKING, NESOI (HTS CODE 8465910078) ⁽³⁾	TOTAL
2005	\$164,086	\$41,630	\$205,717	1,081,570	228,373	1,309,943
2006	\$152,523	\$33,422	\$185,945	974,048	135,073	1,109,121
2007	\$146,171	\$39,542	\$185,713	927,078	200,944	1,128,022
2008	\$110,099	\$24,266	\$134,365	644,218	86,432	730,650
2009	\$78,470	\$39,424	\$117,894	471,324	230,504	701,828
2010	\$55,270	\$57,574	\$112,844	316,067	302,776	618,843
2011	\$43,059	\$65,631	\$108,691	230,182	360,727	590,909
2012	\$47,590	\$65,417	\$113,007	269,662	345,656	615,318
2013	\$58,041	\$72,595	\$130,636	319,536	345,670	665,206
2014	\$61,375	\$100,498	\$161,873	312,097	513,843	825,940

Notes:

(1) Data represent cost, insurance and freight (CIF) values, which includes the price paid for the goods plus the cost of transportation, loading, unloading, handling, insurance, and associated costs incidental to delivery of the goods from the port or place of export in the country of export to the port or place of import in the country of destination.

(2) Data represent first unit of quantity, which are the units used for tariff purposes.

(3) Information is not available to determine the portion of HTS 8465910078 (Sawing machines, woodworking, NESOI) that represents table saws; including this category likely overstates table saw imports.

Source: U.S. Department of Commerce and the U.S. International Trade Commission. U.S. imports for consumption data compiled from tariff and trade data from the for Harmonized Tariff Schedule classification numbers 8465910036 (Tilting arbor table saw, woodworking) and 8465910078 (Sawing machines, woodworking, NESOI). Data accessed on January 29, 2016 at: https://dataweb.usitc.gov/scripts/user_set.asp.

7.0 CONFORMANCE WITH VOLUNTARY STANDARDS (UL 987 AND/OR ANSI 01.1)

This section discusses existing voluntary safety standards applicable to table saws, and whether table saws supplied to the U.S. market currently conform to these standards. The Underwriters Laboratory (UL) 987 voluntary standards associated with table saws used in the U.S. market have been revised several times in recent years. The current version (seventh edition) was published in 2007, and incorporated a new modular blade guard design to provide safety improvements over traditional hood guard designs. The UL 987 standard includes design and performance requirements for the modular blade guard design, riving knife, and anti-kickback pawls. The effective date for these requirements was January 31, 2010.

In September, 2011, UL initiated a Working Group to develop performance criteria for an active safety system on table saws. UL published the *Table Saw Hazard Study on Finger Injuries Due to Blade Contact* in January 2014. Further, in February 2015, a UL ballot was circulated, which proposed the addition of an AIM system for table saws. The proposed standard would have included a requirement of a maximum depth of cut of 4mm when a surrogate finger approaches the blade at a rate of 1 m/s (3.28 ft/s). The ballot failed in April 2015, and thus no further standards development activity was undertaken.

For 33 of the 157 models included in our table saw market research, the model description or user manual explicitly indicated that the products met UL 987 standards. For another 15 models, the firms indicated their products were compliant with Canadian Standards Association (CSA) standards for table saws. They noted that the CSA standard for table saws references UL 987 and is more stringent; therefore, models meeting this standard also likely meet UL 987. Another reason firms focus on the CSA standard over UL 987 is that CSA is accepted in the United States, while UL 987 is not recognized in Canada.²⁵

During our review of available information, including descriptions and pictures of the products and product manuals, we identified the safety features included with each table saw model. Based on this research, we identified 83 table saw models (in addition to the 33 that explicitly indicate conformance) that were equipped with the modular blade guard, riving knife, and anti-kickback pawls necessary to meet the UL 987 standard. The remaining 26 models may lack one or more of the safety features necessary to conform to the UL 987 standard; however, not enough information was available to make a clear determination.

At least one manufacturer we spoke with indicated that all of its table saws were compliant with UL 987 and stated that the company does not consider the UL 987 standards voluntary, in part because their firm would be unable to obtain product liability insurance if they were not compliant.²⁶ Based on sales and compliance estimates provided by PTI, we estimate that roughly 3,250,000 table saws have been produced

²⁵ Interview with table saw manufacturers, November 24 and November 30, 2015.

