Pennsylvania Timber Product Output Survey

pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

Tom Wolf, Governor

Cindy Adams Dunn, Secretary

Preface

Dear Pennsylvania Forest Stakeholder,

Pennsylvania's forests provide us with many critical values and services including clean water, places for recreation, plant and wildlife habitat, and a beautiful landscape. Additionally, our forests are sources of wood and raw materials used to produce an array of valuable consumer products including hardwood furniture, kitchen cabinets, hardwood flooring, high-quality papers, pallets and packing materials, landscaping mulch, and firewood.

Currently, Pennsylvania is home to more than 2,100 forest product establishments that employ approximately 58,000 Pennsylvanians. The forest product industry has a presence in every county of the Commonwealth. In 2012, the state's wood industry had roughly $11.5 billion in sales and an overall total economic impact estimated at $19 billion contributed to the state's economy.

While economic information is generally available, data on timber harvested and processed by Pennsylvania facilities is lacking. Many states, in cooperation with the US Forest Service, routinely collect information, commonly referred to as a "Timber Product Output" survey. The PA Bureau of Forestry last conducted such a survey in 2013. In cooperation with our partners, we conducted our second Timber Product Output survey in 2017. Understanding current harvest levels, tree species harvested, and other information on timber market dynamics is important to sustaining both our forests and the forest products industry.

In addition to collecting data and reporting on the timber market, one of our objectives was to strengthen our relationships with our forest industry partners. This effort gave DCNR foresters the opportunity to interact with forest product companies and communicate on common interests.

This report reflects a large investment of time and energy and we are pleased with the results. We would like to thank all the businesses for participating. Total volume reported is 146 million cubic feet, equivalent to 924 million board feet of lumber. These numbers are consistent with industry experts' anecdotal estimates. While there are gaps and many lessons learned, this report provides a good snapshot of the industry and gives us a baseline for future work.

This effort would not have been successful without the steadfast work of our foresters and cooperation of the 203 businesses that participated—thank you for your support and assistance!

I hope you find this report useful and informative.

Sincerely,

Ellen M. Shultzabarger
Pennsylvania State Forester

Acknowledgements & Partners

The Bureau of Forestry sincerely thanks all the businesses that shared information for this Timber Product Output Survey.

Additional thanks go to:

- The PA Forest Products Association, PA Hardwoods Development Council, and Pennsylvania Sustainable Forestry Initiative Implementation Committee for their contribution and guidance.
- The DCNR, Bureau of Forestry foresters who provided advice on the survey process, helped to compile the facility lists, and visited the businesses to gather the data.

Pennsylvania Primary Wood Processors Directory

In addition to this report, we compiled a directory of primary wood processors in Pennsylvania, which can be obtained on the DCNR website or by contacting the Silviculture Section of the Bureau of Forestry (contact information below). Thank you to all the companies that provided information.

Future Participation & Feedback

Other primary wood processing facilities are encouraged to participate in these Timber Product Output Surveys. The Bureau of Forestry plans to conduct TPO surveys every three years. If a facility was not contacted in 2017 and would like to participate in the next survey, or if other suggestions can be made to improve information gathering or this report, please send contact information and suggestions to the Bureau's Silviculture Section.

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Executive Summary

INTRODUCTION

The Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry (BOF, along with its partners, led an effort to gain information that reflects the current characteristics of the wood products industry in the state. In 2017, the Bureau of Forestry conducted a Timber Product Output (TPO) survey among Pennsylvania's primary wood processing facilities, collecting information from the 2016 production year. The last survey of this type was conducted in 2013 and used the Drop-Off/Pick-Up method, in which the forester left the questionnaire with a manager or contact person at each facility. This provided the foresters the opportunity to interact with the mills, but the managers were free to fill out the questionnaire at their convenience, with the forester available as a contact for questions. Although more time is required to hand-deliver the surveys, this method typically leads to a greater response. In 2017 the foresters again used the drop off /pick up method along with mailing the surveys to known facilities. The TPO surveys provide volumes, species, uses, products and origins of the wood harvested and processed in PA, as well as information about the facilities operating in PA (employment, age, functions, etc.). One of the key points of the survey is to provide an opportunity for BOF foresters to interact directly with the private facilities located in their districts and enhance vital professional relationships. Information gathered from these surveys can be used by land owners, wood-processing businesses, and other interested parties to plan and adapt to the needs and current condition of the market. In addition, the data collected from such surveys contributes to broader datasets that can be used in long-term trend analysis and assessments of regional dynamics.

Objectives

1. Develop and maintain a directory of mills
2. Collect and report basic timber product information
3. Build a foundation to better understand timber market dynamics
4. Strengthen relationships with the forest products industry

Survey Methods

The BOF maintains a list of known primary wood-processing facilities in Pennsylvania. A primary wood products facility is defined to be one that processes the bole of a tree to produce a product or exported logs outside of the U.S. (Companies that cut trees and delivered them to another facility for processing were not included in this survey.) In January 2017 foresters began to contact facilities and started to distribute the surveys and gathered information on additional facilities that should be surveyed in the area. Information was provided by the facilities with the understanding that any information provided (besides contact information) would not be associated with the specific facility from which it was collected.

Data Analysis

This report represents a summary of the information collected in the survey and comparisons of the 2012 data. The reported values were converted to standard units and summarized, as appropriate, across different product types, origins, species, and region of processing. No extrapolations were made to estimate values for non-respondents. Therefore, there is a variable sample size for each summary statistic, since each facility reported different degrees of detail. Many more analyses could be conducted for more in- depth look at the dynamics of the industry in Pennsylvania; however, the purpose of this report is to give a broad overview of survey findings and to determine modifications needed, as the PA TPO survey becomes a recurrent data collection tool.

RESULTS

Participation & Facility information

Based on the lists of facilities compiled by the Bureau of Forestry, 418 facilities were identified to be surveyed across 62 of the 67 counties in PA. Of those, 203 facilities participated in the survey to some extent. The level of detail was variable: some facilities provided their volumes by species and harvest location for the timber for each section of the survey, while others provided only basic business/contact information and the total annual capacity of their facility. In general, most participants provided information about their functions, number of employees, and number of years in business. Because of the variability in amount of detail provided among surveys, the number of facilities contributing to each summary value is given.

Key points & findings include:

- Statewide participation rate was 49%. Some follow-up contacts were required.
- Most facilities are located in the north-central and south-central regions.
- There was a 10% increase in facilities reporting facilities function as Sawmill.
- Half of the facilities surveyed have been in business between 11 and 40 years. A quarter have been in business less than 10 years. Two facilities have been in business over 100 years.
- Most mills performed lumber/dimension processing (sawmill), other miscellaneous functions and international exporting.
- The majority (61%) of the facilities employed between 1 and 10 workers; 16 facilities reported more than 75 employees. A total of 4,655 workers were reported at 192 facilities.

Volumes Processed

The survey was divided into 4 main sections, representing 4 types of volumes: Lumber/Dimension, Pulp/Chips, internationally exported logs, and residues. As previously mentioned, response rate and level of detail provided were variable across survey sections. There were 203 mills that provided volume by type for some section (no single section had 203 responses). These data can be used within the state, as well as at a regional level.

Key points & findings:

- Total volume processed at the 203 facilities that reported volumes is 146 million cubic feet (equivalent to 924 million board feet). This total is comprised of Lumber/Dimension, international exports, and Pulp/Chips: for Lumber/Dimension, 612.7 million board feet was reported for 2016; 38 million board feet of logs exported out of the U.S.; and 1.3 million green tons of pulp/chips. Based on knowledge of the industry and other published data, we estimate that non-respondents account for about 39% of the statewide volume. Therefore, these totals represent about 60% of the total volumes statewide.

- Volumes were also summarized into additional categories within the three major product types (Lumber/Dimension, Pulp/Chips, and Exports). This revealed that lumber, cants, and pulp represent almost 80% of all volume processed in 2016

- Approximately 66% of the total volume reported was in Lumber/Dimension products and 30% processed into Pulp/Chips. The other 1% was Exported Logs. Refer to Table 5 on page 22 for a concise overview of total volumes by product type.

- There was a small production increase of Lumber/Dimension in 2016: 66.3% of the total processed volume compared to 2012: 54.6%. There was a large increase in Log Exports 2012: 1.3% of the volume was exported and in 2016: 4.1% was reported as exported. Pulp/Chip saw a significant decrease in the portion of total volume in 2012: 44.1% to 2016: 29.6%.

- Of the wood processed in Pennsylvania, 48% was processed in facilities located in the north central and south central regions.

Species & Origins

there tends to be a lack of detailed records on the origin (location where harvested) of logs being processed by facilities, and, in some cases, the species were not recorded (especially for volume used in pulpwood production). Although the numbers of reporting facilities is less for this level of detail in the survey, sufficient numbers of facilities reported these data to provide some insight into the flow of timber from a species and geographical perspective. Although we know what is explicitly reported, we did not extrapolate beyond raw data summaries. For example, red pine volume was only reported in one region; however, we cannot assume other regions had none, since there are species reporting categories for miscellaneous softwoods, as well as mixed pines.

Key points & findings:

- Thirty-five species groups were reported to have been harvested from PA forests based on mills reporting volumes by harvest locations and species (includes some conglomerate groups such as mixed softwood, mixed hardwoods, other). Thirty-three species groups were reported as processed in PA facilities during 2016, reported by 160 facilities that provided volumes by species. Red oak, mixed hardwoods, white oak, ash, red/soft maple, and yellow poplar are the six top species groups by volume statewide, respectively.
- Likely due to the emerald ash borer, ash had a noticeable rise in relative percentage and white oak ranked higher likely from the increasing demand for cooperage.
- The relative rank of 'Mixed Categories' (HW, Mixed SW, Other) decreased. These categories are most often utilized in Pulp/Chip processing. This tracks with the trend of decreasing processing in that product category.
- Approximately 48% of the wood volume that was reported as harvested from PA came from forests in north-central and south-central regions.
- 18% of the volume processed was from outside of PA (Unknown origin=8.4%), with volume from Maryland, West Virginia, New York, Virginia, New Jersey, Ohio, Hawaii, and Canada (based on 173 reporting facilities).

Residues

Residues are a by-product of the initial or primary processing of roundwood (e.g., sawdust, slabs, bark, log pieces, shavings). They are not the primary target wood product but are volume created as a result of other types of processing (i.e., chips can be the intended product, as well as a by-product; volume processed into chips as the primary product is reported in the pulp/chips section, not in residues). The types and end-uses of these residues are important, as they comprise a large volume of wood in the state and are widely utilized for a variety of products. Residues were reported as one of 5 types [bark, coarse (chips, slabs), sawdust, shavings, and logs/short sections] with 11 options for end-uses (including an open-ended "other" category).

Key points & findings:

- There were 2.0 million green tons (56.2 million cubic feet) of residues reported by 148 mills. Bark, coarse, and sawdust compose most of the residue volume at 39.1%, 33.1% and 26.3%, respectively. Smaller amounts came from shavings (0.7%) and logs/short sections (0.7%).
- Relative percentages of the residue types remained the same in both survey years. Lumber/ Dimension volume and residue volume changes were positively correlated, as expected.
- Shavings volumes decreased in Residues but increased in Volume Processed.
- Forty three percent of all residues were made into mulch/soil additive, with 78% of that volume coming from bark. Approximately 18% of the reported residues were used in the manufacture of fiber/composite products. Most shavings and sawdust were used for animal bedding and represent approximately 10% of the total residue. Residues used for bio-energy pellets comprise bark, coarse, sawdust, and shavings and are approximately 8% of the total residue volume. Less than .5% of the total residues produced were unutilized and either went to a landfill or burnt.

DISCUSSION & CONCLUSIONS

The 2016 survey participation rate was lower than 2013, but the survey still supplied quality data on the wood product industry. Previous TPO work has shown that it is difficult to maintain an accurate list of facilities still conducting business in Pennsylvania. The fluctuation in facilities operation and production caused some facilities not to be surveyed or said to be out of business. Even with all the hurdles that the foresters faced during the 2017 survey, a greater portion of the surveys were completed with more details in overall reporting, and species/origin of timber harvested. Now that the Bureau of Forestry has two different years of data sets, comparisons between 2012 and 2016 can provide more precise estimates as well as trends in the wood products industry.

This report gives some broad summary values to survey data requested and some comparisons to the 2012 survey. Information supplied in this report details production data from year 2016, collected from respondents in 2017. Therefore, information provided in the report regarding market trends, mill production, demand for varied products, and utility of various end products by species was focused solely in 2016 and should by no means be an indicator of current market factors. For example, the present-day export market compared to 2016 has slowed due to looming Chinese tariffs applied to imported wood. Facilities are currently reducing the number of containers exported to China until discussions about tariffs is finalized. During 2016 exports rose 3% from 2012, which demonstrates the increasing market of wood exports. The data does however show the continual market recovery of the primary wood product industry from past economic downturns. This is evident by analyzing certain market demand and production for specialized products from 2016, in comparison to the same noted in 2012. The current dataset may be analyzed and extrapolated to statewide values by modeling mill characteristics by size, region, primary function, etc. As well, data could be compared to other states or lumped into larger datasets across the region to assess forest conditions and trends.

With subsequent TPO data, it may be possible to conduct more specific regional, temporal, or economic trend analyses that reflect connections to other data or events (e.g. emerald ash borer salvage, growth vs. harvest, downturns in the industry following larger global economic trends). Continuation of TPO surveys in future years will strengthen the ability to procure and analyze data and paint an accurate picture of regional, county, and statewide demand for forest products and the impact of this industry on the Commonwealth economies and forest productivity.

Many details about data collection, communications, and analyses will be adapted and honed based on lessons learned during the 2017 PA TPO survey. Lessons learned range from how to deliver the survey, to more overarching alterations, like simplifying the survey form while still ensuring thorough production data are gathered. Results from this survey validate some of the anecdotal information about the industry, such as the overall volumes processed, top species processed, and general size of individual mills. Some interesting trends were also observed, such as the continued recovery of the market following the economic downturn as evidenced by the number of facilities in business for less than 10 years. Pulpwood markets were suppressed in 2016, but recent pulp and chip markets are on the rise. Another interesting trend was the increasing demand in the export market and how log buyers are procuring exported logs. With log buyers starting to buy direct from the log landing or logger, future volumes of exported logs may become difficult to survey. With repeated surveys, further trends will likely emerge, as well as additional validation of the industry conditions. As the process becomes streamlined and surveys are repeated, the strength of the TPO data will improve. The surveys will provide useful information for land managers and business owners that work within the timber product industry in Pennsylvania and the northeast region of the United States.

Key points & findings between the 2012 & 20106 survey include:

- Between 2012 and 2016 there was a 10% increase in Sawmilling function
- Export volume was up 3 times as much from 2012
- Log exports rose 3% from 2012
- In 2016 there was a 10% increase in Lumber/Dimension
- Ash had a noticeable rise in volume processed due to emerald ash borer.
- Relative percentage of white oak processed ranked higher in 2016 likely due to the increasing demand for cooperage.
- Residues as industrial fuels used at facility producing it is up 6.5% since 2012

Report

INTRODUCTION

The Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry conducted a TPO survey throughout 2017 to provide information on the amount of timber harvested and processed by Pennsylvania's primary wood processing industry during the 2016 production year. The survey also provides general information on employment force, mill size and other general characteristics of the forest products industry. It provides a picture of timber flow from Pennsylvania's forests through the primary forest products industry; it provides insight into timber market dynamics, and information that can be used to help understand the effects of economic growth and decline. This information gives wood-processing companies data on local demand for timber, which they can use in their business and procurement planning. It supplies landowners and other interested parties' data about potential market opportunities for their timber. Knowledge of the current production of the industry provides a useful assessment of the health, vigor and direction of Pennsylvania's forest products industry.

BOF foresters started with a list of primary wood processors and mills. They were asked to canvass the facilities in their assigned counties and locate any new facilities. Starting early in 2017, foresters began visiting sawmills and other facilities in their respected counties to conduct surveys and learn more about Pennsylvania's wood products industry. Over 415 facilities were contacted across 62 of Pennsylvania's 67 counties.

Objectives

1. Develop and maintain a directory of mills.
2. Collect and report basic timber product information.
3. Build a foundation to better understand timber market dynamics.
4. Strengthen relationships with the forest products industry.

Data Collection

- A primary wood products facility processes the bole of a tree to produce a product, whether that is a board, cant, chip, or sawdust. To be considered for the TPO Survey, the facility had to be located in Pennsylvania and produce a wood product from a log/tree bole or export logs out of the US. If the company cut down trees and simply delivered them to another mill or log broker in PA or another state, they were not part of this Timber Product Output Survey; however, facilities that exported logs to another country were included.

