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Economic Impact  
Analysis of the West  
Virginia Great Barrel  
Company



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# Economic Impact Analysis of The West Virginia Great Barrel Company

## REPORT

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## Executive Summary

The West Virginia Great Barrel Company's proposed cooperage in White Sulphur Springs will be a new employer in an area that has seen little economic growth in recent years. The facility would create between 284 and 314 jobs, depending on the sourcing of white oak for the stave mill. With the possible addition of a second shift in the future, this impact could almost double.

This analysis is focused on the economic impact of expenditures made to operate the cooperage, and associated employment and indirect business activity. WVGBC will directly employ 100 people and incur annual expenditures of \$31 million to operate the cooperage. The stave mill will employ 38 people and will be part of the indirect impacts of the facility.

The planned facility has a high share of local purchases due to its use of West Virginia-based suppliers for the bulk of its major inputs to production. WVGBC will use an existing lumber mill to produce staves for its barrels, a local metal fabricator for its barrel rings and will source up to 50 percent of white oak from the State to supply the mill. The cooperage will produce 212,000 barrels when operating a single shift.

The white oak resources available within 200 miles of the stave mill are adequate to supply the needs of the cooperage. West Virginia contains 27 to 31 percent of the regional white oak resources with WVGBC's target tree diameter. The facility expects to use between 11 and 13 million board feet per year to produce 212,000 barrels. Current harvests of white oak in West Virginia are about 230 million board feet per year. This analysis evaluates two scenarios where 25 and 50 percent of white oak is sourced from West Virginia, which would equate to between 1.3 and 2.6 percent of the current white oak harvest removals.

The total economic impacts with 25 percent of white oak sourced in West Virginia are 284 jobs, \$12.9 million in income and \$16.3 million in Gross State Product. Total impacts with 50 percent of white oak sourced in West Virginia are 314 jobs, \$13.7 million in income and \$17.2 million in Gross State Product. Total output associated with these expenditures would be between \$50.7 million and \$53.1 million depending on the sourcing of the timber.

Most of the economic activity created by WVGBC will be in the manufacturing sector, as both the cooperage and the stave mill are manufacturing establishments. Other sectors with significant growth are agriculture, via demand for the timber industry, and services, via demand for healthcare and other services from households.

Profits, if recognized and spent within West Virginia, will result in additional economic impacts from WVGBC beyond what is evaluated here. This analysis ignores the potential profitability as it has not yet occurred and due to uncertainty about how profits will be recognized. This impact analysis should thus be considered a lower bound for potential economic impact as the WVGBC is likely to be profitable. The location of the cooperage near high quality white oak resources and its planned stave mill will enable efficient access to supply. In addition, that fact that there are no competitors within 200 hundred miles is a strong indicator of profitability.

## Introduction

The West Virginia Great Barrel Company (WVGBC) is a start-up company based in West Virginia that seeks to develop a barrel manufacturing facility to serve the regional bourbon industry. WVGBC will produce white oak barrels at a cooperage in White Sulphur Springs, WV. A stave mill to supply the cooperage will be located about 20 miles away at an existing lumber mill in Union, WV. This mill is an integral part of the business plan of WVGBC.

This report is an economic impact analysis that estimates the total economic effects of operating the cooperage in West Virginia and the multiplier effects of those expenditures on the economy of the State. This proposed facility will export its products to customers outside of West Virginia. Once built, the WVGBC will be the only cooperage in the State and will re-establish an industry that existed in West Virginia in the past.

At full capacity with a single shift, the cooperage will produce about 212,000 barrels per year. Under an expanded schedule, with two shifts, the plant would produce about 390,000 barrels. This analysis is for a single shift.

This analysis does not assess the profitability of the facility or the additional economic impact that would occur if the facility were to earn a profit. It is likely that WVGBC will earn a profit as the facility will supply product to a growth industry and has no competition in the area from other cooperages. However, because the firm has no sales history and because the economic impacts associated with profits are uncertain, this analysis is a conservative approach that presents only the basic impact of facility operations. Thus, these results can be considered a minimum level of impact that represents a break-even scenario.