²⁶ Interview with table saw manufacturer, November 24, 2015.

through the end of 2015 that are equipped with the necessary safety features to conform to UL 987.²⁷

A new International Electrotechnical Commission (IEC) international safety standard (IEC 62841-3-1) was published in June 2014 and applies to transportable tools with voltages rated for not more than 250 volts (single-phase motors) or not more than 480 volts (three-phases motors).²⁸ The PTI anticipates that this standard will improve safety standards for table saws used worldwide. According to the PTI, the United States will likely adopt the IEC 62841-3-1 as an American National Standards Institute (ANSI) standard and will replace UL 987 soon after.²⁹ At least one firm we spoke with stated that they would be moving to comply with the IEC standard, which they expect will be the new international standard for table saws.³⁰ UL has shown an interest in proposing AIM technology for the new IEC standard.

8.0 INCREMENTAL COST OF IMPLEMENTING AIM

There are several types of costs that would result from a performance standard requiring the inclusion of AIM technology in table saws. Below we summarize information about the expected incremental costs. We note that it is not clear who would bear the costs, the manufacturer or the consumer. Thus, we have included not only a discussion of the costs that manufacturers would incur to implement the technology, but also a discussion of the potential distributional impacts if these additional costs result in an increase in retail prices.

8.1 ESTIMATED INCREMENTAL COSTS

Table saw manufacturers are likely to incur three primary types of costs in order to incorporate AIM technology into their table saws, including:

- **Costs to develop AIM technology.** Manufacturers currently have two options for obtaining AIM technology. They can either develop and design the system independently, or they could, in theory, license SawStop's patented technology (although to our knowledge, to date, SawStop has only licensed its AIM technology to one Italian manufacturer for development of a sliding table saw).³¹
- **Redesign and retooling costs.** Incorporating AIM technology into existing models will require manufacturers to redesign each model and retool the facilities where the saws are manufactured. Based on the size of the brake cartridge in use

²⁷ CPSC indicates in its "Table Saw Update" document that at the start of 2011, PTI estimated there were 800,000 table saws conforming to the UL standard. Assuming that all saws produced each year since 2011 are compliant with UL 987, given sales estimates by PTI, this results in a total of 3.25 million UL 987 compliant saws in use.

²⁸ International Electrotechnical Commission standard 62841-3 (<https://webstore.iec.ch/publication/7448>).

²⁹ PTI. 2015. Facts at a Glance. January.

³⁰ Interview with table saw manufacturer, November 30, 2015.

³¹ Griggio, SA, an Italian manufacturer, collaborated with SawStop to develop a sliding table saw, which was demonstrated in May 2015 at a trade show in Germany. FDMC. 2015. SawStop and Griggio to develop safer panel saw. May. Accessed December 8, 2015 at: <http://www.fdmcdigital.com/ArticleDetails/tabid/162/ArticleID/95172/Default.aspx>.

with the existing SawStop technology and the space needed for a retractable blade, it appears each table saw model will require redesign.

- **Materials costs.** The combination of the addition of a brake cartridge, or other means of stopping the blade from contact with flesh, and the redesign of the saw to accommodate the weight and dimensions of the AIM technology results in increased material costs.

Below, we attempt to quantify incremental unit costs based on data collected through interviews with SawStop and other saw manufacturers.

Development of AIM Technology

Currently, we are aware of three manufacturers who have developed AIM technology, although only one is currently available to consumers, including:

- **SawStop's AIM technology**, which induces a small electrical signal onto the saw blade that is partially absorbed by the human body if contact is made. When this reduction in signal is detected, the system applies a brake to the blade that stops and retracts the blade below the table surface in less than five milliseconds. SawStop contractor/cabinet saws have been available to consumers since 2004, and a new benchtop saw was introduced in March 2015.³²
- **Bosch's Active Response Technology™**, which rapidly detects human flesh that comes in contact with the blade (through electronic sensors) and initiates a pressurized activation cartridge which drives the saw blade below the tabletop. Bosch announced this technology in a March 2015 press release, but it is not yet available on the market due to ongoing litigation.³³
- **Whirlwind's Black Box flesh-sensing prototype**, which does not involve a blade retraction system, but rather uses a fixed protective guard and a very rapid, non-destructive motor-braking to stop the saw blade when the operator's hand is too close to the spinning blade. Whirlwind's website indicates that it is currently looking for funding to develop its technology, and that Whirlwind is the plaintiff in ongoing litigation that has hampered its efforts to bring the technology to the market; details of the pending litigation are not provided.³⁴