- BOF foresters used the Drop-Off/Pick-Up survey method along with mailing surveys to gather data for Pennsylvania's TPO survey. The self-administered questionnaires were hand- delivered and retrieved, which helps to reduce coverage error associated with mail surveys and at lower cost than face-to-face interviews.

- This survey method's strengths are convenience, greater response rate than with mail surveys alone, and relationship building. Respondents answer the survey at their own convenience. Because the interviewer makes personal contact with respondents, explains the importance of the survey, and answers any questions or concerns the respondent might have, there are higher response rates than with mail surveys alone. The drop-off survey helps to establish or develop professional relationships with the respondents.

- The sampling frame for the TPO Survey in all Pennsylvania counties was all primary "breakdown" sawmills and wood processors, whole-tree chippers, pulp & paper mills, panelboard mills, and log buyers exporting wood outside the U.S. BOF foresters had local knowledge about facility locations in their respective counties. Before going to the field to begin the survey, each forester had a list of known facilities from utilizing the facility list from 2012, institutional knowledge, timber sale bidder's lists, and other directories and cooperators.

- The foresters called ahead to arrange a facility visit. At the facility, they asked to speak with the owner or manager. They explained the survey was designed to gather data for the PA Timber Product Output Survey for the 2016 production year. They left the survey form with the manager/owner and generally returned a week later to pick-up the completed survey. They completed a survey tracking form to record details of their visits. Foresters could adjust this method to accommodate specific needs, and some found it more effective to assist with the survey completion in-person, so that questions could be addressed if there was confusion with the survey form.

Data Conversions

- All board feet units in this report have been standardized to International ¼-inch rule by applying the conversions in Table 1.

- Pulp/Chips totals have been converted from reported units to green tons (Table 1).

- Totals that compare lumber, pulpwood, and residues have been standardized to cubic feet (Table 1), unless industry standard dictated the use of another unit.

Table 1. Conversion factors used in this document. Unless otherwise indicated, all conversions are based on Piva & Treiman 2000*.

Reported Unit	Conversion equivalency
1 Cubic foot	=6.33 bd ft(1/4-inch international standard)
1 Bd Ft Doyle (Lumber)	=1.38 bd ft(1/4-inch international standard)
1 Bd Ft Doyle (Veneer)	=1.14 bd ft(1/4-inch international standard)
1 Bd Ft Scribner (Lumber)	=1.08 bd ft(1/4-inch international standard)
1 Bd Ft Scribner (Veneer)	=1.04 bd ft(1/4-inch international standard)
1 Green Ton	=217.4 bd ft(1/4-inch international standard)
1 Standard cord	=500 bd ft(1/4-inch international standard)
1 Billet**	=0.15 bd ft(1/4-inch international standard)
1 linear foot (log siding) ***	=1.19 bd ft(1/4-inch international standard)
1 Dry Ton****	=434.8 bd ft(1/4-inch international standard)
1 Piece	=7.9 cubic feet
1 Cord	=79 cubic feet
1 Green ton	=32.92 cubic feet
1 Dry ton****	=65.84 cubic feet
1 Linear ft (log siding) ***	=0.1875 cubic feet
1 Cord	=2.4 green tons
1 Dry ton****	=2 green tons
1 cubic foot	=0.0304 green tons

*Piva, R. J., & Treiman, T. B. (2000). Missouri Timber Industry-An Assessment of Timber Product Output and Use. Agriculture, USD o., Ed. North Central Research Station.

**=1 billet=2.5lb=0.00125tons=0.15bd ft (M. Palko, PA DCNR BOF)

***=assume siding is 9 inches wide by 3 inches thick: (0.75ft)*(0.25ft)*(reported linear feet)=cubic ft; so, 1 linear ft=0.1875 cubic feet=1.19 bd ft (M. Palko, PA DCNR BOF)

****=assuming water content is 50% on average, dry tons would be about twice as much volume as green tons.

DATA ANALYSIS & RESULTS

For ease of understanding, the results have been divided into four general categories:

1. Participation & Facility information: summarizes the survey participation and level of detail provided by respondents, as well as the general information about the facility (from page 1 of the survey; see Appendix 2).

2. Volumes Processed: provides total volumes of wood processed for various products statewide and by region.

3. Species & Origins: characterizes the processed wood by species and where the wood was harvested.

4. Residues: summarizes the amount, types and end uses of the residues produced as by-products from primary processing of the timber

Participation & Facility Information

- Figure 1 provides a map of Pennsylvania that displays counties grouped into regions used in this analysis. Regions were delineated based on conventions used by the USDA Forest Service during their inventory and analysis of Pennsylvania's forest resources. Counties were grouped into northwest, southwest, north central, south central, northeast and southeast regions of the state.

- Of the facilities originally identified to canvass, 418 facilities were found to be in business during the survey. Of those, 203 facilities provided information for an overall participation rate of 49% statewide.

- Most data was collected using the Drop-Off/Pick-Up method discussed previously. Some supplemental information was obtained via phone calls to the mills that had not returned a completed survey.

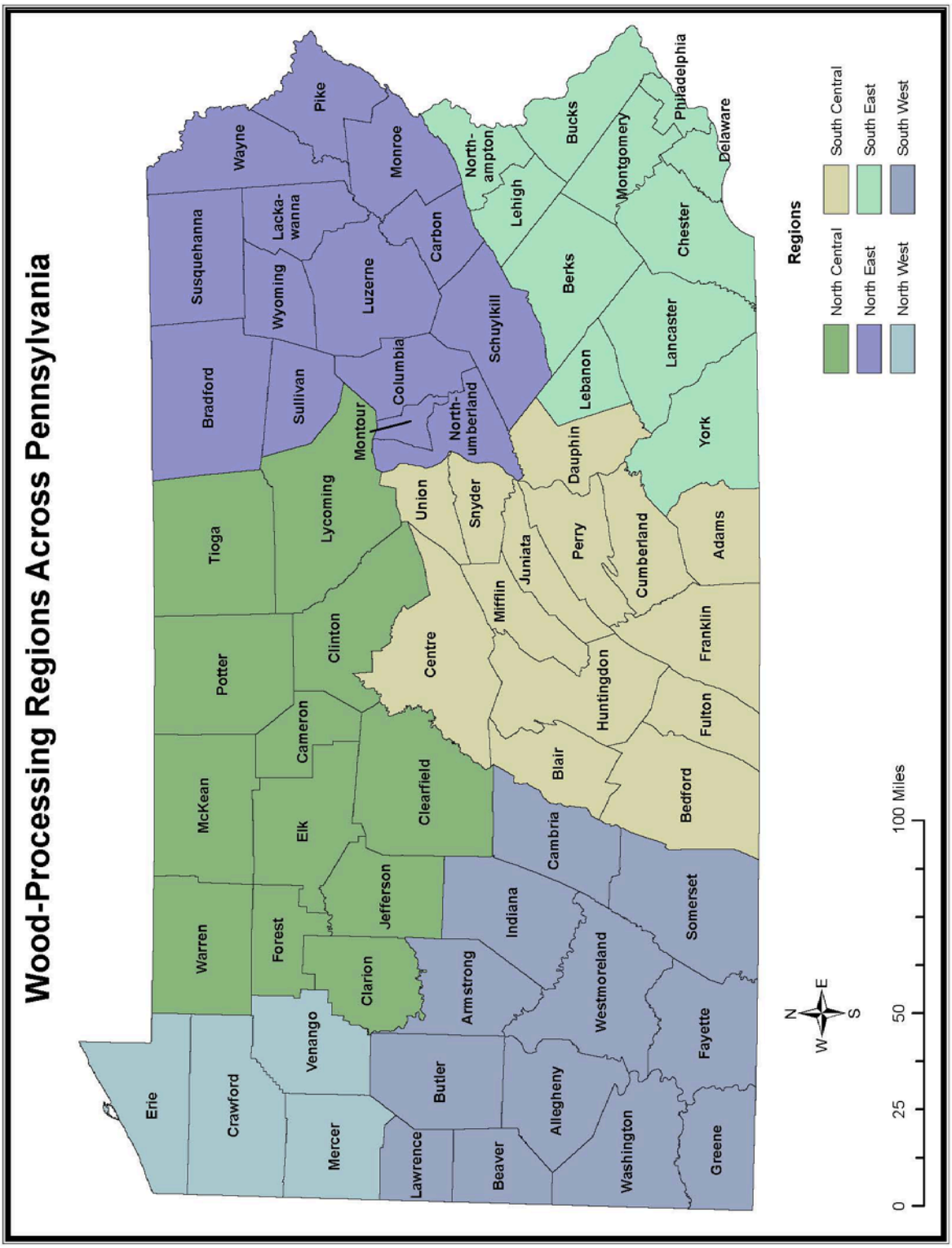


Figure 1 – Map of PA by regions and counties.

- The summaries represent the data provided by survey participants only. No extrapolations have been made to approximate statewide totals or estimate volumes for the non-respondents.
- The level of detail provided by each participant varied considerably. Some participants provided only basic information about their facility, others provided volumes by type of product, and some fully detailed their volumes by species and harvest location of the wood. Table 2 outlines the number of mills reporting for each level of detail within each section of the survey (see Appendix 2 to see the survey form). Because of this variability, captions for each figure provide the number of surveys upon which each summary is based.
- An example of variability of reporting detail: the statewide total volume processed by species is 130.1 million cubic feet (Table A15); however, the statewide total volume processed is 146 million cubic feet. The difference occurs because some participants gave a level of detail that included a volume by species breakdown, while others only gave total volume by type of product (which would only be included in the overall total, but not the total for the species breakdown).
- For reference, a blank survey can be found in Appendix 2.

Table 2 - Number of participants reporting volumes in each of the survey sections.

Survey Section	Number of mills reporting volumes	Number of mills reporting species & origin of materials (subsection 2)
Section 1: Lumber/Dimension	170	160
Section 2: Pulp/Chips	31	25
Section 3: Exports	28	27
Section 4: Residues	148	125

- The 2016 survey had fewer participants, but a greater portion of the surveys had more details in overall reporting, and species/origin of timber harvested.

- Table 3 lists each Pennsylvania region and the number of counties, survey participants, known facilities/mills, and the percent participation rate for each region. Note that the regions with the highest known number of facilities/mills are the north-central (102 facilities) and south-central (149 facilities) regions.

Table 3 – Summary of counties, participants, number of wood-processing facilities, and participation rate for each of the 6 regions of Pennsylvania.

Region	Counties	Participants	Known Facilities	Participation Rate (%)
NW	4	6	31	19%
SW	12	14	41	34%
NC	12	43	102	42%
SC	14	103	149	69%
NE	14	18	58	31%
SE	11	19	37	51%
Statewide	67	203	418	49%

- Of the 188 facilities that provided establishment dates, over a quarter have been in business less than 10 years; two facilities have been in business over 100 years (Table4).

Table 4 – Age of wood-processing facilities in Pennsylvania in 10-year increments, based on responses from the 2012 and the 2016 surveys.

Yrs in business	2012		2016	
	Number of Mills	Percentage of mills	Number of Mills	Percentage of mills
0-10	57	24%	51	27%
11-20	42	18%	30	16%
21-30	45	19%	35	19%
31-40	31	13%	29	15%
41-50	20	8%	16	9%
51-60	16	7%	10	5%
61-70	12	5%	6	3%
71-80	5	2%	5	3%
81-90	4	2%	3	2%
91-100	2	1%	1	1%
>100	4	2%	2	1%
Total	**238**	**100%**	**188**	**100%**

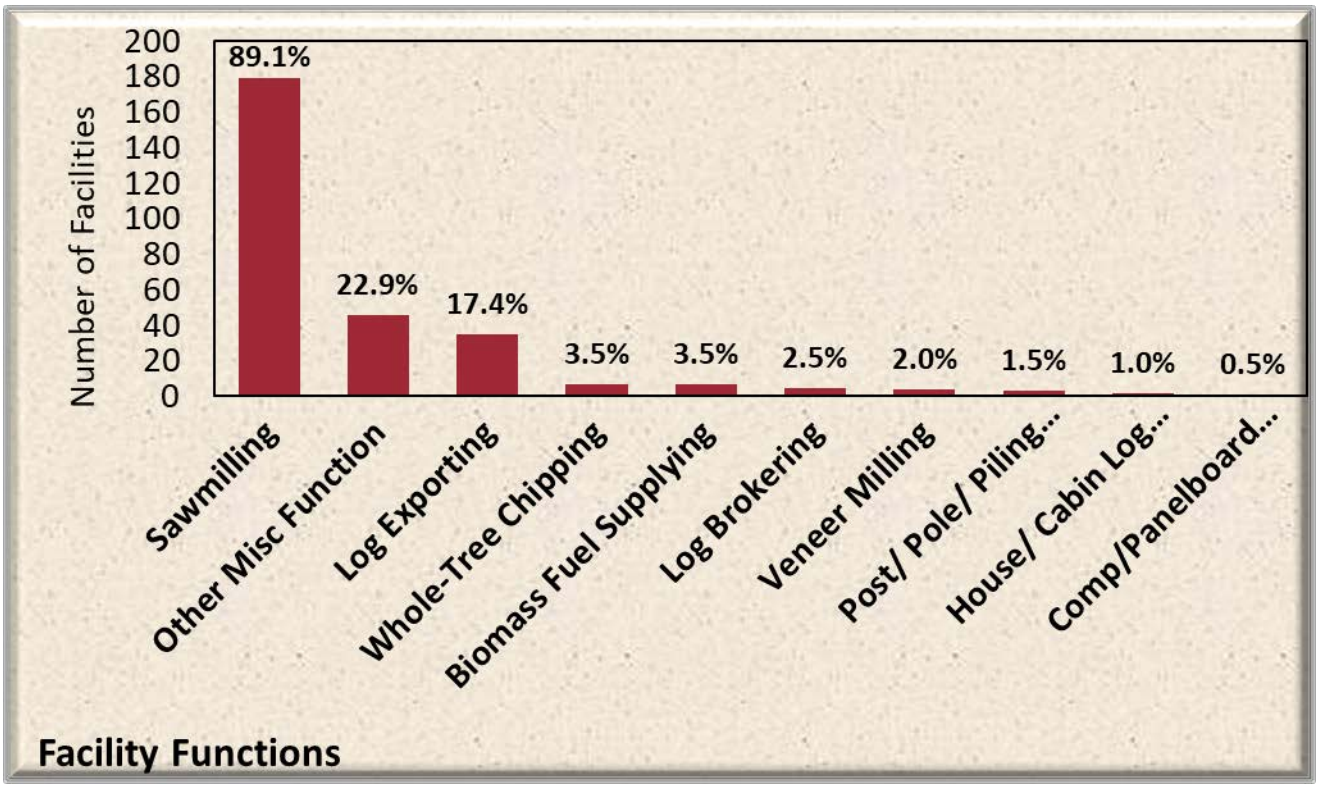
- The 2016 data was similar to 2012 to suggest we have a representative sample of statewide trend

- There were ten main function categories identified by a primary wood-processor (Figure 2). Participants indicated all functions used in their facility. **Some facilities were counted in more than one category, since a mill may have multiple functions.** The percentages in Figure 2 represent the total number of mills of that type relative to the total number of surveyed mills.

- Participants were engaged in various activities and were multifaceted (Figure 2). The number of mills performing each function were:
  - Sawmilling = 179
  - Exporting Logs (out of U.S.) = 35
  - Whole-tree chipping = 7
  - Fuel wood supplying = 7
  - Log brokering = 5
  - Composite/panelboard manufacturing = 1
  - Veneer milling = 4
  - House/cabin log manufacturing = 2
  - Posts-poles-piling manufacturing = 3
  - Other miscellaneous function = 46

- Examples of miscellaneous manufacturers included pulp & paper mills, planing mills, firewood processers, live edge mills, handle blank mills, cooperages, pallet mills, scragg mills, dimension/component mills, mulch manufacturers, and shavings mills.

Figure 2– Distribution of facilities/mills by their functions, based on 203 surveys.