## Timber Resources

The supply of white oak timber in the region is an important component of the business activity of the cooperage. The facility expects to use between 11 and 13 million board feet per year at full production capacity when operating a single shift. A sizeable portion of white oak timber can be sourced from West Virginia but due to the location of the mill in Union, and the need to procure timber from several suppliers, some supply will also come from Virginia and possibly other contiguous states.

West Virginia's timber resources have been maturing for several years and the mill is an existing facility that already has connections to regional timbering companies. Per the U.S. Department of Agriculture (USDA), "West Virginia's forests have been maturing as illustrated in the distribution of timberland by stand-size class. Since the 1975 inventory, the acreage of large-diameter stands has been steadily increasing. The acreage of small- and medium-diameter

stands has been declining since the 1989 inventory.”<sup>1</sup> Large-diameter trees are those with a diameter at breast-height (dbh) of 11 inches or more.

The following data describes estimates of net volume of large-diameter standing white oak sawtimber located within a 200-mile radius of Union, WV. Net volume of timber is the gross volume less deductions for rot, roughness, and poor form. Volume is computed for the central stem from a 1-foot stump to a minimum 4.0-inch top diameter outside bark, or to the point where the central stem breaks into limbs.

In addition to West Virginia, this area includes portions of Kentucky, Maryland, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee and Virginia. West Virginia’s share of all large-diameter standing white oak is about 25 percent of the area total, but varies by diameter class.

#### **Estimated Net Volume of White Oak Sawtimber on Forest Land (Billion board feet) in 2016**

<b>Diameter Class (inches)</b>	<b>All States (Billion board ft.)</b>	<b>West Virginia Share (Billion board ft.)</b>	<b>West Virginia Share %</b>
Total	36.62	9.17	25%
11.0-12.9	3.79	1.16	31%
13.0-14.9	5.53	1.51	27%
15.0-16.9	6.07	1.64	27%
17.0-18.9	6.43	1.43	22%
19.0-20.9	4.62	1.23	27%
21.0-28.9	8.55	1.86	22%
29.0+	1.63	0.34	21%

Source: U.S. Forest Service (USFS), Forest Inventory and Analysis (FIA) Program.

This data is an estimate of volume of white oak available on forest land in West Virginia, of which about two percent is restricted for timbering. The gross volume of standing white oak located on timberland, or unrestricted areas is about 98% of the gross volume on forestland. This means very little timber is restricted due to land status.<sup>2</sup> Per the USDA, 59 percent of the forest land in southeastern West Virginia is in corporate ownership.<sup>3</sup>

White oak constitutes about 9.4 percent of total timber resources in the region within a 200-mile radius of Union, WV. The white oak share in West Virginia is 9.3 percent.<sup>4</sup>

The WVGC will target white oaks with a diameter between 11 and 16.9 inches to supply the stave mill. This range of size could increase the ability to source white oak from West Virginia, as the State has more than 25 percent of sawtimber volume in these diameter classes.

<sup>1</sup> U.S. Department of Agriculture, Resource Update: “Forests of West Virginia, 2016.”