According to Dr. Gass, the initial development and design of the SawStop brake cartridge required a significant time and financial commitment; including two people full time for a year. Dr. Gass indicated that he raised "a couple of million dollars" to fund the development of the first saw incorporating SawStop's flesh sensing technology, which could be considered an upper bound on development costs.³⁵

³² SawStop website. Accessed on January 23, 2016 at: <http://www.sawstop.com/>.

³³ Bosch. 2015. Press Release titled: *Bosch GTS1041A REAXX™ Portable Jobsite Table Saw Takes User Safety to the Next Level, and Saves the Blade Too*. Accessed on January 20, 2016 at: http://www.boschtools.com/AboutBoschTools/PressRoom/Pages/031815_reaxxsaw.aspx.

³⁴ Whirlwind Tools website. Whirlwind Tool Patented Safety Technology for Sale or License. Accessed on November 17, 2015 at: <http://www.whirlwindtool.com/>.

³⁵ Interview with Dr. Stephen Gass, SawStop, November 6, 2015.

Various stakeholders have expressed concern that a mandatory rule could impose a monopoly for SawStop technology given the numerous patents that have been filed by Stephen Gass. PTI notes that Stephen Gass has filed more than 140 patent applications, and has over 100 issued patents which pertain to SawStop technology.³⁶

Several companies have attempted to license the SawStop technology as described below. To our knowledge, the only company to partner with SawStop to date has been Griggio, SA, an Italian manufacturer that collaborated with SawStop to develop a sliding table saw, which was demonstrated in May 2015 at a trade show in Germany.³⁷

- Grizzly Industrial Inc. indicated in its comment letter that it attempted to license SawStop technology as far back as 2000, and again in 2007, but it was unable to come to an agreement with SawStop because of what it considered “unrealistic demands to convert every existing Grizzly model to include the flesh-sensing technology.” SawStop also apparently refused to allow Grizzly to distribute SawStop saws, stating “It does not make sense for SawStop to distribute saws through Grizzly given SawStop’s current distribution network.”³⁸
- In the *Osorio v. Ryobi* litigation, Dr. Gass testified that Ryobi had been given an opportunity to license the SawStop technology in 2000 before SawStop launched its own line of saws.³⁹ Similarly, other manufacturers noted that they had discussions with SawStop prior to SawStop launching its line of saws, and Stephen Gass wanted to charge them a licensing fee equal to ten percent of the retail price, which they felt was unreasonable.⁴⁰ Another table saw manufacturer we spoke with indicated that they tried to license the SawStop technology without success.⁴¹

Grizzly has stated that mandating AIM technology during the life of the SawStop patents will cause numerous businesses to be unable to stay in the table saw business.⁴² PTI has also expressed concerns that “there can be no assurance that Petitioners and SawStop would be willing to license their patent technology at *any* price, notwithstanding any of their assertions to the Commission to the contrary.”⁴³

Currently, there are two pending lawsuits that could have bearing on SawStop or other companies’ willingness to license their AIM technologies. One involves Whirlwind Tools, which has patents pending for its Black Box flesh sensing technology. Whirlwind

³⁶ PTI. 2015. Facts at a Glance. January.

³⁷ FDMC. 2015. SawStop and Griggio to develop safer panel saw. May. Accessed December 8, 2015 at: <http://www.fdmcdigital.com/ArticleDetails/tabid/162/ArticleID/95172/Default.aspx>.

³⁸ Grizzly Industrial Inc. 2012. Letter to CPSC. Formal Response to Docket No. CPSC-2011-0074 Table Saw Blade Contact Injuries; ANPR. February 10.

³⁹ *Osorio v. One World Technologies, Inc.* 659 F3d 81, 83 (1st Cir 2011).

⁴⁰ Interview with table saw manufacturer, November 24, 2015.