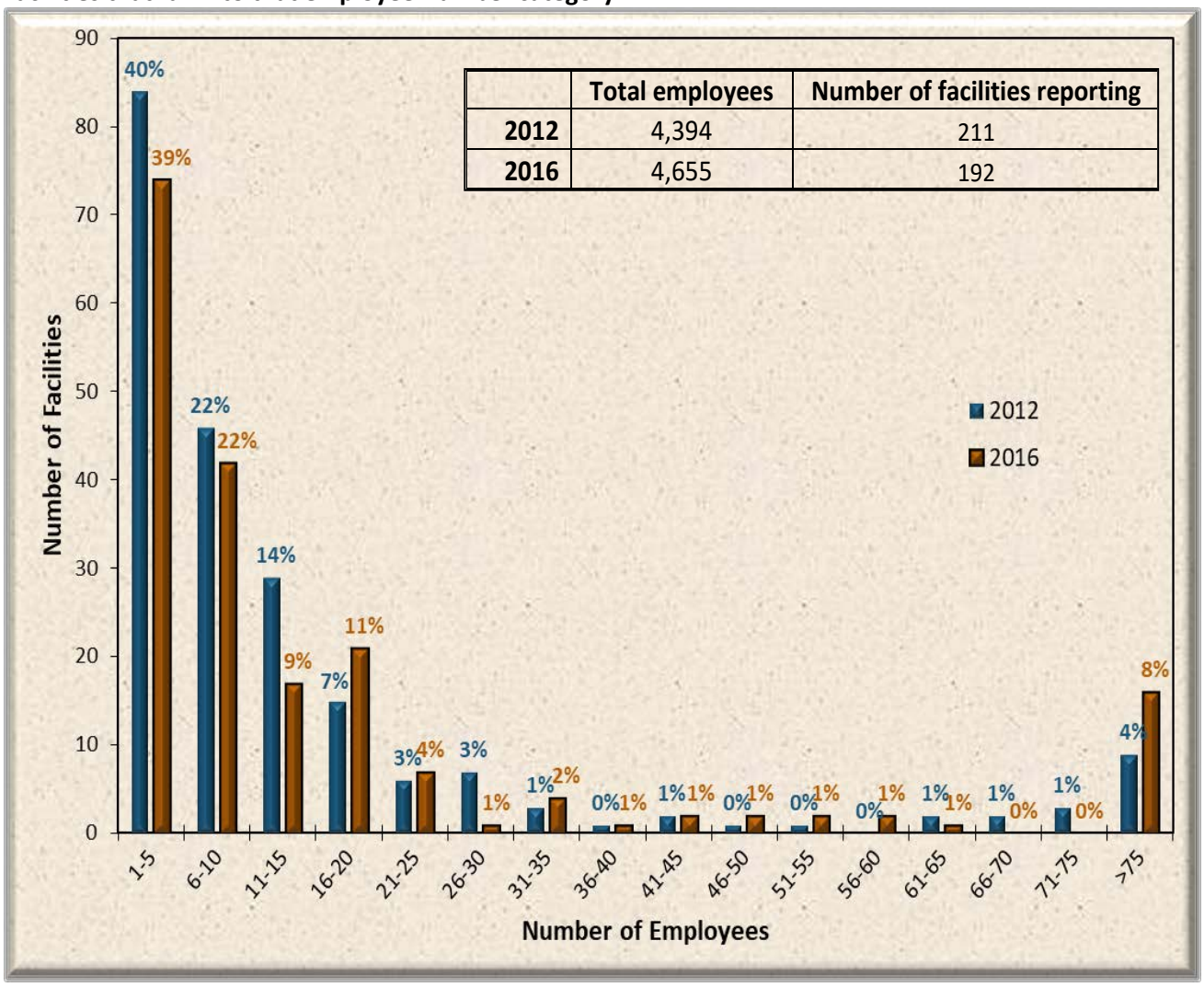


- There was a 10% increase in the Sawmilling function from 2012. This reflects the upward trend of the market and as expected more facilities focused on sawing.

- Of the 203 facilities that participated in the TPO survey, 192 facilities reported total number of employees (Figure 3). There were 4,655 employees at those 192 facilities. Seventy-four facilities reported employing between 1 to 5 employees, 42 mills reported employing 6 to 10 employees, 17 reported employing 11 to 15 employees, and 21 reported employing 16 to 20 employees; however, 16 facilities reported employing more than 75 employees.

- For the 116 facilities that reported the number of employees in both the 2012 and 2016 surveys: 32 mills lost between 1 and 28 employees. This resulted in a total of 185 positions lost. 32 mills rate of employment remained unchanged. 51 mills gained between 1 and 150 employees. This resulted in a total of 441 gained positions. There was a net gain of 256 positions for the 116 facilities that reported employment numbers.

Figure 3 – Distribution of wood-processing facilities based on total number of employees per facility. 211 facilities provided this information in 2012 and 192 facilities in 2016. Bars are labeled with percentage of facilities that fall into that employee-number category



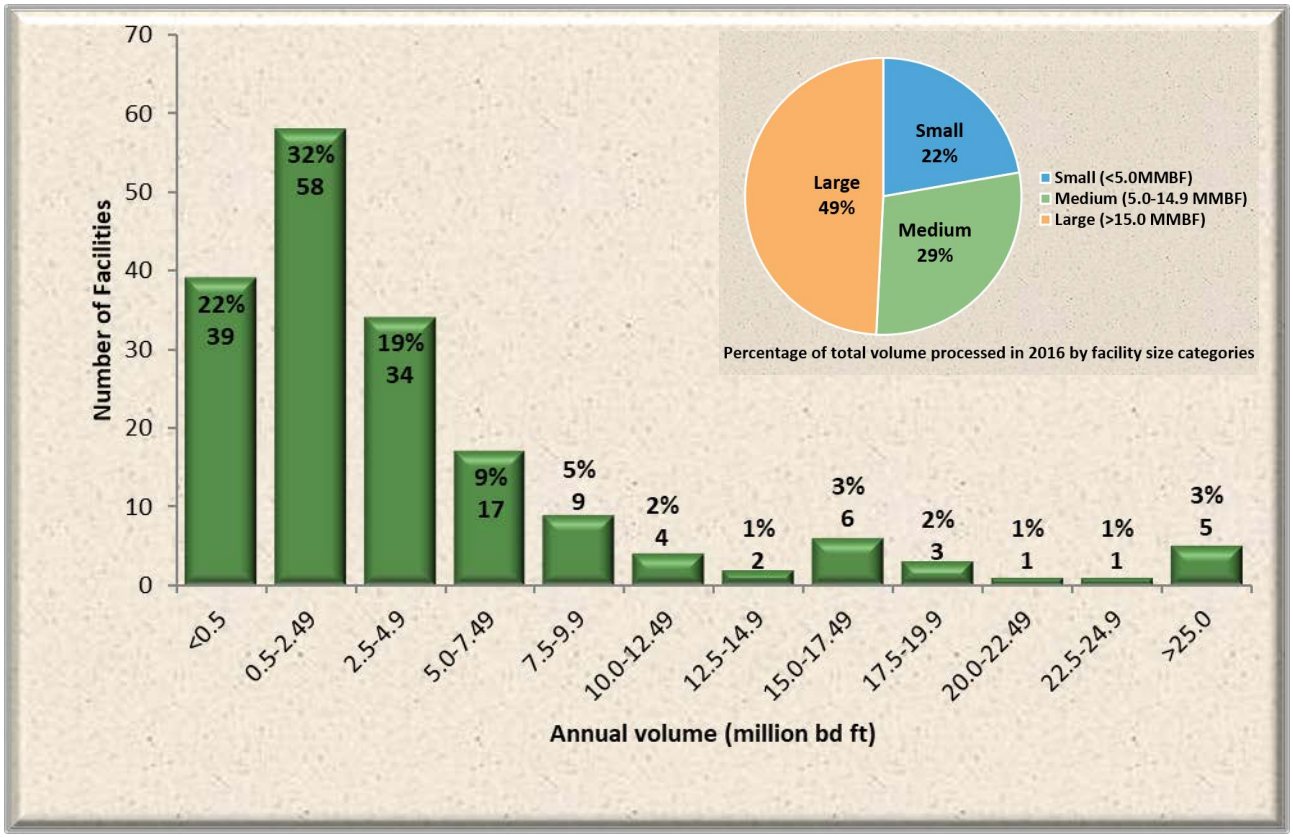


Figure 4 – Distribution of wood-processing facilities by size, based on volume processed in 2016 at 179 facilities that provided volume data (does not include exported logs). Bars are labeled with the number of facilities and percentage of total facilities in each category.

- Total volume processed was standardized to board feet, even for Pulp/Chips volumes, since mill size is typically characterized using board feet. Conversion factors from Table 1 were applied to convert green tons and cubic feet to board feet for this summary.

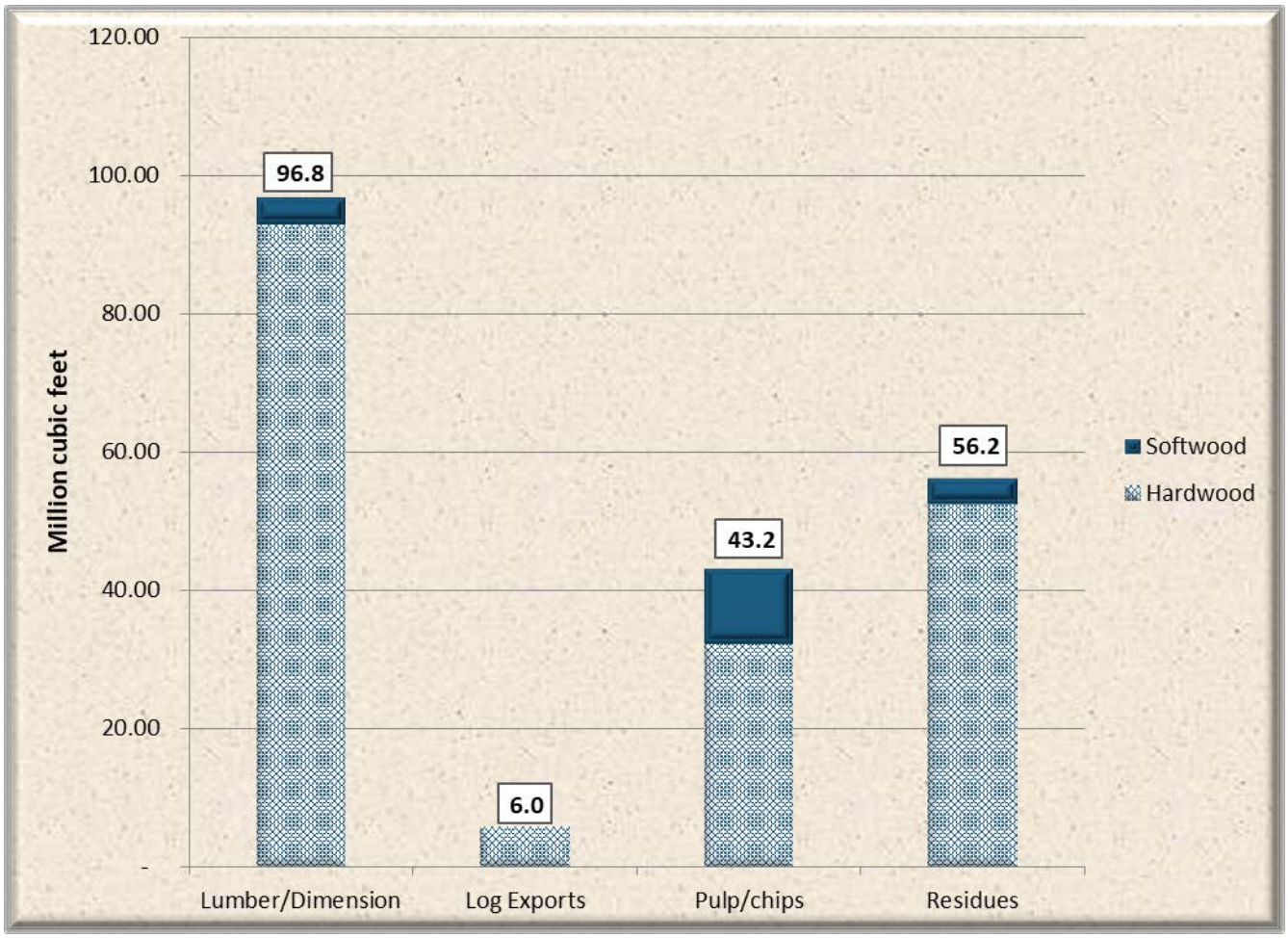
- Based on 179 mills that provided volumes processed for Lumber/Dimension and/or Pulp/Chips (Figure 4):
  - Twenty-two percent of the mills reported annual volumes of less than 0.5 million bd ft (500,000 bd ft) in 2016.
  - Seventy-three percent of the mills process less than 5 million bd ft of Lumber/Dimension and Pulp/Chips each year.
  - The average annual volume processed at these 186 mills was 9.2 million bd ft, with a minimum of 0.001 million bd ft (1,000 bd ft) and a maximum of 117 million bd ft (median=2.0 million bd ft).
  - 32 facilities reported producing firewood. 22 of the facilities produced less than 500 cords per year. 8 produced 500-1,500 cords per year and 2 producers reported production of more than 1,500 cords.

Volumes Processed

- The 2016 Timber Product Output Survey addressed **four product types** and gathered the following product volume data from each reporting facility:
    - volume of roundwood/logs processed into Lumber/Dimension and the percentage of that volume by species and by county, state or country where harvested
    - volume of roundwood/logs processed into Pulp/Chips and the percentage of that volume by species and by county, state or country where harvested
    - volume of roundwood/logs Exported out of the U.S. including Canada and the percentage of that volume by species and by county, state or country where harvested
    - volume of Residues produced and how it was utilized

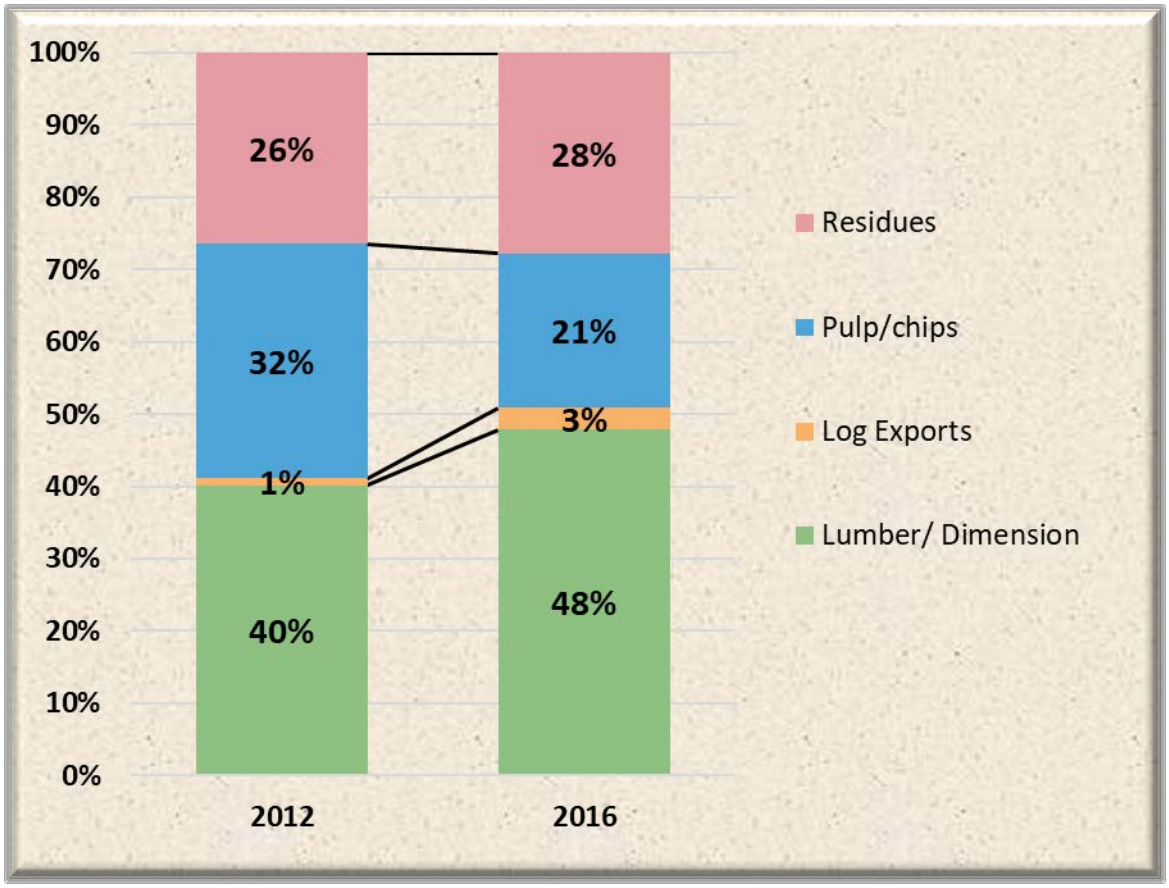
Figure 5 depicts total statewide volumes processed by product type in million cubic feet; 186 mills reported volume by product type as well as softwood & hardwood component.

Figure 5 – Total volumes processed by product type in million cubic feet (MM ft3); based on reported volumes from 186 wood-processing facilities that provided volumes in any of these 4 categories (each category has n<186; see Table 2).