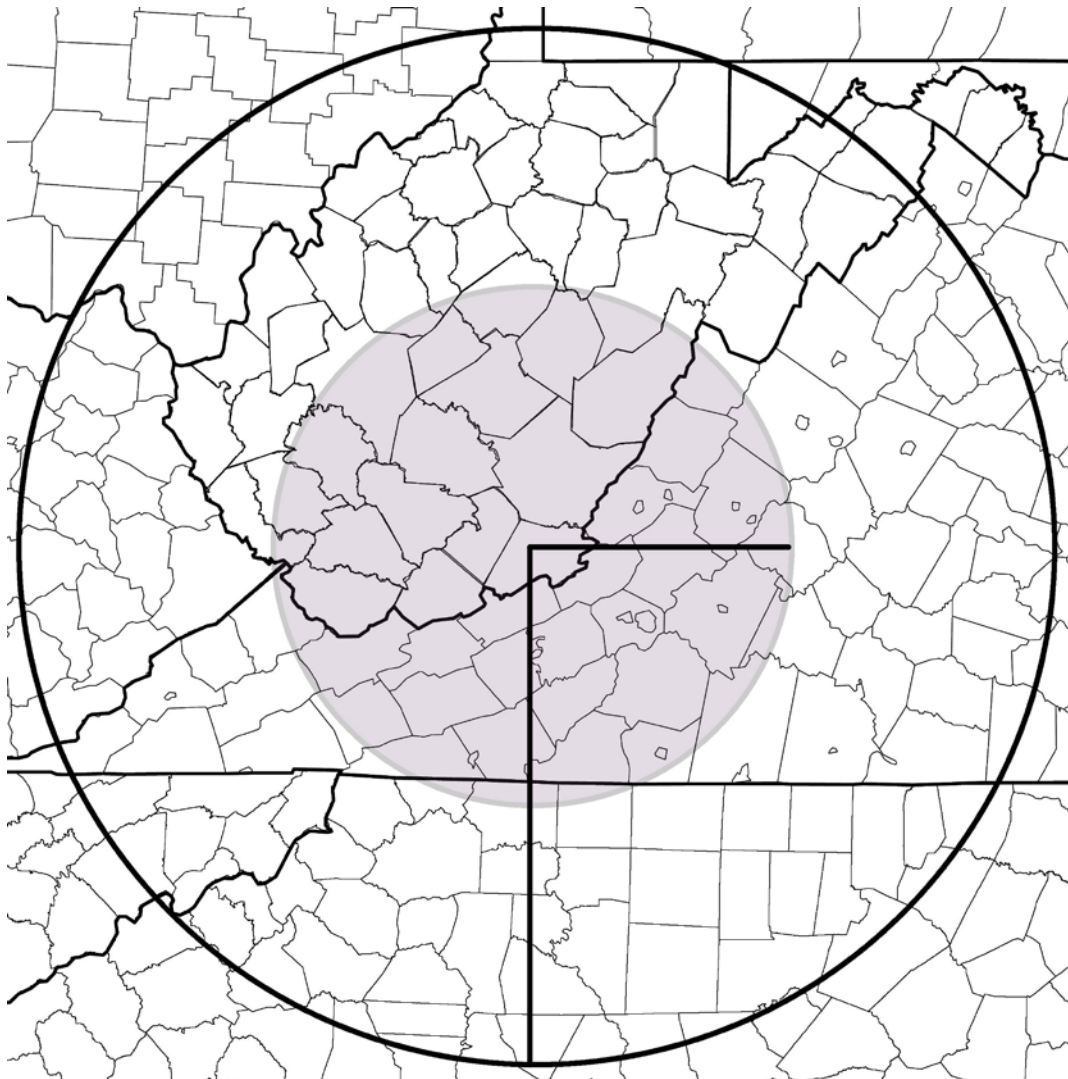
<sup>2</sup> Timberland excludes all lands where harvesting is not allowed such as National, State and local Parks, U.S. Fish and Wildlife Service areas, and wilderness areas in the Monongahela Forest.

<sup>3</sup> U.S. Department of Agriculture, Resource Update: “Forests of West Virginia, 2016.”

<sup>4</sup> U.S. Forest Service, Forest Inventory and Analysis (FIA) Program.

It is assumed that an effort would be made to procure timber from resources close to the mill in Union. The mill will be able to pay a premium to some timber operators in exchange for reduced hauling costs a closer supplier would allow. Thus, suppliers within 100 miles of the mill will be targeted before seeking supplies from further away. Under this type of arrangement, it is likely that closer to 50 percent of timber supplies could come from West Virginia. A 100-mile radius would primarily include timber resources in Virginia and West Virginia.