⁴¹ Interview with table saw manufacturer, November 24, 2015.

⁴² Grizzly Industrial Inc. 2012. Letter to CPSC. Formal Response to Docket No. CPSC-2011-0074 Table Saw Blade Contact Injuries; ANPR. February 10.

⁴³ PTI. 2012. U.S. Consumer Product Safety Commission [Docket No. CPSC-2011-0074] Table Saw Blade Injuries; Advance Notice of Proposed Rulemaking. Comment of Power Tool Institute. March 16. Page 4.

indicates that they are the plaintiff in litigation ongoing since 2012.⁴⁴ Another is the suit by SawStop against Robert Bosch. SawStop has filed complaints at the U.S. International Trade Commission and the U.S. District Court in Oregon to stop alleged infringement of SawStop's patents.⁴⁵

The outcome of ongoing lawsuits involving the SawStop technology will determine the impacts that may result from a mandatory rule requiring AIM technology in table saws. If the courts determine that the patents covering the SawStop technology allow for companies to manufacture their own saws with alternative AIM technologies (such as the Bosch Reaxx saw), then manufacturers may choose to try to develop their own proprietary measures.

If courts decide that table saws with alternative AIM technologies infringe on SawStop patents, then SawStop may effectively have a monopoly on the technology needed to comply with a mandatory rule. Other manufacturers would likely be required to work with SawStop to license the SawStop technology for use in their saws, or leave the table saw market.

In fact, even if courts determine that manufacture of saws with alternative AIM systems would not infringe on SawStop's patents, some companies may choose to license SawStop (or other) AIM technology rather than to develop their own. The level at which the royalty payments are set will play a significant role in determining the impacts on table saw manufacturers. Dr. Gass states that SawStop would accept royalty payments of eight percent of a saw's wholesale price, but only if a rule requiring AIM technology is passed. Otherwise, licensing the patent would harm SawStop's business, allowing competitors who underprice SawStop saws and force him out of business.^{46,47}

Redesign and Retooling

Our interviews with multiple manufacturers, as well as our review of public comments provided by PTI, revealed general agreement that implementing AIM technology requires a complete redesign of each saw. Specifically, the trunnion system must be redesigned, and the cabinet/interior would need to be modified to incorporate the system and allow access to change out the brake cartridge, if such technology is employed. The support structure, such as the stand, would also likely need to be redesigned to bear the extra weight of the AIM system and also absorb the force applied by the triggering of the mechanism.⁴⁸

PTI estimates that the cost to redesign and retool existing table saws would range from \$2 million to \$10 million per company; it is unclear whether this range represents the difference between redesigning one versus multiple models, or if the range represents

⁴⁴ Whirlwind Tools website. Whirlwind Tool Patented Safety Technology for Sale or License. Accessed on November 17, 2015 at: <http://www.whirlwindtool.com/>.

⁴⁵ SawStop website. Accessed on January 23, 2016 at: <http://www.sawstop.com/company/news/press-releases/sawstop-sues-bosch-to-protect-inventions>.

⁴⁶ Interview with Dr. Stephen Gass, SawStop, November 6, 2015.

⁴⁷ Dr. Gass states typical industry mark-ups from wholesale to retail price are 10 to 20 percent; therefore, profits would be reduced to roughly 2.7 to 12.7 percent, assuming the licensing cost is borne entirely by the U.S. manufacturer/supplier.

⁴⁸ Interview with table saw manufacturer, November 24, 2015.

uncertainty in the cost of redesign for a single model.⁴⁹ Furthermore, two firms we interviewed indicate that the costs of redesigning their saws to incorporate AIM technology may be too great with respect to their sales volume and they may reduce or eliminate offerings of table saws to the U.S. market.⁵⁰

SawStop agrees that the entire table saw would need to be redesigned, but suggests that the total cost would not be in the multi-million dollar range indicated by PTI. Rather, Dr. Gass states that SawStop's tooling costs for its first cast iron (i.e., contractor/cabinet saw) were approximately \$200,000 and approximately \$700,000 for its first benchtop table saw. He also stated that there are not as many distinct models as advertised. Some models are minor variations and share the same basic structure.⁵¹