- Total reported volume processed equals 146 million cubic feet (equivalent to 924 million board feet). Based on knowledge of the industry and other published data, we estimate that non- respondents account for about 39% of the statewide volume. Therefore, these totals represent about 61% of the total volume statewide.
- The total volume processed into Pulp/Chip does not include any material reported in the Residues Section of the survey. These were defined and reported as different materials. Residues are defined as by-products resulting from the initial processing of roundwood (e.g. slabs, sawdust, bark, log pieces/cut-offs). Residue volume was 56.2 million cubic feet (equivalent to 356 million board feet).

Figure 6 - Percentage of total volume for each product category for 2012 and 2016 surveys. Note: these are the relative percentages for the different categories and an increase since 2012 does not necessarily imply an increase in volume, as the survey sample size is different between the 2 years. For absolute volume of each, see Figure 5 and Table 5.



- Export volume was up 3 times as much from 2012 showing export markets were growing and the market was trending upward.

- The ratio of softwood to hardwood is lower in pulpwood and residues. As seen in the decrease portion of Pulp/Chip in the statewide volume.

- Table 5 presents total volumes processed by species group and product type reported by 186 mills. The last column provides all totals converted to millions of cubic feet. **Table 5 does not include the product "Residues" depicted in Figure 5. Those totals are presented in the Residues section.**

Table 5 –Total volume processed by species group and product type reported by 253 mills. See Table 2 for the distribution of mills reporting in each product type.

2016 Total volume processed by species group and product type						2012 n=253
	2016 Species Group			All Species Standardized to million cubic ft	Percentage of Total Volume	2012 Precentage of Total Volume
Product Type	Hardwood	Softwood	Total			
Lumber/Dimension						
Lumber	368.7	16.8	385.5	60.9	41.7%	36.40%
Veneer	16.1	<0.1	16.1	2.5	1.7%	1.10%
Cants	141.7	6.2	148.0	23.4	16.0%	13.0%
Other Lumber	54.2	1.4	55.6	8.8	6.0%	4.10%
Uncategorized Volume	7.5	0.0	7.5	1.2	0.8%	
Total	**588.2**	**24.5**	**612.7**	**96.8**	**66.3%**	**54.60%**
Exports						
Exported Logs	38.0	0.0	38.0	6.0	4.1%	1.3%
Total	**38.0**	**0.0**	**38.0**	**6.0**	**4.1%**	**1.3%**
	----------Million Green Tons--------					
Pulp/Chips						
Pulp	0.7	0.2	1.0	31.8	21.8%	39.90%
Composite Chips	0.1	<0.1	0.1	2.1	1.4%	1.30%
Energy Chips	<0.1	<0.1	0.1	2.0	1.4%	1.00%
Other Pulp/Chip	0.2	0.1	0.2	7.3	5.0%	1.90%
Total	**1.0**	**0.3**	**1.3**	**43.2**	**29.6%**	**44.10%**
2016 Total Volume processed for Lumber/Dimension, Exported logs, Pulp/Chips= **146MMCF**						**184.7MMCF**

- Total volume processed in 2016 for the Lumber/Dimension, Exported Logs, and Pulp/Chips product types totaled 146 million cubic feet for all species (Table 5).

- Lumber, cants, and pulp represent 79.5% of all volume processed in 2016. The volume of each product reported in Table 5 is represented as a percentage of the total 146 million cubic feet.

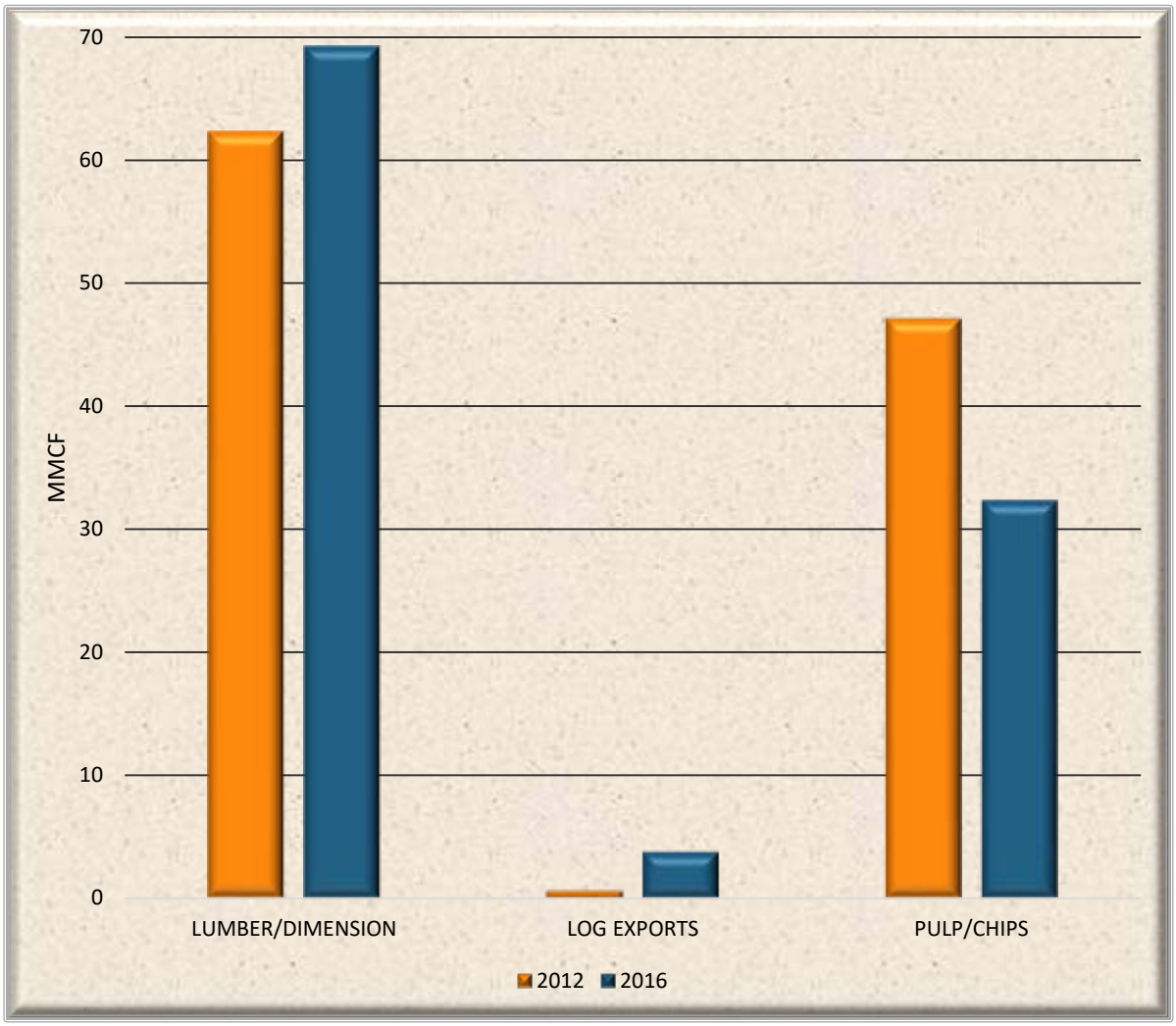
- The total processed volume reported for 2016 was 612.7 million board feet for Dimension; 38 million board feet for Exported Logs; and 1.3 million green tons for Pulp/Chips (Table 5).

- 2016 shows a 10% increase in Lumber/Dimension due to the rising lumber market.

- Log Exports rose 3% from 2012 which correlates with the increasing export market.

- Pulp/Chips volume fell nearly 15% between surveys. During the production year of 2016 the Pulp/Chip market was trending lower.

Figure 7 - Volume in million cubic feet (MM ft3) for ONLY those 119 wood-processing facilities who provided volumes in both 2012 and 2016.

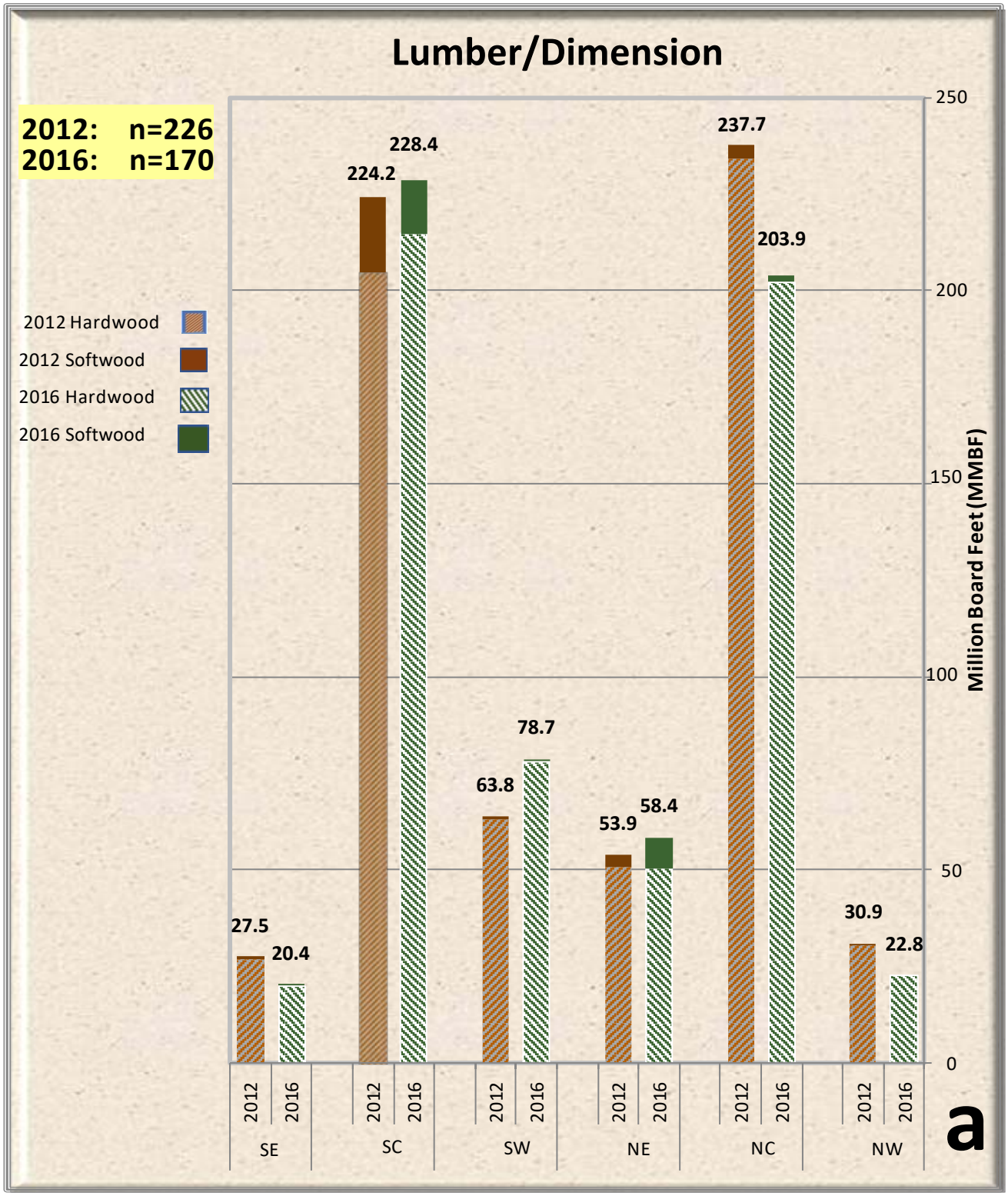


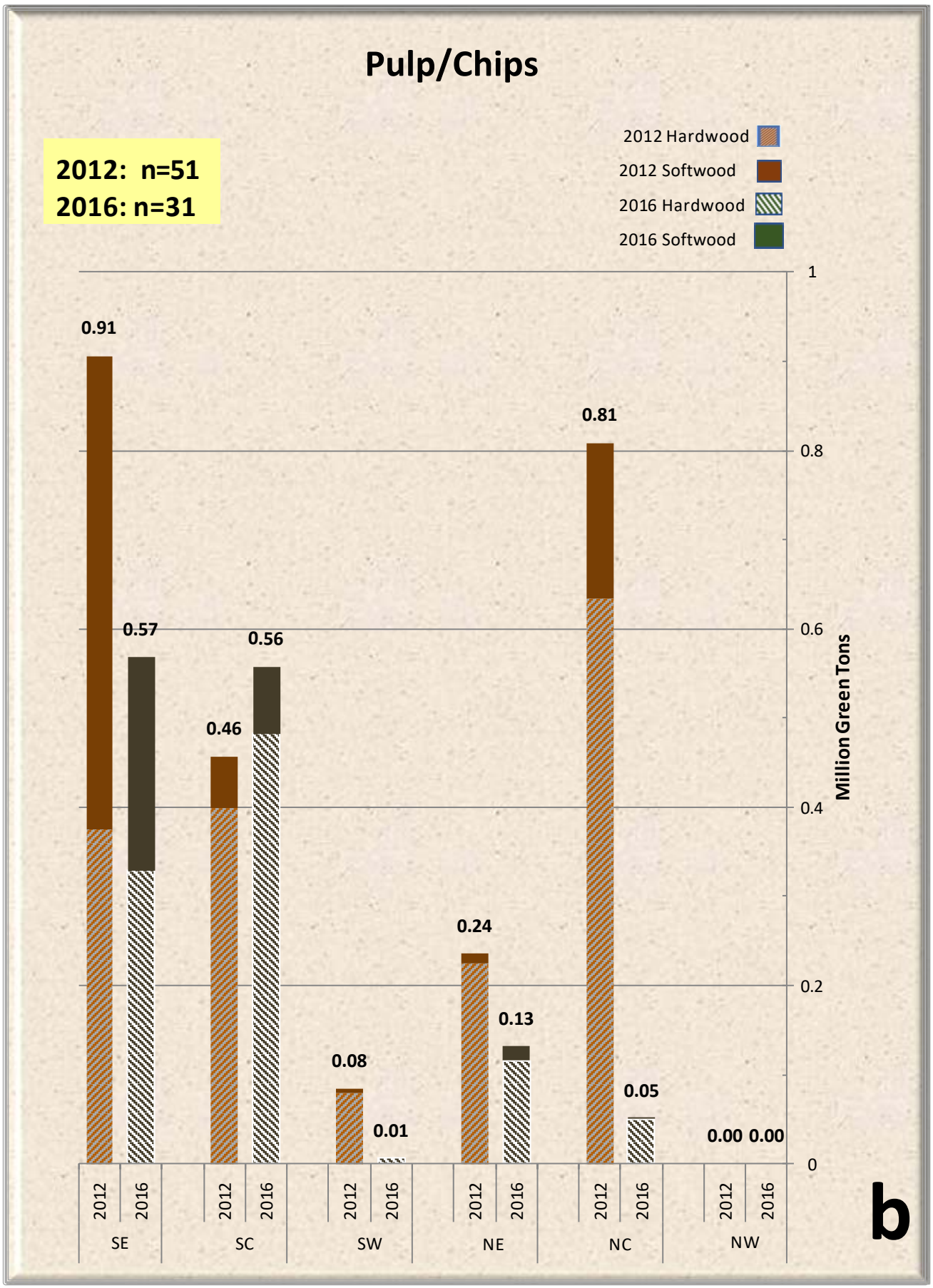
- To elimanate confusion due to different reporting responses and volumes from the two surveys. Volumes by catergory were compared for only facilities that participated in the 2012 and 2016 survey.