#### Counties Within a 100-Mile and 200-Mile Radius of Union, West Virginia



The USFS also maintains state-level estimates of the number of trees, net growth, mortality and annual harvest removals for white oak.<sup>5</sup> This data is shown below for West Virginia.

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<sup>5</sup> U.S. Department of Agriculture, Resource Update: "Forests of West Virginia, 2016."

**White Oak in West Virginia, 2016**

<b>Million Trees (≥ 5-inch diameter)</b>	<b>Net Volume (million ft<sup>3</sup>)</b>	<b>Net Growth (thousand ft<sup>3</sup>/yr)</b>	<b>Mortality (thousand ft<sup>3</sup>/yr)</b>	<b>Harvest Removals (thousand ft<sup>3</sup>/yr)</b>	<b>Harvest Removals (thousand board ft./yr)<sup>6</sup></b>
117	2,380	35,164	21,560	19,126	229,513

This analysis looks at the economic impact of the cooperage under two sourcing scenarios:

- 1) 25 percent of white oak sourced in West Virginia, and
- 2) 50 percent of white oak sourced in West Virginia.

Annual usage of lumber at the cooperage of 12 million board feet would equate to between three and six million board feet sourced from West Virginia forests. This amount of demand would be between 1.3 and 2.6 percent of the current white oak harvest removals of 230 million board feet. This makes the proposed facility very viable from a resource procurement perspective.

**Economic Impact**

The WVGBC cooperage would be a new manufacturing plant in the State of West Virginia. It is assumed that the firm would fall into the NAICS Industry Code “Wood Pallets and Container Manufacturing.” The firm would not compete with other cooperages in the State as it would be the only facility of its type.

Direct Impacts: The cooperage will employ 100 individuals with a single shift at full production. The facility will incur \$31 million in annual expenses, including employee compensation of \$5.2 million.

Employee Compensation	\$5.2 million
Mill Expenses (white oak staves)	\$23.1 million
Metal Hoops Expenses	\$1.7 million
<u>Other Operating Expenses</u>	<u>\$1.0 million</u>
Total Direct Spending Impacts	\$31.0 million

Indirect Impacts: These impacts include \$25.8 million in expenditures made by the cooperage to produce barrels and the multiplier effects of that spending in West Virginia. This includes operation of a local lumber mill (38 jobs) that will supply staves to the cooperage, as well as a local metal fabricator (7 jobs) of metal hoops to assemble the barrels and other expenditures

<sup>6</sup> 1,000 board feet = 83.33 ft<sup>3</sup>. 19,126,000 ft<sup>3</sup>/83.33 = 229,513 = about 230 million board feet.

made in operating the facility. Additional indirect impacts would occur in the logging industry (26 to 50 jobs), supplier to the stave mill, and related industries such as trucking.

Induced Impacts: These are the impacts of new household spending from increased income, which supports consumer industries like food services and medical industries.

This impact analysis was conducted using the IMPLAN regional economic impact model.<sup>7</sup> IMPLAN is an input-output model that simulates the interaction between industries and households in demand and supply of goods and services in a defined area.

The WVGBC anticipates revenues of around \$41 million associated with \$31 million in cost to produce 212,000 barrels. This impact study is based on the \$31 million expenditures only, and ignores the potential profits of the facility which would increase the economic impact of the WVGBC.

The impact area for this analysis is the State of West Virginia, although some economic activity will likely spill into Virginia. The combined impacts for employment<sup>8</sup>, income and value-added/gross state product (GSP) are:

## 25 Percent Timber Sourcing in West Virginia

The estimated economic impacts of the WVGBC facility, with sourcing of 25 percent of which oak from West Virginia are shown below.