SawStop's estimates are within the range of estimates provided by other firms. For example, several companies indicated the cost to redesign saws could be approximately \$500,000 per saw.⁵² Another table saw manufacturing representative we spoke with indicated that retooling could cost \$100,000 to \$200,000. An additional cost of several hundred thousand dollars may be necessary depending on the level of engineering required for the redesign.⁵³ According to one company, a redesign of the trunnion system alone may cost \$200,000.⁵⁴

Uncertainty exists concerning the allocation of the retooling costs. In some instances, Taiwanese and Chinese manufacturers may produce saws for multiple U.S. firms, thus the costs of retooling can be spread across several of their customers, if the designs are similar enough. A representative of one firm also suggested that U.S. manufacturers may be able to work with their respective overseas contract manufacturers to absorb some of the retooling costs. For example, he indicated that when they redesigned products to incorporate new riving knife standards, the manufacturers they contract with in Taiwan absorbed much of the retooling cost.⁵⁵

The redesign and retool of the table saws would be expected to take one to three years based on interviews with several companies. Representatives indicated that redesigning and retooling subsequent models would require a shorter period and cost less.⁵⁶

Materials Costs

In addition to the redesign and tooling costs, additional costs would be associated with the increased use of raw materials and casting of the new table saw and materials associated with inclusion of the AIM system. For SawStop models, the additional material cost per saw is approximately \$58 (including brake cartridge, cartridge, key, cartridge cable, cartridge bracket, insulation on arbor, electrode shell assembly, and

⁴⁹ Graham, J. 2010. Expert report of Dr. John D. Graham. April 27. Submitted with the PTI public comments dated March 16, 2012.

⁵⁰ Interviews with table saw manufacturers, November 24 and November 30, 2015.

⁵¹ Interview with Dr. Stephen Gass, SawStop, November 6, 2015.

⁵² Interviews with table saw manufacturers, November 24, 2015.

⁵³ Interview with table saw manufacturer, November 30, 2015.

⁵⁴ Interview with table saw manufacturer, November 24, 2015.

⁵⁵ Interview with table saw manufacturer, November 30, 2015.

⁵⁶ Interviews with table saw manufacturers, November 24 and November 30, 2015.

power supply/motor control).⁵⁷ Public comments provided by SawStop on the ANPR also included an estimate from Black & Decker of \$74 (including cartridge, electronics, and mechanical parts).⁵⁸

8.2 POTENTIAL DISTRIBUTIONAL EFFECTS

If a mandatory rule requiring the inclusion of AIM technology on all table saws is implemented, there is potential for distributional impacts to consumers of table saws, which may include individuals (e.g., homeowners or hobbyists) or businesses who purchase table saws. Distributional effects may result from an increase in prices paid for saws, increased costs due to replacement parts, and impacts related to utility. Below we provide a discussion of these three types of impacts, and provide information on the number of small businesses in industries that may be indirectly affected by the rule, including those firms that are considered small. It should be noted that distributional effects represent a transfer of the costs discussed above, and thus they are not additive. The costs of replacement parts may be additive; we are uncertain whether the materials associated with replacement parts is included in estimates presented above. Finally, consumers who choose not to purchase table saws may experience a loss in utility, but the value of this loss would not be larger than the incremental increase in the price of the saw.

Increase in Retail Prices

Several firms provided estimates of how a mandatory rule requiring inclusion of AIM technology in table saws would affect retail prices.

- One manufacturer estimates that table saws with a patented AIM system would increase retail price by approximately 30 percent; based on the range of prices of this company's saws this translates to an increase of \$330.⁵⁹
- Another manufacturer estimates a retail price increase of 20 percent in addition to a SawStop licensing fee;⁶⁰ based on the prices of this company's table saws (ranging from to \$1,299 to \$3,999) this translates to a lower bound increase between \$260 to \$800.⁶¹
- Another manufacturer indicates that smaller models might increase by \$200 while larger models might increase by \$500 to \$800.⁶²
- SawStop acknowledges that retail prices could increase by \$110 to \$120 per saw if the additional costs (including associated profit) are passed through to consumers.⁶³ If the proposed rule is approved, Dr. Gass suggested the least

⁵⁷ SawStop, LLC. 2012. Comments and Information Responsive to ANPR for Table Saw Blade Contact Injuries By SawStop, LLC. U.S. Consumer Product Safety Commission Docket No. CPSC-2011-0074. March 16.