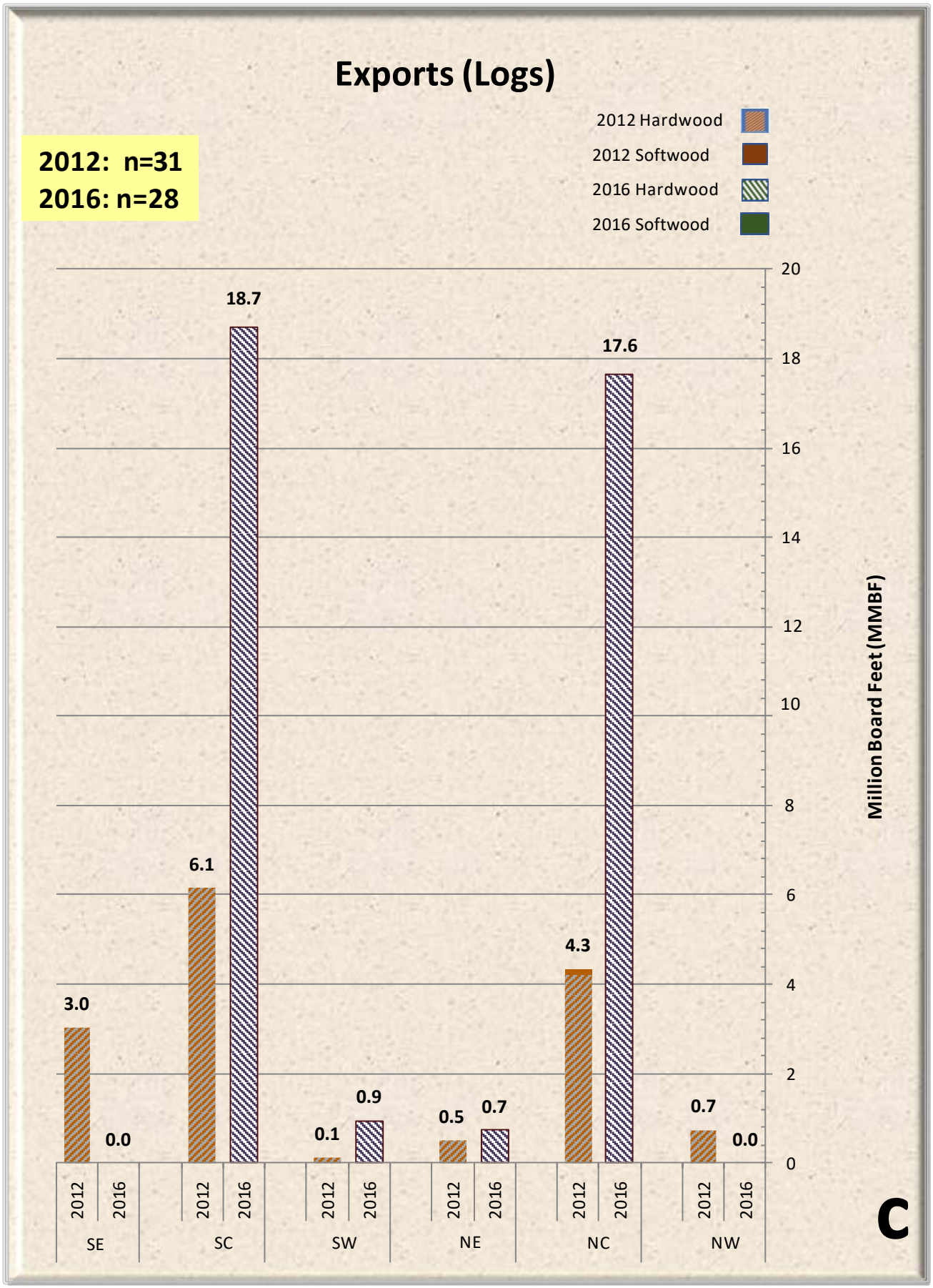
- Broad trends were consistent with overall volumes (see Table 5).

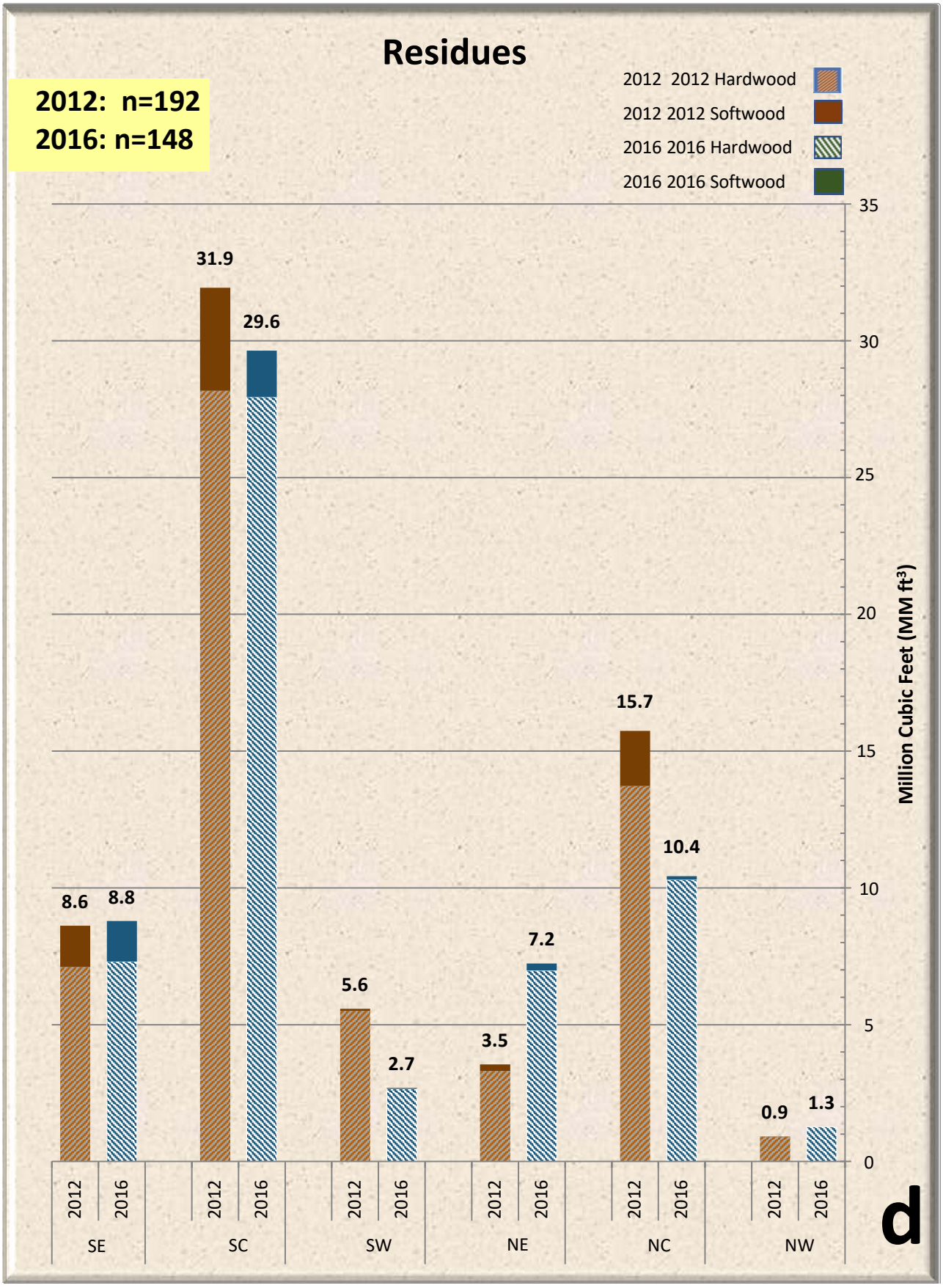
- The total volumes processed for each of the four product types shown in **Figure 5** are presented by region in **Figure 8**, with the following differences: Lumber/Dimension and Exported Logs are presented in million board feet and Pulp/Chips are presented in million greentons.

Figure 8 - Volumes by PA region where the wood-processing facility is located (i.e. where processed) for each product type: a) Lumber/Dimension; b) Pulp/Chips; c) Log Exports; d) Residues.




Pulp/Chips
2012: n=51
2016: n=31
2012 Hardwood
2012 Softwood
2016 Hardwood
2016 Softwood
Million Green Tons
1
0.8
0.6
0.4
0.2
0
0.91
0.57
0.46
0.56
0.08
0.01
0.24
0.13
0.81
0.05
0.00
0.00
2012
2016
SE
SC
SW
NE
NC
NW
b


Exports (Logs)
2012: n=31
2016: n=28
2012 Hardwood
2012 Softwood
2016 Hardwood
2016 Softwood
Million Board Feet (MMBF)
0
2
4
6
8
10
12
14
16
18
20
3.0
0.0
6.1
18.7
0.1
0.9
0.5
0.7
4.3
17.6
0.7
0.0
2012
2016
SE
SC
SW
NE
NC
NW
C


Residues
2012: n=192
2016: n=148
2012 2012 Hardwood
2012 2012 Softwood
2016 2016 Hardwood
2016 2016 Softwood
Million Cubic Feet (MM ft³)
35
30
25
20
15
10
5
0
8.6
8.8
31.9
29.6
5.6
2.7
3.5
7.2
15.7
10.4
0.9
1.3
2012
2016
SE
SC
SW
NE
NC
NW
d

- The only volume increase in Pulp/Chips was in the south central region.

- Pulp/Chips volume in north central region is significantly down from 2012.

- The greatest increase in export volume came from the south central region followed closely by the north central area.

Species and Origins

- During 2016, thirty-five species groups were reported as processed by facilities/mills in Pennsylvania (see Table A15 for the complete list of species and volumes).

- The total volume processed statewide was 146 million cubic feet (n= 186 mills); species information was reported for 130.2 million cubic feet of that (n=173 mills). These totals include volumes harvested from Pennsylvania's forests, as well as volumes imported from other states and countries.

- The 15 species groups with the highest reported volumes processed during 2012 and 2016 are in table 6 (see Table A15 in the appendix for a complete list of species groups and volumes):

Table 6 - Fifteen species groups with the highest reported volumes processed during 2012 and 2016. Mixed groups were combined as apporpriate for both 2012 and 2016. (see Table A15 in the appendix for a complete list of species groups and volumes):

2012			2016		
Species	Volume (million cubic ft)	Pct	Species	Volume (million cubic ft)	Pct
Mixed hardwoods	39.2	21.5%	Red oak	24.4	18.8%
Red oak	24.2	13.3%	Mixed hardwoods	18.2	14.0%
Mixed softwoods	23.3	12.7%	White oak	13.1	10.0%
Other misc. species	15.8	8.7%	Ash	12.7	9.7%
Red/soft maple	15	8.2%	Red/soft maple	12.3	9.4%
Black cherry	12.6	6.9%	Yellow poplar	10.3	7.9%
Yellow poplar	12.5	6.8%	Black cherry	10.1	7.8%
White oak	11.1	6.1%	Mixed softwoods	7.9	6.1%
Sugar/hard maple	9	4.9%	Sugar/hard maple	7.5	5.8%
Ash	6.6	3.6%	Chestnut/rock oak	2.5	1.9%
Hemlock	2.4	1.3%	Black oak	1.9	1.5%
Chestnut/rock oak	1.8	1.0%	Hemlock	1.9	1.5%
Hickory	1.7	0.9%	Hickory	1.9	1.4%
Black oak	1.7	0.9%	White pine	1.5	1.2%
White pine	1.1	0.6%	Black walnut	1.2	0.9%

- 2016 red oak volume surpassed mixed hardwoods as top species by volume following the increased market demand for red oak.

- Ash had a noticeable rise in relative percentage due to the emerald ash borer, white oak ranked higher likely from the increasing demand for cooperage.

- The relative rank of 'Mixed Categories' (HW, Mixed SW, Other) decreased. These categories are most often utilized in Pulp/Chips processing. This tracks with the trend of decreasing processing in that product category.

- Figure 9 illustrates the distribution of volume of wood harvested from all major sources as reported by 173 mills providing volumes by origin (where harvested). Approximately 83% of the volume reported by these facilities came from PA forests.

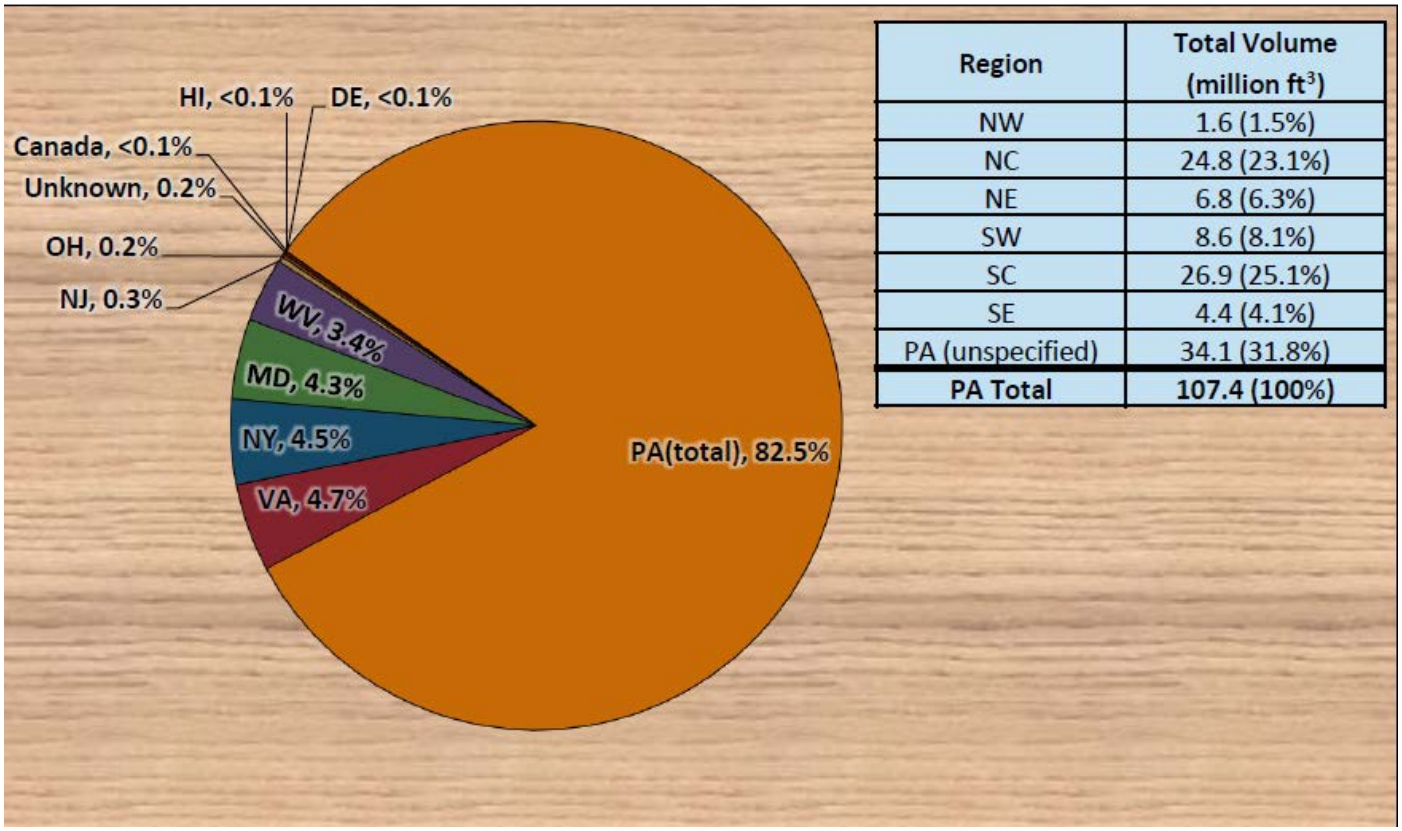
- Unknown sources accounted for 0.2% of total volume, with 4.3% of the volume from Maryland, 4.5% from New York, 4.7% from Virginia, and 3.4% from West Virginia. In addition, volumes came from New Jersey, Ohio, Delaware, Hawaii and Canada.

- The harvested volumes reported for PA are shown by regions in the inset table (Figure 7). Approximately 48% of the volume harvested from PA came from forests in the north central and south central regions (see also Figure 8 & Table A14).

- During 2016, 173 mills reported processing 35 species groups that were harvested from Pennsylvania's forests. For these mills, the total volume was 107.9 million cubic feet (Figure 7; see Table A14 for a complete species list and volumes).