### Annual Economic Impacts Sourcing 25% of White Oak from West Virginia

Impact Type	Employment	Labor Income	Value Added (GSP)	Output
<b>Direct</b>	100	\$5,200,000	\$5,200,000	\$31,000,000
<b>Indirect (Businesses)</b>	118	\$5,162,613	\$6,432,430	\$11,509,756
<b>Induced (Households)</b>	66	\$2,505,912	\$4,654,705	\$8,177,161
<b>Total Effect</b>	284	\$12,868,525	\$16,287,135	\$50,686,917

This impact analysis estimates that the cooperage would create 1.8 additional jobs for every job at the cooperage. For every \$1 in new labor income, the facility would create an additional \$1.5 in income. These multipliers are high compared to many other industries due to high use of local inputs to production, including in-State sourcing of 25 percent of white oak processed at the stave mill and use of a West Virginia-based steel fabricator to supply metal hoops.

<sup>7</sup> IMPLAN (Impacts for PLANning) Version 3.0.13.2.

<sup>8</sup> The default assumption is that all employees will reside in West Virginia, although proximity to Virginia may entice some Virginians to seek employment at the cooperage or one of its suppliers.



Multiplier Effects from Increased Business and Household spending: **184 jobs, \$7.7 million in labor income, \$11.1 million in GSP and \$19.7 million in output.**

Total Economic Impact: **284 jobs, \$12.9 million in income and \$16.3 million in Gross State Product.**

Not all spending stays in the West Virginia economy. For example, a portion of all employee compensation leaves the state via retail sales margins. In addition, every industry incurs expenditures for services and supplies that must be purchased outside of West Virginia.

Total employment impacts for the expenditures of the cooperage, by major sector of the economy are shown below. Most of the new jobs will be in the manufacturing sector, as both the cooperage (direct impacts) and the stove mill (part of indirect impacts) are manufacturing establishments.

#### Total Employment Impacts by Sector - Sourcing 25% of Timber from West Virginia

	Direct	Indirect	Induced	Total
<b>Total</b>	100	118	66	284
<b>Agriculture</b>	0	36	0	36
<b>Mining</b>	0	0	0	0
<b>Construction</b>	0	2	1	3
<b>Manufacturing</b>	100	52	0	152
<b>Transportation, Information, Power and Utilities</b>	0	7	1	8
<b>Wholesale &amp; Retail Trade</b>	0	4	17	20
<b>Service</b>	0	17	46	62
<b>Government</b>	0	1	1	2

Employment impacts are concentrated in the following industries.

#### Employment Impacts Sourcing 25% of Timber from West Virginia – Top 10 Industries

Industry Description	Employment	Labor Income
Wood containers and pallet manufacturing	100	\$5,200,000
Sawmills and wood preservation	44	\$2,310,415
Commercial logging	26	\$633,433
Food services and drinking places	11	\$208,068
All other crop farming	8	\$6,069
Other fabricated metal manufacturing	7	\$348,611
Wholesale trade businesses	6	\$355,437
Transport by truck	5	\$290,861
Private hospitals	5	\$308,131
Offices of physicians, dentists, and other health practitioners	4	\$320,888

Profits recognized as income to partnerships or sole proprietors would be reflected in larger amounts of induced impacts. The IMPLAN model estimates every additional \$1 million in sole proprietor or partnership income will result in an additional 5 jobs, \$200,000 in labor income and \$350,000 in gross state product. As with all spending in a small economy like West Virginia, a portion of income is assumed to be leaked to other states.

### 50 Percent Timber Sourcing in West Virginia

A scenario where 50 percent of white oak is sourced from West Virginia results in larger impacts. Doubling the amount of timber sourced from West Virginia would add another 30 jobs and \$800,000 in income the result of indirect and induced economic activity.

#### Annual Economic Impacts Sourcing 50% of White Oak from West Virginia

Impact Type	Employment	Labor Income	Value Added	Output
Direct	100	\$5,200,000	\$5,200,000	\$31,000,000
Indirect (Businesses)	145	\$5,872,477	\$7,086,416	\$13,491,296
Induced (Households)	69	\$2,640,014	\$4,903,798	\$8,614,754
Total Effect	314	\$13,712,491	\$17,190,214	\$53,106,050

Multiplier Effects from Increased Business and Household spending: **214 jobs, \$8.5 million in labor income, \$12 million in GSP and \$22.1 million in output.**

Total Economic Impact: **314 jobs, \$13.7 million in income and \$17.2 million in Gross State Product.**

Under this 50 percent in-State sourcing scenario, the impact simulation estimates that the facility would create about additional 2.1 jobs for every job at the cooperage. For every \$1 in new labor income, the facility would create an additional \$1.6 in income.