⁵⁸ Ibid.

⁵⁹ Interviews with table saw manufacturer, November 24, 2015.

⁶⁰ Interviews with table saw manufacturer, November 24, 2015.

⁶¹ Note, sliding saws were not included in this estimate.

⁶² Interviews with table saw manufacturer, November 30, 2015.

⁶³ SawStop, LLC. 2012. Comments and Information Responsive to ANPR for Table Saw Blade Contact Injuries By SawStop, LLC. U.S. Consumer Product Safety Commission Docket No. CPSC-2011-0074. March 16.

expensive benchtop saws would retail for approximately \$299 in the near term, but could be less expensive (approximately \$199) in the long term (ten years into the future) if they are manufactured in high volume.⁶⁴ In a separate instance, Dr. Gass testified that SawStop technology would add “less than \$150” to the price of a table saw.⁶⁵

If pricing of the SawStop and Bosch bench saws incorporating AIM technology are any indication, the mandatory inclusion of AIM technology could significantly affect the retail price of bench table saws. While most bench saw models have a retail price ranging from \$199 to \$799, the two models which include AIM technology are priced at \$1,299 to \$1,499.⁶⁶ As discussed earlier, bench saws make up the bulk of table saws (estimated to account for approximately 75percent of units sold), and are likely the primary type of saw used by DIY consumers. We note, however, that currently available models with AIM technology are produced in relatively smaller numbers than the larger production runs required by the four major manufacturers/suppliers discussed earlier in Section 5.2.⁶⁷

Cost of Replacement Parts

The cost of replacement parts can vary depending on the AIM system. In the event that the SawStop AIM system fires, both the saw blade and brake cartridge are destroyed. According to PTI, this would result in additional costs to the consumer of \$30-\$90 for a replacement saw blade and \$69 for a replacement brake cartridge.⁶⁸ Current online prices confirm that a replacement SawStop brake cartridge is \$69. Further, performing dado cuts on the SawStop saws requires a specialized brake cartridge at a cost of \$89 to the consumer.⁶⁹ The Bosch Active Response Technology™ may have a lower replacement cost of firing because it does not damage the blade; thus, replacement saw blades are not required. In addition, the Bosch system includes a two-shot cartridge which would only need to be replaced after two activations.⁷⁰ Replacement cartridges for the Bosch Reaxx table saw (which is not yet available on the market), are expected to retail for \$15.⁷¹

Lost Utility

Some consumers may decide that the price of a table saw is greater than the utility they would derive from purchasing the saw. Thus, they may choose to forego the purchase. The loss in utility experienced by these consumers would be less than the incremental increase in the price of the saw.

⁶⁴ Interview with Dr. Stephen Gass, SawStop, November 6, 2015.

⁶⁵ *Osorio v. One World Technologies, Inc.*, 659 F.3d 81, 83 (1st Cir. 2011).

⁶⁶ The Bosch Reaxx saw (model #GTS1041A-09) is not available for sale yet, but the press release from Bosch indicates its price (see http://www.boschtools.com/AboutBoschTools/PressRoom/Pages/031815_reaxxsaw.aspx, accessed on January 20, 2016).

⁶⁷ Per unit costs are likely to be higher for smaller production runs because fixed costs are spread across a smaller number of units.

⁶⁸ PTI. 2015. Facts at a Glance. January.

⁶⁹ CPSC. 2011. Table Saws Blade Contact Injuries; Advance Notice of Proposed Rulemaking. September 14.

⁷⁰ Bosch. 2015. Press Release titled: *Bosch GTS1041A REAXX™ Portable Jobsite Table Saw Takes User Safety to the Next Level, and Saves the Blade Too*. Available at

http://www.boschtools.com/AboutBoschTools/PressRoom/Pages/031815_reaxxsaw.aspx, accessed on January 20, 2016.

⁷¹ CPSC. 2011. Table Saws Blade Contact Injuries; Advance Notice of Proposed Rulemaking. September 14.