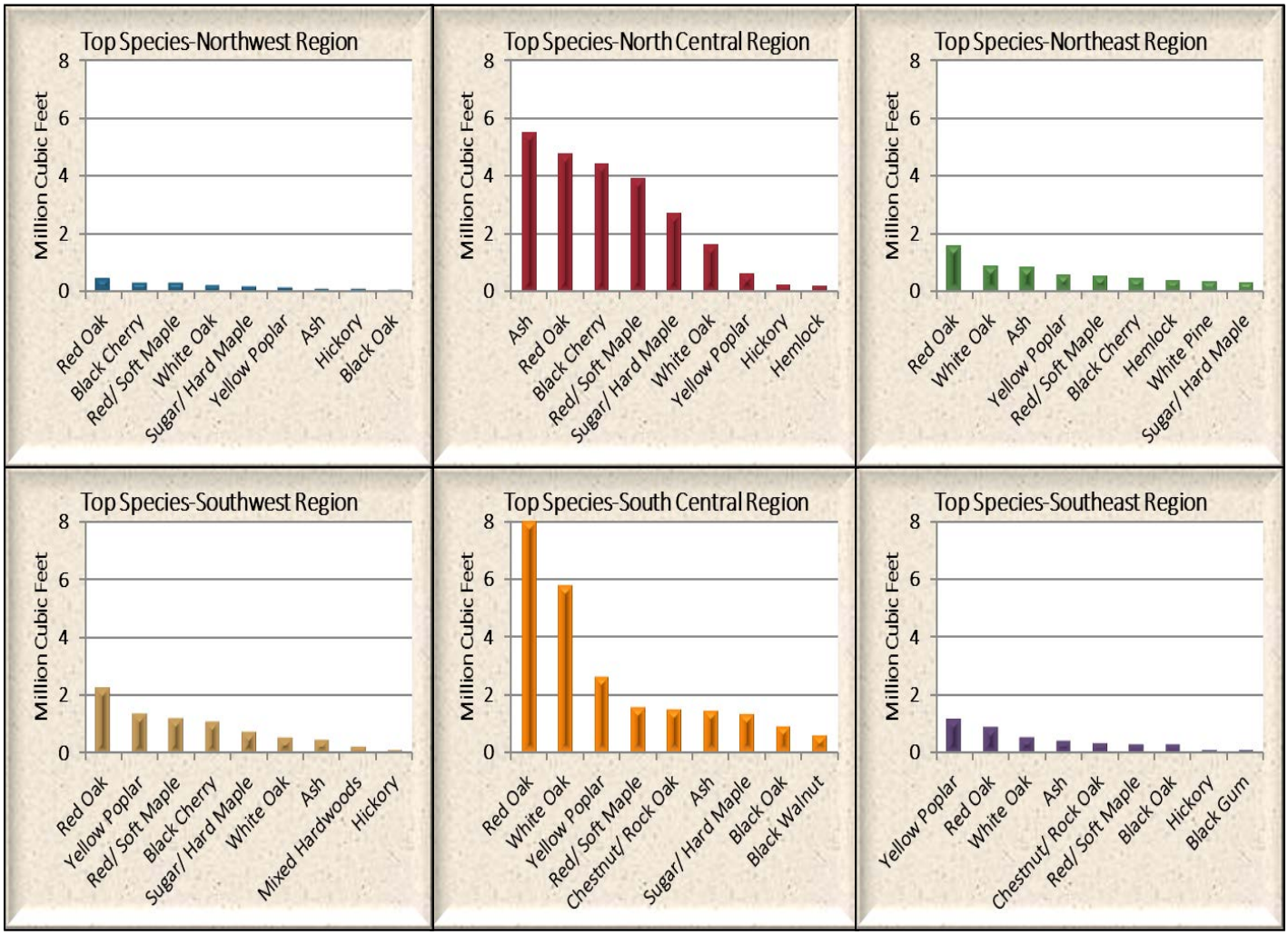
- Of the volume from Pennsylvania, 31.8% was harvested from "PA (unspecified)". In other words, this volume was known to be from PA forests, but the specific counties were not reported in the survey.

Figure 9 – Distribution of harvest locations based on reported wood origins from the TPO survey (242 mills provided volumes by harvest location). Of the total volume, 78.5% was harvested from PA forests; the PA volume is shown by region in the inset table.



Region	Total Volume (million ft^3)
NW	1.6 (1.5%)
NC	24.8 (23.1%)
NE	6.8 (6.3%)
SW	8.6 (8.1%)
SC	26.9 (25.1%)
SE	4.4 (4.1%)
PA (unspecified)	34.1 (31.8%)
PA Total	**107.4 (100%)**

Figure 10 –Volume for the top species harvested from forests in each region, based on 173 wood-processing facilities that provided species volumes and the county from which volumes were harvested. All axes are scaled to the same maximum to illustrate the differences in total volumes from forests in each region.



- The top species harvested from each region of PA (based on 173 mills that provided species volumes and volume by county of origin) are shown in Figure 10. The forests in north central and south central regions had the highest reported volumes harvested during 2016 (Figure 8). Refer also to Table A14 for a complete species list and a breakdown of volume by region.

- Note that a considerably larger volume (compared to other regions) of red oak (8 million cubic feet) and white oak (5.8 million cubic feet) was harvested from forests in the south central region (Figure 10).

- Ash increased dramatically in the north central region and increased in south central, south west and north east.

Residues

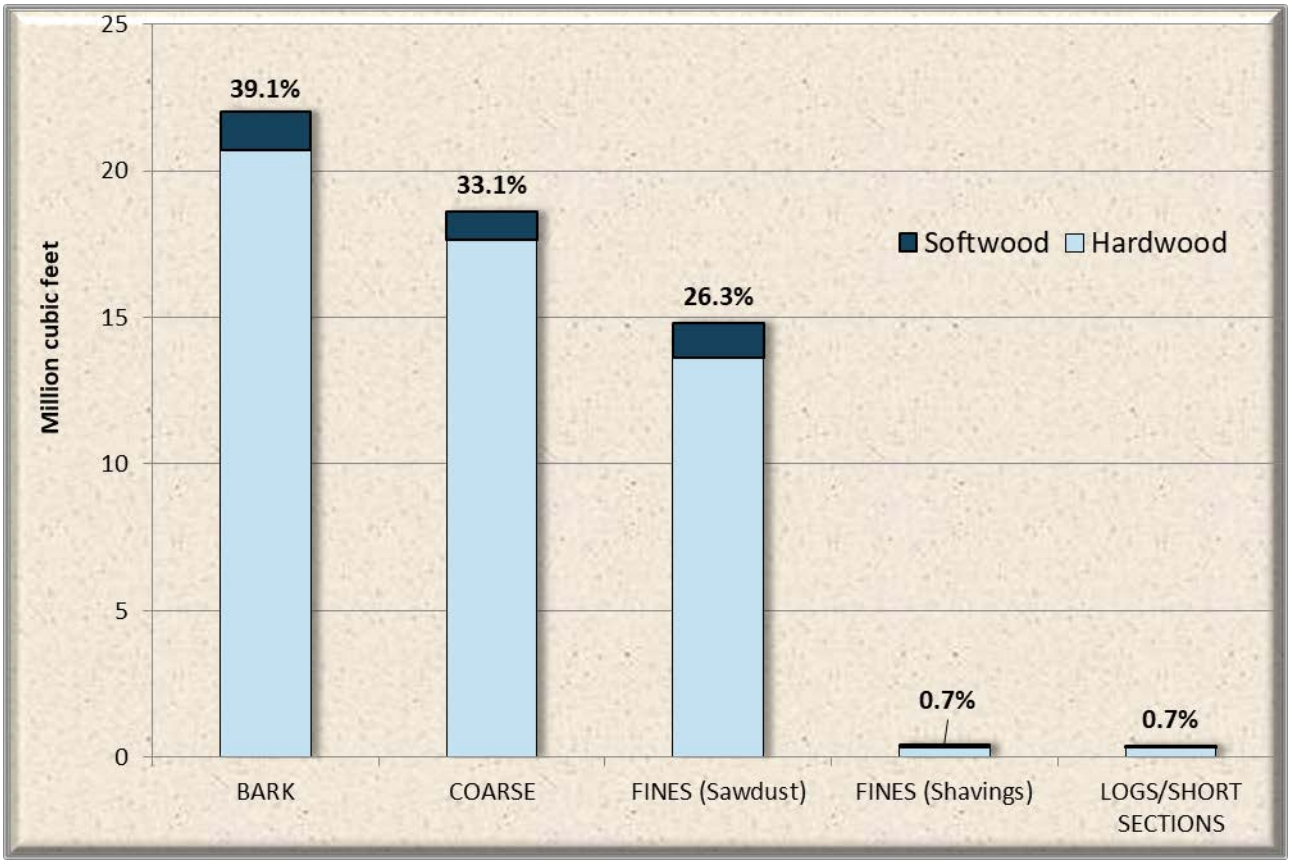
- Residue types generated by 148 facilities/mills are shown in Table 6 as five categories: bark; coarse (chipped slabs, edgings); sawdust; shavings; and logs/short sections (not suitable for lumber).

- There were 2.0 million green tons (56.2 million cubic feet) of residues reported by 148 mills (Table 6).

Table 7 – Residue volumes by residue type, generated at 148 wood-processing facilities that provided residue volume data.

Residue Type	Softwood Volume (million cubic ft)	Hardwood Volume (million cubic ft)	Total Volume (million cubic ft)	2016 Percentage	2012 Percentage
Bark	1.3	20.7	22.0	39.1%	41.4%
Coarse	1.0	17.6	18.6	33.1%	31.5%
Sawdust	1.2	13.6	14.8	26.3%	23.30%
Shavings	0.1	0.4	0.4	0.7%	3.1%
Logs/Short Sections	0.1	0.3	0.4	0.7%	0.7%
Total	3.6	52.6	56.2	100%	100%

Figure 11 – Total volume produced of each residue type for the 148 wood-processing facilities that reported residue volumes.



- The largest quantities of residue types (98%) are comprised of Bark, Coarse, and Sawdust (Figure 11).

Table 8 – End use of manufacturing residues (in million cubic feet) based on 125 facilities/mills reporting residue volumes by use. ("--"designates no data)

	Type of Residue						
End Use	Bark	Coarse	Sawdust	Shavings	Log/Short Sections	All Types	% of Total
Manufacture of Fiber/Composite Products	0.1	8.8	0.3	--	--	9.1	18.4%
Small dimension and other sawn products	--	0.7	--	--	--	0.7	1.5%
Charcoal or chemical wood	--	0.4	<0.1	--	--	0.4	0.8%
Industrial fuel at this plant (on-site)	1.9	<0.1	3.6	<0.1	<0.1	5.5	11.1%
Industrial fuel at other plants	--	--	0.6	--	--	0.6	1.3%
Bio-energy pellets	<0.1	1.5	2.4	0.1	--	4.0	8.1%
Other Bio-energy products (biodiesel, etc.)	--	0.2	<0.1	--	--	0.2	0.4%
Residential fuelwood	0.3	0.2	<0.1	--	0.2	0.7	1.4%
Mulch/Soil additive (includes biochar)	16.6	3.6	1.1	--	--	21.4	43.3%
Animal bedding	0.1	0.1	4.8	0.1	--	5.0	10.2%
Other Misc.	0.2	1.3	0.1	--	--	1.5	3.1%
All Uses	19.1	16.7	13.0	0.2	0.2	49.2	99.6%
Not Utilized (land fill, bark burned, etc.)	<0.1	<0.1	<0.1	--	0.2	0.2	0.4%
Total Produced	19.1	16.7	13.0	0.2	0.4	49.4	100.0%

- Each facility/mill was asked to quantify how each category of residue was utilized. Table 8 lists 11 end-uses plus one non-use category (open-burned, landfill, etc.).

- The totals in Table 8 are different from those reported in Table 7 because fewer facilities (n=125) reported the end-uses of their manufactured residues than the number of facilities (n=148) that reported volumes of residues generated.

- Forty three percent of all residues reported are made into mulch/soil additives. The bulk of that (81%) comes from bark.

- Animal bedding makes up just over 10% of all residues (Table 7). Sawdust and shavings comprise 26.7% (13.2 million cubic feet) of residues reported by end use. 37percent of all reported Sawdust and Shavings (combined) was used as animal bedding.

- Eight percent of all residues become feedstocks at pellet mills. Coarse, sawdust and shavings residues are used at pellet mills.

- Eleven percent of residues are used as industrial fuel at the facility producing it (Table 8). Sixty four percent of that industrial fuel is bark. Sawdust residues are used as industrial fuel at another facility, and this end use compromises 1.3% of all residues reported.

- Residues as industrial fuels used at facility producing it is up 6.5% since 2012. This indicates more facilities are using these residues in their only boiler systems. The heat and energy produced is used to heat the facility and kilns.

APPENDIX 1: SUPPLEMENTAL TABLES

Index of Tables

Table A1 - Total volume (lumber dimension, pulp/chips, exports) by PA county of origin (i.e. where harvested); 173 facilities reported volumes by origin "--" designates no data

Origin	Volume (million cubic ft.
Unspecified PA County	34.1
Potter Co, PA	5.1
Fulton Co, PA	4.6
McKean Co, PA	4.4
Clearfield Co, PA	4.0
Huntingdon Co, PA	3.3
Bedford Co, PA	3.3
Juniata Co, PA	3.0
Perry Co, PA	2.7
Warren Co, PA	2.2
Somerset Co, PA	2.0
Lycoming Co, PA	1.9
Fayette Co, PA	1.8
Tioga Co, PA	1.8
Cambria Co, PA	1.8
Schuylkill Co, PA	1.7
York Co, PA	1.7
Centre Co, PA	1.7
Forest Co, PA	1.7
Franklin Co, PA	1.7
Mifflin Co, PA	1.5
Blair Co, PA	1.5
Snyder Co, PA	1.2
Dauphin Co, PA	1.2
Indiana Co, PA	1.0
Elk Co, PA	1.0
Union Co, PA	1.0
Lancaster Co, PA	0.9
Northumberland Co, PA	0.9
Clarion Co, PA	0.8
Cameron Co, PA	0.7
Westmoreland Co, PA	0.7
Bradford Co, PA	0.7
Jefferson Co, PA	0.7

Origin	Volume (million cubic ft.
Venango Co, PA	0.7
Sullivan Co, PA	0.7
Butler Co, PA	0.7
Crawford Co, PA	0.6
Luzerne Co, PA	0.6
Columbia Co, PA	0.6
Clinton Co, PA	0.5
Lebanon Co, PA	0.4
Berks Co, PA	0.4
Bucks Co, PA	0.3
Wyoming Co, PA	0.3
Wayne Co, PA	0.3
Mercer Co, PA	0.3
Montour Co, PA	0.2
Monroe Co, PA	0.2
Northampton Co, PA	0.2
Susquehanna Co, PA	0.2
Adams Co, PA	0.2
Lackawanna Co, PA	0.2
Greene Co, PA	0.2
Chester Co, PA	0.2
Washington Co, PA	0.2
Lawrence Co, PA	0.1
Pike Co, PA	0.1
Montgomery Co, PA	0.1
Lehigh Co, PA	0.1
Cumberland Co, PA	0.1
Beaver Co, PA	0.1
Armstrong Co, PA	<0.1
Carbon Co, PA	<0.1
Allegheny Co, PA	--
Delaware Co, PA	--
Erie Co, PA	--
Philadelphia Co, PA	--
Total	**107.4**

Table A2 - Total volume from other countries/states of origin (i.e. where harvested); 173 facilities reported

Origin	Volume (million cubic ft)
Virgina (state)	6.1
New York (state)	5.9
Maryland (state)	5.5
West Virgina (state)	4.4
New Jersey (state)	0.4
Ohio (state)	0.2
Unknown	0.2
Canada	<0.1
Hawaii (state)	<0.1
Delaware (state)	<0.1
Total	**22.8**

Table A3 - Volumes of lumber/dimension from PA by county (i.e. where harvested); 160 faciliities reported volumes by origin for Lumber/Dimension "--" designates no data

Origins: Lumber/Dimension	Volume (million board ft)	Volume (million cubic ft)
Unspecified PA County	134.9	21.3
Potter Co, PA	27.0	4.3
Clearfield Co, PA	23.2	3.7
McKean Co, PA	22.8	3.6
Huntingdon Co, PA	18.3	2.9
Juniata Co, PA	18.0	2.8
Bedford Co, PA	17.3	2.7
	15.7	2.5
Fulton Co, PA	12.5	2.0
Fayette Co, PA	11.6	1.8
Somerset Co, PA	11.5	1.8
Tioga Co, PA	11.3	1.8
Lycoming Co, PA	11.2	1.8
Warren Co, PA	11.2	1.8
Cambria Co, PA	10.3	1.6
Forest Co, PA	10.1	1.6
York Co, PA	9.7	1.5
Centre Co, PA	9.7	1.5
Mifflin Co, PA	9.0	1.4
Blair Co, PA	8.6	1.4
Snyder Co, PA	7.8	1.2
Schuylkill Co, PA	7.1	1.1
Dauphin Co, PA	6.7	1.1
Indiana Co, PA	5.9	0.9
Union Co, PA	5.7	0.9
Franklin Co, PA	5.7	0.9
Elk Co, PA	5.0	0.8
Northumberland Co, PA	4.9	0.8
Clarion Co, PA	4.7	0.7
Venango Co, PA	4.5	0.7
Bradford Co, PA	4.5	0.7
Lancaster Co, PA	4.5	0.7
Jefferson Co, PA	4.4	0.7
Westmoreland Co, PA	4.4	0.7
Butler Co, PA	4.3	0.7
Sullivan Co, PA	4.3	0.7
Cameron Co, PA	4.1	0.6
Crawford Co, PA	3.7	0.6