Employment impacts are concentrated in the following industries.

#### Employment Impacts Sourcing 50% of Timber from West Virginia – Top 10 Industries

Industry Description	Employment	Labor Income
Wood containers and pallet manufacturing	100	\$5,200,000
Commercial logging	50	\$1,225,853
Sawmills and wood preservation	44	\$2,311,787
Food services and drinking places	11	\$217,164
All other crop farming	9	\$7,057
Other fabricated metal manufacturing	7	\$348,611
Wholesale trade businesses	6	\$373,437
Transport by truck	5	\$301,434
Private hospitals	5	\$324,621
Offices of physicians, dentists, and other health practitioners	4	\$338,060

Total employment impacts for the expenditures of the cooperage, by major sector of the economy are shown below.

#### Total Employment Impacts by Sector - Sourcing 50% of Timber from West Virginia

	Direct	Indirect	Induced	Total
<b>Total</b>	100	145	69	314
<b>Agriculture</b>	0.0	62.0	0.3	62
<b>Mining</b>	0.0	0.2	0.1	0
<b>Construction</b>	0.0	2.0	0.6	3
<b>Manufacturing</b>	100	52	0	152
<b>Transportation, Information, Power and Utilities</b>	0.0	7.0	1.4	8
<b>Wholesale &amp; Retail Trade</b>	0.0	4.0	17.6	22
<b>Service</b>	0.0	17.1	47.9	65
<b>Government</b>	0.0	0.5	1.1	2

The potential tax impacts to the State of West Virginia are shown below, and are based on CBER's internal tax model which is based on employment. The State will also benefit from an increased tax base with the addition of the WVGC facility.

#### State Tax Impacts

Category of Tax	25% WV Sourced Timber	50% WV Sourced Timber
Business Taxes	\$239,031	\$264,280
Consumer Sales & Use Taxes	\$471,594	\$521,410
Personal Taxes	\$706,517	\$781,149
Excise Taxes	\$222,494	\$245,997
Miscellaneous Fees and Transfers	\$7,616	\$8,421
Taxes Collected by Counties	\$2,564	\$2,835
<b>Total</b>	<b>\$1,649,816</b>	<b>\$1,824,092</b>

These additions to employment in Greenbrier county will contribute to a local economy that has seen little growth in recent years. While small increases have been seen in other goods producing industries, overall employment has been stagnant.

#### Recent Employment Trends by Major Sector in Greenbrier County

Sector	2016	2015	2014	2013	2012
Private – Goods Producing	1,470	1,500	1,460	1,360	1,360
Private – Service Providing	10,420	10,460	10,630	10,560	10,530
Government	2,330	2,380	2,370	2,590	2,500
<b>Total</b>	<b>14,220</b>	<b>14,340</b>	<b>14,460</b>	<b>14,510</b>	<b>14,390</b>

Source: Workforce West Virginia, 2017.

## Summary

The West Virginia Great Barrel Company's cooperage in White Sulphur Springs will be a new employer in the area. The facility would create between 284 and 314 jobs, depending on the sourcing of white oak for the stave mill. With the possible addition of a second shift in the future, this impact could almost double.

The planned facility has a high share of local purchases due to its use West Virginia-based suppliers for the bulk of its major inputs to production. WVGBC will use an existing lumber mill to produce staves for its barrels, a local metal fabricator for its barrel rings and will source up to 50 percent of white oak from the State to supply the mill.

This analysis is focused on the economic impact of operating the cooperage and associated employment and indirect business activity. Profits, if recognized and spent within West Virginia, will result in additional economic impacts from WVGBC to the economy beyond what is evaluated here.