Additionally, while consumers may benefit due to a reduction in the risk of injury if AIM technology is incorporated, they may also experience decreased utility when using table saws due to the saws being “much larger and more difficult for consumers to handle.”⁷² For example, if the weight of these saws increases, the convenience of transporting these saws to and from job sites may decrease. In addition, some operating time may be lost if the brake is activated and cartridges need to be replaced in the case of a false activation, or if a special cartridge needs to be installed (e.g., for a dado cut).

Numbers of Small Businesses Potentially Impacted

In addition to the table saw suppliers and manufacturers included in Exhibit 4, firms that use table saws in the course of their business operations may be affected. Exhibit 8 provides information on the number of firms that are likely purchasers of table saws, and as such may be impacted indirectly by a mandatory rule, should it result in higher prices for table saws. In addition, Exhibit 8 illustrates the fact that the vast majority of these types of businesses are considered small based on the Small Business Administration (SBA) size standards.

EXHIBIT 8. NUMBER OF FIRMS IN INDUSTRIES USING TABLE SAWS

NAICS CODE	DESCRIPTION	TOTAL NUMBER OF FIRMS (2012) ⁽¹⁾	ESTIMATED NUMBER OF FIRMS MEETING SMALL BUSINESS STANDARD ^{(2),(3)}	SBA SMALL BUSINESS STANDARD
236115	New Single-Family Housing Construction (except For-Sale Builders)	45,716	38,456	\$36.5 million
236116	New Multifamily Housing Construction (except For-Sale Builders)	2,591	1,169	
236117	New Housing For-Sale Builders	13,025	9,507	
236118	Residential Remodelers	88,656	79,949	
236210	Industrial Building Construction	2,991	1,942	
236220	Commercial and Institutional Building Construction	36,860	22,481	
238130	Framing Contractors	10,056	6,649	\$15 million
238160	Roofing Contractors	17,265	11,824	
238170	Siding Contractors	7,394	4,911	
238330	Flooring Contractors	13,428	9,349	
238350	Finish Carpentry Contractors	25,724	21,813	
238390	Other Building Finishing	6,149	4,402	

⁷² KCMA. 2012. Letter to CPSC RE: CPSC-2011-0074, Table Saw Blade Contact Injuries: Advanced Notice of Proposed Rulemaking; Request for Comments and Information. February 10.

NAICS CODE	DESCRIPTION	TOTAL NUMBER OF FIRMS (2012) ⁽¹⁾	ESTIMATED NUMBER OF FIRMS MEETING SMALL BUSINESS STANDARD ^{(2),(3)}	SBA SMALL BUSINESS STANDARD
	Contractors			
321911	Wood Window and Door Manufacturing	1,014	978	500 employees
321912	Cut stock, Resawing lumber, and Planing	910	876	
321918	Other Millwork (including Flooring)	1,431	1,406	
321999	All other Miscellaneous Wood Product Manufacturing	1,671	1,646	
337110	Wood Kitchen Cabinet and Counter Top Manufacturing	6,795	6,771	
337122	Nonupholstered Wood Household Furniture Manufacturing	2,391	2,371	
337211	Wood Office Furniture Manufacturing	360	347	
337212	Custom Architectural Woodwork and Millwork Manufacturing	1,992	1,982	
336611	Ship building and Repairing	604	570	
336612	Boat Building	836	822	

Sources:

- (1) U.S. Census Bureau. 2012. Statistics of U.S. Businesses. Number of Firms, Number of Establishments, Employment, Annual Payroll, and Estimated Receipts by Enterprise Employment Size for the United States, All Industries: 2012. Accessed on January 18, 2016 at: http://www2.census.gov/econ/susb/data/2012/us_6digitnaics_2012.xls.
- (2) We approximate the total number of firms that meet the SBA Small Business Standards for NAICS codes beginning with 236 and 238. We use sample data provided by The Risk Management Association (RMA) Annual Statement Studies to approximate the total number of firms within the SBA revenue category. Because the revenue ranges reported by RMA do not match the SBA standard revenue designations, we proportionally approximate the total number of firms within each revenue category, using the Census 2012 reported number for total firms as a base.
- (3) For NAICS codes beginning with 236, we calculate the total number of firms meeting the SBA standard by using the proportional number of firms reported in the RMA sample that have revenues less than \$25 million. We are unable to proportionally calculate the number of firms under \$36.5 million using these data due to the fact that no maximum value is provided in the reported range for the number of firms with over \$25 million in sales. Therefore, our reported figure is likely an underestimate of the total number of firms with this NAICS code designation that would be considered small entities under the SBA standard. For NAICS codes beginning with 238, we calculate the total number of firms meeting the SBA standard by summing the number of sample firms under \$10 million with one third of the firms reported within RMA's \$10 million to \$25 million range.