Origins: Lumber/Dimension	Volume (million board ft)	Volume (million cubic ft)
Luzerne Co, PA	3.0	0.5
Columbia Co, PA	2.9	0.5
Clinton Co, PA	2.4	0.4
Berks Co, PA	2.3	0.4
Bucks Co, PA	2.1	0.3
Lebanon Co, PA	1.9	0.3
Wyoming Co, PA	1.8	0.3
Wayne Co, PA	1.8	0.3
Mercer Co, PA	1.7	0.3
Montour Co, PA	1.5	0.2
Monroe Co, PA	1.4	0.2
Northampton Co, PA	1.4	0.2
Susquehanna Co, PA	1.3	0.2
Adams Co, PA	1.3	0.2
Lackawanna Co, PA	1.2	0.2
Greene Co, PA	1.2	0.2
Washington Co, PA	1.0	0.2
Lawrence Co, PA	0.9	0.1
Pike Co, PA	0.9	0.1
Montgomery Co, PA	0.9	0.1
Cumberland Co, PA	0.7	0.1
Chester Co, PA	0.5	0.08
Beaver Co, PA	0.5	0.07
Lehigh Co, PA	0.2	0.04
Armstrong Co, PA	0.2	<0.1
Carbon Co, PA	0.1	<0.1
Allegheny Co, PA	--	--
Delaware Co, PA	--	--
Erie Co, PA	--	--
Philadelphia Co, PA	--	--
Total	**530.9**	**83.9**

Table A4 - Volume of lumber/dimension from outside of PA/ states of origin (i.e. where harvested); 160 facilities reported volumes by origin

Origin	Volume (million board ft)	Volume (million cubic ft)
West Virgina (state)	26.0	4.1
New York (state)	19.1	3.0
Maryland (state)	18.5	2.9
Ohio (state)	1.5	0.2
Virgina (state)	1.0	0.2
Unknown	0.9	0.1
New Jersey (state)	0.3	0.1
Canada	0.2	<0.1
Hawaii (state)	<0.1	<0.1
Delaware (state)	<0.1	<0.1
Total	**67.7**	**10.7**

Table A5 - Volumes for pulp/chips from PA by county origin (i.e. where harvested); 25 faciliities reported volumes by origin
"--" designates no data

Origin	Volume (million cubic ft.)
Unspecified PA County	11.3
Fulton Co, PA	2.4
Franklin Co, PA	0.7
Schuylkill Co, PA	0.5
Huntingdon Co, PA	0.4
Potter Co, PA	0.2
Bedford Co, PA	0.2
York Co, PA	0.2
Lancaster Co, PA	0.2
McKean Co, PA	0.2
Clearfield Co, PA	0.2
Lebanon Co, PA	0.1
Blair Co, PA	0.1
Dauphin Co, PA	0.1
Cambria Co, PA	0.1
Somerset Co, PA	0.1
Chester Co, PA	0.1
Cameron Co, PA	0.1
Mifflin Co, PA	0.1
Northumberland Co, PA	0.1
Warren Co, PA	0.1
Lehigh Co, PA	0.1
Centre Co, PA	0.1
Indiana Co, PA	0.1
Juniata Co, PA	0.1
Perry Co, PA	0.1
Luzerne Co, PA	0.1
Berks Co, PA	0.1
Lycoming Co, PA	<0.1
Tioga Co, PA	<0.1
Westmoreland Co, PA	<0.1
Clinton Co, PA	<0.1
Columbia Co, PA	<0.1
Montour Co, PA	<0.1
Union Co, PA	<0.1
Adams Co, PA	--
Allegheny Co, PA	--
Armstrong Co, PA	--

Origin	Volume (million cubic ft.)
Beaver Co, PA	--
Bradford Co, PA	--
Bucks Co, PA	--
Butler Co, PA	--
Carbon Co, PA	--
Clarion Co, PA	--
Crawford Co, PA	--
Cumberland Co, PA	--
Delaware Co, PA	--
Elk Co, PA	--
Erie Co, PA	--
Fayette Co, PA	--
Forest Co, PA	--
Greene Co, PA	--
Jefferson Co, PA	--
Lackawanna Co, PA	--
Lawrence Co, PA	--
Mercer Co, PA	--
Monroe Co, PA	--
Montgomery Co, PA	--
Northampton Co, PA	--
Philadelphia Co, PA	--
Pike Co, PA	--
Snyder Co, PA	--
Sullivan Co, PA	--
Susquehanna Co, PA	--
Venango Co, PA	--
Washington Co, PA	--
Wayne Co, PA	--
Wyoming Co, PA	--
Total	**18.0**

Volumes of pulp/chips from outside PA/ state of origin (i.e. where harvested); 25 facilities reported volumes by origin.

Origin	Volume (million cubic ft)
Virgina (state)	5.9
New York (state)	2.6
Maryland (state)	2.5
New Jersey (state)	0.2
West Virgina (state)	0.2
Unknown	0.1
Delaware (state)	<0.1
Total	**11.6**

Table A7 - Volumes for exports harvested from PA by county of origin;
27 facilities gave volumes by origin for exports.
"--" designates no data

Origins: Log Exports	Volume (million bd ft)	Volume (million cubic ft)
Unspecified PA County	9.7	1.5
McKean Co, PA	4.1	0.6
Potter Co, PA	3.8	0.6
Bedford Co, PA	2.2	0.4
Warren Co, PA	1.9	0.3
Elk Co, PA	1.6	0.2
Fulton Co, PA	0.9	0.1
Clearfield Co, PA	0.9	0.1
Lycoming Co, PA	0.8	0.1
Forest Co, PA	0.6	0.1
Perry Co, PA	0.6	0.1
Columbia Co, PA	0.6	0.1
Centre Co, PA	0.6	0.1
Schuylkill Co, PA	0.5	0.1
Clinton Co, PA	0.5	0.1
Luzerne Co, PA	0.5	0.1
Union Co, PA	0.5	0.1
Crawford Co, PA	0.4	0.1
Cambria Co, PA	0.4	0.1
Huntingdon Co, PA	0.3	0.1
Franklin Co, PA	0.3	0.1
Blair Co, PA	0.3	<0.1
Somerset Co, PA	0.3	<0.1
Jefferson Co, PA	0.3	<0.1
Westmoreland Co, PA	0.2	<0.1
Juniata Co, PA	0.2	<0.1
Tioga Co, PA	0.2	<0.1
Mifflin Co, PA	0.2	<0.1
Indiana Co, PA	0.2	<0.1
Bradford Co, PA	0.2	<0.1
Clarion Co, PA	0.1	<0.1
Sullivan Co, PA	0.1	<0.1
Wyoming Co, PA	0.1	<0.1
Snyder Co, PA	<0.1	<0.1
Butler Co, PA	<0.1	<0.1

Origins: Log Exports	Volume (million bd ft)	Volume (million cubic ft)
Cameron Co, PA	<0.1	<0.1
Fayette Co, PA	<0.1	<0.1
Adams Co, PA	--	--
Allegheny Co, PA	--	--
Armstrong Co, PA	--	--
Beaver Co, PA	--	--
Berks Co, PA	--	--
Bucks Co, PA	--	--
Carbon Co, PA	--	--
Chester Co, PA	--	--
Cumberland Co, PA	--	--
Dauphin Co, PA	--	--
Delaware Co, PA	--	--
Erie Co, PA	--	--
Greene Co, PA	--	--
Lackawanna Co, PA	--	--
Lancaster Co, PA	--	--
Lawrence Co, PA	--	--
Lebanon Co, PA	--	--
Lehigh Co, PA	--	--
Mercer Co, PA	--	--
Monroe Co, PA	--	--
Montgomery Co, PA	--	--
Montour Co, PA	--	--
Northampton Co, PA	--	--
Northumberland Co, PA	--	--
Philadelphia Co, PA	--	--
Pike Co, PA	--	--
Susquehanna Co, PA	--	--
Venango Co, PA	--	--
Washington Co, PA	--	--
Wayne Co, PA	--	--
York Co, PA	--	--
Total	**34.3**	**5.4**

Table A8 - Volumes of exports harvested from outside PA (i.e. harvested outside PA but exported by PA company); 27 faciliities reported volumes by origin.

Origin	Volume (million board ft)	Volume (million cubic ft)
New York (state)	1.7	0.3
West Virgina (state)	0.7	0.1
Maryland (state)	0.6	0.1
New Jersey (state)	0.5	0.1
Virgina (state)	<0.1	<0.1
Total	**3.4**	**0.5**

Table A9 - Statewide volume by species processed (lumber/dimension, pulp/chips, exports); 173 mills reported volume by species; descending by volume

Species	Volume (million cubic ft)	Percentage
Red Oak	24.4	18.8%
Mixed Hardwoods	18.2	14.0%
White Oak	13.1	10.0%
Ash	12.7	9.7%
Red/ Soft Maple	12.3	9.4%
Yellow Poplar	10.3	7.9%
Black Cherry	10.1	7.8%
Mixed Softwoods	7.9	6.1%
Sugar/ Hard Maple	7.5	5.8%
Chestnut/ Rock Oak	2.5	1.9%
Black Oak	1.9	1.5%
Hemlock	1.9	1.5%
Hickory	1.9	1.4%
White Pine	1.5	1.2%
Black Walnut	1.2	0.9%
Sweet Birch	0.8	0.6%
Black Gum	0.5	0.3%
Basswood	0.4	0.3%
Beech	0.3	0.2%
Scarlet Oak	0.2	0.1%
Spruce	0.1	0.1%
Yellow Birch	0.1	0.1%
Jack Pine	0.1	0.1%
Aspen	0.1	0.1%
Southern Yellow Pine	0.1	0.1%
Locust	0.04	<0.1%
Red Pine	0.03	<0.1%
Sycamore	0.02	<0.1%
Elm	0.02	<0.1%
Other	0.02	<0.1%
Pitch Pine	0.01	<0.1%
Larch	0.01	<0.1%
Silver Maple	0.01	<0.1%
Koa	0.01	<0.1%
Butternut	0.002	<0.1%
Pallet	--	--
Sassafrass	--	--
Sweet Gum	--	--
White (Paper) Birch	--	--
Total	**130.1**	**100.0%**

Table A10 - Statewide total volume processed (lumber/dimension,pulp/chips,exports) by species; 173 mills reported volume by species; sorted alphabetical by species

Species	Volume (million cubic ft)	Percentage
Ash	12.7	9.7%
Aspen	0.1	0.1%
Basswood	0.4	0.3%
Beech	0.3	0.2%
Black Cherry	10.1	7.8%
Black Gum	0.5	0.3%
Black Oak	1.9	1.5%
Black Walnut	1.2	0.9%
Butternut	0.002	<0.1%
Chestnut/ Rock Oak	2.5	1.9%
Elm	0.02	<0.1%
Hemlock	1.9	1.5%
Hickory	1.9	1.4%
Jack Pine	0.1	0.1%
Koa	0.01	<0.1%
Larch	0.01	<0.1%
Locust	0.04	<0.1%
Mixed Hardwoods	18.2	14.0%
Mixed Softwoods	7.9	6.1%
Other	0.02	<0.1%
Pallet	--	--
Pitch Pine	0.01	<0.1%
Red Oak	24.4	18.8%
Red Pine	0.03	<0.1%
Red/ Soft Maple	12.3	9.4%
Sassafrass	--	--
Scarlet Oak	0.2	0.1%
Silver Maple	0.01	<0.1%
Southern Yellow Pine	0.1	0.1%
Spruce	0.1	0.1%
Sugar/ Hard Maple	7.5	5.8%
Sweet Birch	0.8	0.6%
Sweet Gum	--	--
Sycamore	0.02	<0.1%
White (Paper) Birch	--	--
White Oak	13.1	10.0%
White Pine	1.5	1.2%
Yellow Birch	0.1	0.1%
Yellow Poplar	10.3	7.9%
Total	**130.1**	**100.0%**

Table A11 - lumber/dimension volume processed; 160 mills reported volumes by species

Species	Volume (million bd ft)	Percentage
Red Oak	130.5	21.8%
Red/ Soft Maple	74.3	12.4%
White Oak	69.1	11.5%
Ash	67.3	11.2%
Yellow Poplar	60.6	10.1%
Black Cherry	55.7	9.3%
Sugar/ Hard Maple	45.1	7.5%
Mixed Hardwoods	27.7	4.6%
Chestnut/ Rock Oak	12.3	2.1%
Hemlock	10.9	1.8%
Black Oak	10.9	1.8%
Hickory	8.8	1.5%
White Pine	7.4	1.2%
Black Walnut	5.5	0.9%
Sweet Birch	4.3	0.7%
Basswood	2.4	0.4%
Beech	1.4	0.2%
Scarlet Oak	1.1	0.2%
Black Gum	0.9	0.2%
Yellow Birch	0.5	0.1%
Spruce	0.3	0.1%
Southern Yellow Pine	0.3	<0.1%
Locust	0.2	<0.1%
Red Pine	0.2	<0.1%
Sycamore	0.2	<0.1%
Elm	0.2	<0.1%
Mixed Softwoods	0.1	<0.1%
Jack Pine	0.1	<0.1%
Pitch Pine	0.1	<0.1%
Larch	0.1	<0.1%
Silver Maple	0.05	<0.1%
Koa	0.04	<0.1%
Aspen	0.02	<0.1%
Butternut	0.01	<0.1%
Other	--	--
Pallet	--	--
Sassafrass	--	--
Sweet Gum	--	--
White (Paper) Birch	--	--
Total	**598.6**	**100.0%**

Table A12 - Pulp/chip volume processed; 25 mills reported volumes by species

Species	Volume (million green tons)	Percentage
Mixed Hardwoods	0.420	46.7%
Mixed Softwoods	0.240	26.7%
Red Oak	0.058	6.4%
White Oak	0.050	5.5%
Yellow Poplar	0.020	2.2%
Red/ Soft Maple	0.017	1.9%
Ash	0.017	1.9%
Chestnut/ Rock Oak	0.016	1.8%
White Pine	0.011	1.2%
Black Gum	0.009	1.0%
Hickory	0.007	0.8%
Hemlock	0.006	0.7%
Black Oak	0.006	0.6%
Sugar/ Hard Maple	0.006	0.6%
Black Cherry	0.005	0.5%
Sweet Birch	0.003	0.3%
Beech	0.003	0.3%
Aspen	0.002	0.2%
Jack Pine	0.002	0.2%
Spruce	0.001	0.1%
Southern Yellow Pine	0.001	0.1%
Basswood	0.001	0.1%
Other	0.001	0.1%
Black Walnut	0.0002	<0.1%
Butternut	0.0	--
Elm	0.0	--
Koa	0.0	--
Larch	0.0	--
Locust	0.0	--
Pallet	0.0	--
Pitch Pine	0.0	--
Red Pine	0.0	--
Sassafrass	0.0	--
Scarlet Oak	0.0	--
Silver Maple	0.0	--
Sweet Gum	0.0	--
Sycamore	0.0	--
White (Paper) Birch	0.0	--
Yellow Birch	0.0	--
Total	**0.899**	**100.0%**

Table A13 - Log export volume; 27 mills reported volumes by species

Species	Volume (million bd ft)	Percentage
Red Oak	12.2	32.2%
Ash	9.5	25.2%
Black Cherry	7.4	19.5%
white Oak	3.2	8.5%
Black Walnut	1.8	4.7%
Hickory	1.5	3.9%
Sugar/Hard Maple	1.4	3.6%
Yellow Poplar	0.4	1.1%
Black Oak	0.3	0.7%
Chestnut/Rock Oak	0.1	0.2%
Red/Soft Maple	0.0	0.1%
Yellow Birch	0.0	0.1%
Basswood	0.007	<0.1%
Sweet Birch	0.001	<0.1%
Total	**37.8**	**100.0%**

Table A14 - Volume by species & region *where harvested* for 173 mills that reported volumes by species groups; does NOT include volume harvested outside of PA"--" designates no data