As noted above, it is likely that a mandatory rule would increase the retail price of table saws. Available estimates range from \$150 to up to \$800. To put this in perspective, for

this price increase to reach a threshold of one percent of revenues, a firm purchasing one table saw per year would need to have average annual receipts less than \$80,000.

Commenters note that these types of increases would be difficult for small businesses that use table saws to absorb. Specifically, the Kitchen Cabinet Manufacturers Association (KCMA) believes the proposed rule would be a costly mandatory requirement, but does not specify the magnitude or types of costs. KCMA represents 326 manufacturers, including 60 percent of which have annual sales less than \$10 million.^{73, 74} KCMA comments note that there are also “thousands of small manufacturers in the U.S., typically with fewer than 20 employees, who make cabinets for a living in a local market.”⁷⁵

On the other hand, businesses that use table saws could also benefit from a decrease in injuries and workers compensation payments. We note that the level of costs and benefits for businesses using table saws will vary depending on the pattern of use of table saws by the business. For example, cabinet shops may use contractor or cabinet saws on a regular basis, if not daily. The level of use, training, working conditions and exposure to saw hazards, will vary across businesses, affecting the costs and benefits experienced by individual firms as a result of the rule.

9.0 CONCLUSIONS

A mandatory rule to implement AIM technology, with the goal of reducing blade contact injuries, would result in significant costs related to designing the AIM technology and/or addressing any patent issues. Our interviews suggest licensing the technology is likely to cost at least eight percent of the wholesale value of the saw. Another not insignificant set of costs would result from the need to redesign and retool to make the new compliant saws. Both these types of impacts would be borne by the 22 firms currently supplying table saws to the U.S. market. Most of these firms contract with overseas manufacturing firms to produce their saws (largely in Taiwan and China) and import them into the United States. It has been suggested that the overseas manufacturing firms may be willing to absorb some of the retooling costs, but the degree to which these costs may be transferred to foreign entities is uncertain.

Table saws encompass three primary product categories: bench, contractor and cabinet saws as well as two lesser categories, sliding and hybrid saws. Bench saws account for the bulk of sales, estimated to be approximately 75 percent of units sold. Bench saws are primarily produced by the larger firms, who are members of the industry group PTI. Another group of firms produces contractor and cabinet saws; these firms are mostly smaller entities. Table saw sales appears to account for a small percentage of overall company sales for many firms, based on analysis of available information and interviews with various companies. Thus, while firms may choose to scale back or eliminate their

⁷³ We note that the SBA small business standards for kitchen cabinet manufacturers is based on number of employees, not revenues; firms with less than 500 employees are considered small.

⁷⁴ KCMA. 2012. Letter to CPSC RE: CPSC-2011-0074, Table Saw Blade Contact Injuries; Advanced Notice of Proposed Rulemaking; Request for Comments and Information. February 10.

⁷⁵ Ibid.

table saw offerings, most firms have a variety of other offerings that would not be affected by the rule. SawStop appears to be the only potentially affected firm that is focused entirely on table saw manufacturing.

Companies we spoke with indicated that incorporating AIM technology could result in a near-term increase in retail prices ranging from \$150 to \$800 per unit. While they indicated these price increases may decrease as volume of sales expand, these increased prices would represent a significant change for consumers.

The outcome of ongoing lawsuits involving the SawStop technology will determine the ultimate impacts that may result from a mandatory rule requiring AIM technology in table saws. If it is determined that the patents covering the SawStop technology allow for companies to manufacture their own saws with alternative AIM technologies then manufactures may choose to develop their own proprietary measures (which will entail upfront development costs that are presumably lower in present value terms than long-term licensing fees).

If courts decide that table saws with alternative AIM technologies infringe on SawStop patents, then a mandatory rule would likely require table saw manufacturers to work with SawStop to license the SawStop technology for use in their saws, potentially resulting in a contraction of the industry and significantly increased prices for consumers.

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