Species Group	Volume (million cubic ft)	Percentage	NW	NC	NE	SW	SC	SE	PA (unspecified region)
Ash	10.9	10.2%	0.1	5.5	0.8	0.5	1.4	0.4	2.1
Aspen	0.1	0.1%	--	0.0	0.0	--	0.0	0.0	0.0
Basswood	0.4	0.4%	--	0.2	0.0	0.0	0.2	0.0	0.0
Beech	0.2	0.2%	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Black Cherry	9.4	8.7%	0.3	4.4	0.5	1.1	0.6	0.1	2.5
Black Gum	0.3	0.3%	--	0.0	0.0	0.0	0.2	0.1	0.0
Black Oak	1.7	1.6%	0.0	0.1	0.1	0.1	0.9	0.3	0.2
Black Walnut	1.1	1.0%	0.0	0.0	0.1	0.0	0.6	0.1	0.3
Butternut	0.0	0.0%	--	--	--	--	--	--	0.0
Chestnut/ Rock Oak	2.2	2.0%	--	0.0	0.2	0.1	1.5	0.3	0.1
Elm	0.0	0.0%	--	0.0	0.0	0.0	0.0	--	--
Hemlock	1.7	1.6%	--	0.2	0.4	0.1	0.5	0.0	0.5
Hickory	1.6	1.5%	0.1	0.2	0.0	0.1	0.6	0.1	0.5
Jack Pine	0.1	0.1%	--	0.0	0.0	--	0.0	--	--
Larch	0.0	0.0%	--	0.0	--	--	0.0	--	0.0
Locust	0.0	0.0%	--	--	--	--	0.0	0.0	--
Mixed Hardwoods	13.8	12.8%	0.0	0.1	0.0	0.3	0.4	0.0	12.9
Mixed Softwoods	2.0	1.8%	--	0.0	0.1	--	0.0	--	1.9
Other	0.0	0.0%	--	--	--	--	--	0.0	--
Pitch Pine	0.0	0.0%	--	--	--	--	--	0.0	--
Red Oak	21.8	20.3%	0.4	4.8	1.6	2.3	8.0	0.9	3.8
Red Pine	0.0	0.0%	--	0.0	0.0	--	0.0	0.0	--
Red/ Soft Maple	11.4	10.6%	0.3	3.9	0.6	1.2	1.5	0.3	3.6
Scarlet Oak	0.1	0.1%	--	--	--	--	0.1	0.0	0.0
Silver Maple	0.0	0.0%	--	--	--	--	--	--	0.0
Southern Yellow Pine	0.0	0.0%	--	--	--	--	0.0	--	--
Spruce	0.1	0.1%	--	0.0	0.0	--	0.0	0.0	0.0
Sugar/ Hard Maple	6.9	6.4%	0.2	2.7	0.3	0.8	1.3	0.1	1.5
Sweet Birch	0.7	0.7%	0.0	0.1	0.1	0.0	0.2	0.1	0.2
Sycamore	0.0	0.0%	--	0.0	0.0	--	0.0	0.0	0.0
White Oak	11.4	10.6%	0.2	1.6	0.9	0.6	5.8	0.5	1.8
White Pine	1.2	1.1%	--	0.1	0.4	0.1	0.3	0.0	0.4
Yellow Birch	0.1	0.1%	0.0	0.0	0.0	--	0.0	0.0	0.0
Yellow Poplar	8.1	7.6%	0.1	0.6	0.6	1.4	2.6	1.1	1.7
Total	107.4	100.0%	1.6	24.8	6.8	8.6	26.9	4.4	34.1
Percentage of Total	100.0%	100.0%	1.5%	23.1%	6.3%	8.1%	25.1%	4.1%	31.8%

Table A15 - Volume by species & region *where mill is located* for 173 mills that reported volumes by species groups; may include volume harvested from outside of PA"--" designates no data

Species Group	Volume (million cubic ft)	Percentage	NW	NC	NE	SW	SC	SE
Ash	12.7	9.7%	0.2	7.5	2.0	0.5	2.3	0.2
Aspen	0.1	0.1%	--	<0.1	<0.1	--	<0.1	<0.1
Basswood	0.4	0.3%	--	0.2	<0.1	<0.1	0.2	--
Beech	0.3	0.2%	<0.1	<0.1	<0.1	--	0.1	0.1
Black Cherry	10.1	7.8%	0.6	6.1	0.9	1.2	1.2	<0.1
Black Gum	0.5	0.3%	--	--	--	--	0.2	0.2
Black Oak	1.9	1.5%	--	0.3	<0.1	<0.1	1.2	0.3
Black Walnut	1.2	0.9%	<0.1	<0.1	<0.1	<0.1	1.0	<0.1
Butternut	0.0	0.0%	--	<0.1	--	--	--	--
Chestnut/ Rock Oak	2.5	1.9%	--	<0.1	0.1	0.2	1.8	0.3
Elm	0.0	0.0%	--	<0.1	--	--	<0.1	--
Hemlock	1.9	1.5%	--	0.1	0.8	<0.1	0.9	<0.1
Hickory	1.9	1.4%	0.2	0.3	<0.1	0.2	1.1	0.1
Jack Pine	0.1	0.1%	--	--	<0.1	--	<0.1	--
Koa	0.0	0.0%	--	--	--	--	--	<0.1
Larch	0.0	0.0%	--	<0.1	--	--	<0.1	--
Locust	0.0	0.0%	--	--	--	--	<0.1	<0.1
Mixed Hardwoods	18.2	14.0%	<0.1	0.9	3.5	2.8	1.0	10.0
Mixed Softwoods	7.9	6.1%	--	<0.1	<0.1	--	<0.1	7.8
Other	0.0	0.0%	--	--	--	--	--	<0.1
Pitch Pine	0.0	0.0%	--	--	--	--	--	<0.1
Red Oak	24.4	18.8%	0.9	6.7	1.7	2.5	12.1	0.5
Red Pine	0.0	0.0%	--	<0.1	--	--	<0.1	--
Red/ Soft Maple	12.3	9.4%	0.5	6.7	1.4	1.5	2.2	0.1
Scarlet Oak	0.2	0.1%	--	--	--	--	0.1	<0.1
Silver Maple	0.0	0.0%	--	--	--	--	<0.1	--
Southern Yellow Pine	0.1	0.1%	--	--	--	--	<0.1	--
Spruce	0.1	0.1%	--	<0.1	<0.1	--	<0.1	<0.1
Sugar/ Hard Maple	7.5	5.8%	0.2	3.9	0.9	0.9	1.7	--
Sweet Birch	0.8	0.6%	--	0.3	<0.1	--	0.4	<0.1
Sycamore	0.0	0.0%	--	--	--	--	<0.1	--
White Oak	13.1	10.0%	0.6	1.8	0.5	0.7	9.1	0.4
White Pine	1.5	1.2%	--	<0.1	0.7	<0.1	0.6	<0.1
Yellow Birch	0.1	0.1%	<0.1	<0.1	<0.1	--	<0.1	<0.1
Yellow Poplar	10.3	7.9%	0.2	1.2	0.7	2.0	4.9	1.4
Total	130.1	100.0%	3.3	36.2	13.6	12.8	42.6	21.8
Percentage of Total	100.0%	100.0%	2.5%	27.8%	10.4%	9.8%	32.7%	16.7%

APPENDIX 2: SURVEY FORM

PA Timber Product Output Survey - 2016

Facility Information Rev. 7/2016 - PA Bureau of Forestry, (717) 783-3322 16000

Facility Name _____

Mailing Address _____

City _____ **State** _____ **Zip** _____

Phone _____ **Fax** _____

e-mail _____ **Web Page** _____

Physical Address _____

(if different from mailing address)

City _____ **State** _____ **Zip** _____

County _____

→→ Check this box to **OMIT** the information above from a "Regional/Statewide/Local" Directory ☐

Company or Headquarters Name _____

(if different from facility name)

Mailing Address _____

City _____ **State** _____ **Zip** _____

Phone _____ **Fax** _____

e-mail _____ **Web Page** _____

Year Established _____ **No. of Employees** All _____ Production _____ Administration _____

Type *(check all that apply)*

- ☐ Sawmill
- ☐ Veneer mill
- ☐ House/cabin log mill
- ☐ Exporter
- ☐ Whole tree chipper
- ☐ Composite panel/Engineered wood product
- ☐ Industrial fuelwood/Biomass energy plant
- ☐ Post, pole, piling mill
- ☐ Broker
- ☐ Miscellaneous/other mill (specify) _____

Maximum Output Capacity Annually (specify units) _____

→→ Check this box if you wish to receive a copy of the report resulting from this study ☐

→→ Check this box if you are willing to accept **urban** shade trees/logs/wood ☐

→→ Check this box if you currently accept **urban** shade trees/logs/wood ☐

→→ Check this box if we can release your information to the public for accepting **urban** trees ☐

Section 1.1- Raw Material (Roundwood/Logs) Processed into Lumber/Dimension at this facility, 2016

Survey # 16000

	Log Volume	Unit of Measure from list below	Percentage Processed for:
Softwoods			_____% Lumber _____% Cants _____% Veneer _____% Other
Hardwoods			_____% Lumber _____% Cants _____% Veneer _____% Other
Total Log Volume			

Units of Measure

1 - MBF Doyle	6 - BF Scribner	11 - Standard cord	99 - Other (specify):
2 - BF Doyle	7 - MBF International ¼-inch rule	12 - Pieces	
3 - MBF Scribner Decimal C	8 - BF International ¼-inch rule	13 - Thousand Pieces	
4 - BF Scribner Decimal C	9 - MBF Lumber Tally	14 - Green Tons	
5 - MBF Scribner	10 - BF Lumber Tally	15 - Thousand Cubic Feet	

Enter the Percentage of the Total Raw Material Volume is From Public Land

1.2 - Enter the PERCENTAGE of Total Log Volume Processed into Lumber/Dimension at this facility for each Species Group by County, State or Country of origin.

Species Group Code ↓	% of Total Log Volume	← Enter County, State or Country codes →										Total
												100%
												100%
												100%
												100%
												100%
												100%
												100%
												100%
												100%
												100%
	100%											

Species Group Codes:

ASH - ash	BO - black oak	JP - jack pine	RP - red pine	SYC - sycamore	Other (specify):
ASP - aspen	BW - black walnut	LAR - larch	SB - sweet birch	WB - white (paper) birch	
BASS - basswood	CO - chestnut/rock oak	OP - other pine	SG - sweet gum	WO - white oak	
BC - black cherry	ELM - elm	PP - pitch pine	SM - sugar/hard maple	WP - white pine	
BCH - beech	HEM - hemlock	RM - red/soft maple	SO - scarlet oak	YB - yellow birch	
BG - black gum	HICK - hickory	RO - red oak	SPR - spruce	YP - yellow poplar	

Section 2.1- Raw Material (Roundwood/Logs) Processed at this facility into Pulp and/or Chips, 2016

	Roundwood Volume	Unit of Measure from list below	Percentage Processed for:
Softwoods			_____% Pulp _____% Composite Chips _____% Energy Chips _____% Other
Hardwoods			_____% Pulp _____% Composite Chips _____% Energy Chips _____% Other
Total Roundwood Volume			

Units of Measure

1 - MBF Doyle	6 - BF Scribner	11 - Standard cord	99 - Other (specify):
2 - BF Doyle	7 - MBF International ¼-inch rule	12 - Pieces	
3 - MBF Scribner Decimal C	8 - BF International ¼-inch rule	13 - Thousand Pieces	
4 - BF Scribner Decimal C	9 - MBF Lumber Tally	14 - Green Tons	
5 - MBF Scribner	10 - BF Lumber Tally	15 - Thousand Cubic Feet	

2.2 - Enter the PERCENTAGE of Raw Material (Roundwood/Logs) Processed at this facility into Pulp and/or Chips for each Species Group by County, State or Country of origin.

Species Group Code ↓	% of Total Roundwood Volume	← Enter County, State or Country codes →										Total
												100%
												100%
												100%
												100%
												100%
												100%
												100%
												100%
												100%
												100%
												100%
	100%											

Species Group Codes:

ASH - ash	BO - black oak	JP - jack pine	RP - red pine	SYC - sycamore	Other (specify):
ASP - aspen	BW - black walnut	LAR - larch	SB - sweet birch	WB - white (paper) birch	
BASS - basswood	CO - chestnut/rock oak	OP - other pine	SG - sweet gum	WO - white oak	
BC - black cherry	ELM - elm	PP - pitch pine	SM - sugar/hard maple	WP - white pine	
BCH - beech	HEM - hemlock	RM - red/soft maple	SO - scarlet oak	YB - yellow birch	
BG - black gum	HICK - hickory	RO - red oak	SPR - spruce	YP - yellow poplar	

Section 3.1- Raw Material (Roundwood/Logs) Exported by this facility out of the U.S., 2016

	Roundwood/Log Volume	Unit of Measure from list below	Percentage Processed for:
Softwoods			_____% Logs _____% Composite Chips _____% Pulpwood _____% Energy Chips
Hardwoods			_____% Logs _____% Composite Chips _____% Pulpwood _____% Energy Chips
Total Roundwood/Log Volume			

Units of Measure

1 - MBF Doyle	6 - BF Scribner	11 - Standard cord	99 - Other (specify):
2 - BF Doyle	7 - MBF International ¼-inch rule	12 - Pieces	
3 - MBF Scribner Decimal C	8 - BF International ¼-inch rule	13 - Thousand Pieces	
4 - BF Scribner Decimal C	9 - MBF Lumber Tally	14 - Green Tons	
5 - MBF Scribner	10 - BF Lumber Tally	15 - Thousand Cubic Feet	

3.2 - Enter the PERCENTAGE of Raw Material (Roundwood/Logs) Exported by this facility out of the U.S. for each Species Group by County, State or Country of origin.

Species Group Code ↓	% of Total Roundwood /Log Vol.	← Enter County, State or Country codes →										Total
												100%
												100%
												100%
												100%
												100%
												100%
												100%
												100%
												100%
												100%
	100%											

Species Group Codes:

ASH - ash	BO - black oak	JP - jack pine	RP - red pine	SYC - sycamore	Other (specify):
ASP - aspen	BW - black walnut	LAR - larch	SB - sweet birch	WB - white (paper) birch	
BASS - basswood	CO - chestnut/rock oak	OP - other pine	SG - sweet gum	WO - white oak	
BC - black cherry	ELM - elm	PP - pitch pine	SM - sugar/hard maple	WP - white pine	
BCH - beech	HEM - hemlock	RM - red/soft maple	SO - scarlet oak	YB - yellow birch	
BG - black gum	HICK - hickory	RO - red oak	SPR - spruce	YP - yellow poplar	

Section 4.1. Residue Produced by this Facility for 2016

Please enter the amount of residue produced by this facility.

Type of Residue	Softwood	Hardwood	Unit of Measure (example: green tons, cubic feet, etc.)
Bark			
Coarse (chips, slabs, edgings, trims, cores, etc.)			
Fine - Shavings (Planer or Lathe)			
Fine - Sawdust			
Whole logs or short sections chipped or not processed as the facility's primary product			

4.2. Utilization of Residue Produced by this Facility

Please enter the percentage of softwood and hardwood residue (by Residue Utilization) produced by this facility.

RESIDUE UTILIZATION	Code	BARK		COARSE (chips, slabs, edgings, etc.)		FINES (Planer or Lathe)				LOGS/ SHORT SECTIONS	
						Shavings		Sawdust			
		Softwood %	Hardwood %	Softwood %	Hardwood %	Softwood %	Hardwood %	Softwood %	Hardwood %	Softwood %	Hardwood %
Manufacture of fiber/composite products	1										
Small dimension and other sawn products	2										
Charcoal or chemical wood	3										
Industrial fuel at this plant (on-site)	4										
Industrial fuel at other plants	5										
Bio-energy pellets	6										
Other Bio-energy products(biodiesel,etc)	7										
Residential fuelwood	8										
Mulch/Soil additive (includes biochar)	9										
Animal bedding	10										
Other misc. uses- please specify:	88										
NOT UTILIZED (land fill, bark burned, etc.)	99										
TOTAL		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Does this Facility Produce Firewood Yes No

How many Cords / Tons Produced in 2016 _____

Is this Facility FSC certified Yes No

Is this Facility SFI certified Yes No

Does this Facility require loggers/contractors to be SFI certified YES NO

Is this Facility in theTree farmer program YES NO

Please turn in this page with your survey

Pennsylvania County Codes

Survey # **16000**

1 - Adams
2 - Allegheny
3 - Armstrong
4 - Beaver
5 - Bedford
6 - Berks
7 - Blair
8 - Bradford
9 - Bucks
10 - Butler
11 - Cambria
12 - Cameron
13 - Carbon
14 - Centre
15 - Chester
16 - Clarion
17 - Clearfield
18 - Clinton
19 - Columbia
20 - Crawford
21 - Cumberland
22 - Dauphin
23 - Delaware
24 - Elk
25 - Erie
26 - Fayette
27 - Forest
28 - Franklin
29 - Fulton
30 - Greene
31 - Huntingdon
32 - Indiana
33 - Jefferson
34 - Juniata
35 - Lackawanna
36 - Lancaster
37 - Lawrence
38 - Lebanon
39 - Lehigh
40 - Luzerne
41 - Lycoming
42 - McKean
43 - Mercer
44 - Mifflin
45 - Monroe
46 - Montgomery
47 - Montour
48 - Northampton
49 - Northumberland
50 - Perry
51 - Philadelphia
52 - Pike
53 - Potter
54 - Schuylkill
55 - Snyder
56 - Somerset
57 - Sullivan
58 - Susquehanna
59 - Tioga
60 - Union
61 - Venango
62 - Warren
63 - Washington
64 - Wayne
65 - Westmoreland
66 - Wyoming
67 - York
99 - Unknown

*Use standard state and country abbreviations where necessary.

80 - Canada
90 - Other: _____
91 - Other: _____
92 - Other: _____
93 - Other: _____
94 - Other: _____
95 - Other: _____

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PA TPO Survey - 2016 - Notes:

Facility Information:
Section 1:
Section 2:
Section 3:
Section 4:
Other:

Please turn in this page with your survey