EMP-118, Sub 1 Documentation for Patrick Flynn Petition 1924 Paradise Rd. Edenton, NC 27932 (252)334-7091 ncwriter2001@yahoo.com

TIMBERMILL WIND

ECONOMIC AND FISCAL CONTRIBUTION TO

CHOWAN COUNTY, NORTH CAROLINA





4201 DOMINION BOULEVARD, SUITE 114 GLEN ALLEN, VIRGINIA 23060 804-346-8446

MANGUMECONOMICS.COM

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About Mangum Economics, LLC

Mangum Economics, LLC is a Richmond, Virginia based firm that specializes in producing objective economic, quantitative, and qualitative analysis in support of strategic decision making. Much of our recent work relates to IT & Telecom Infrastructure (data centers, terrestrial and subsea fiber), Renewable Energy, and Economic Development. Examples of typical studies include:

POLICY ANALYSIS

Identify the intended and, more importantly, unintended consequences of proposed legislation and other policy initiatives.

ECONOMIC IMPACT ASSESSMENTS AND RETURN ON INVESTMENT ANALYSES

Measure the economic contribution that businesses and other enterprises make to their localities.

WORKFORCE ANALYSIS

Project the demand for, and supply of, qualified workers.

CLUSTER ANALYSIS

Use occupation and industry clusters to illuminate regional workforce and industry strengths and identify connections between the two.

The Project Team

Martina Arel, M.B.A. Researcher and Economic Development Specialist

A. Fletcher Mangum, Ph.D. Founder and CEO



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Executive Summary

This report assesses the economic and fiscal contribution that the proposed Timbermill Wind project would make to Chowan County, North Carolina. The primary findings from that assessment are as follows:

- The proposed Timbermill Wind project that may be developed by Apex Clean Energy is a 189-Megawatt (MW) wind power facility that would be located north of U.S. Highway 17 and east of Route NC 32 in Chowan County, North Carolina. The total acreage involved in the project encompasses approximately 8,500 acres of private land in Chowan County, of which the majority would be leased and a small portion would be purchased.
- 2) The proposed Timbermill Wind project would make a significant economic contribution to Chowan County:
 - The proposed Timbermill Wind project would provide an estimated one-time pulse of economic activity to Chowan County during its construction phase that would support approximately:
 - 152 job years.¹
 - \$5.5 million in associated labor income.
 - \$19.8 million in economic output.²
 - \$505,103 in state and local tax revenue.
 - The proposed Timbermill Wind project would provide an estimated annual economic impact to Chowan County during its ongoing operational phase that would support approximately:³
 - 17 jobs (12 direct, 5 indirect/induced).⁴
 - \$1.1 million in associated labor income.
 - \$1.5 million in economic output.

3) The proposed Timbermill Wind project would have a significantly greater fiscal impact on Chowan County than the property generates in its current agricultural use.

• The proposed Timbermill Wind project would generate approximately \$33.0 million in cumulative county tax revenue over a 30-year period, as compared to approximately

⁴ Total jobs consist of direct jobs created by the Timbermill Wind project, plus indirect and induced jobs. The direct jobs and associated spending will have a ripple effect throughout the local economy. One dollar in expenditures will create multiple dollars of income and therefore support the additional indirect and induced jobs locally.



¹ A job year is equal to one job over one year. It is used to denote employment on construction projects where the construction schedule extends beyond one year and to account for the fact that actual on-site employment may vary over the period. For example, a construction project that lasted two years and employed 50 workers on-site the first year and 100 workers on-site the second year, would provide 150 job years of employment.

² Economic output is an accounting of all of the money that changes hands in a local economy. Please note that the analysis does not take into account the indirect and induced impact stemming from the additional specialized construction labor brought into the county.

³ Includes the impact of confidential lease and royalty payments to landowners residing in Chowan County.



\$15,762 in cumulative county tax revenue in the property's current agricultural use. This constitutes a difference of approximately \$33.0 million between the two uses.

- To put these numbers into perspective, the \$1.1 million in average annual Chowan County tax revenue⁵ from the Timbermill Wind project (in 2020 dollars) is equivalent to about 4.7 percent of Chowan County's FY '19 total revenues or about 28.9 percent of the FY '19 countywide education funding.⁶
- Timbermill Wind's average assessed value of personal and real property investments of approximately \$135.6 million (in 2020 dollars) would make it the county's largest taxpayer, with an average assessed valuation equivalent to approximately 9.0 percent of the 2019 total countywide assessed valuation.
- Taxation of the capital investment in real and personal property of the proposed Timbermill Wind project over a 30-year period would generate approximately:
 - \$30.7 million in cumulative Chowan County tax revenue, and
 - \$2.2 million in cumulative Chowan County fire district tax revenue.

 ⁵ Please refer to "Fiscal Impact" section for details. Calculations based on total capital investment and current county tax rates.
 ⁶ Data Source: Chowan County Annual Financial Report for the Year Ended June 30, 2019.



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Cumulative Chowan County and Fire District Tax Revenue over 30-Years (2020 dollars)



4) The proposed Timbermill Wind project would provide a boost to Chowan County's construction sector:

- At 155 jobs, construction is not among Chowan County's largest industry sectors but construction sector jobs pay average weekly wages (\$837/week) that are 20 percent above the county-wide average wage (\$695/week).
- Additionally, the construction sector posted a loss of 8 jobs in the county between 2018 and 2019.
- We estimate that the proposed Timbermill Wind project would directly support approximately 113 jobs and \$4.0 million in wages in Chowan County's construction sector.

The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing that information. However, because these estimates attempt to foresee circumstances that have not yet occurred, it is not possible to provide any assurance that they will be representative of actual events. These estimates are intended to provide a general indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

Introduction

This report assesses the economic and fiscal contribution that the proposed Timbermill Wind project would make to Chowan County, North Carolina. This report was commissioned by Apex Clean Energy and produced by Mangum Economics.

The Project

The proposed Timbermill Wind project that may be developed by Apex Clean Energy is a 189-Megawatt (MW), 45-turbine wind power facility that would be located north of U.S. Highway 17 and east of Route NC 32 in Chowan County, North Carolina. The total acreage involved in the project encompasses approximately 8,500 acres of private land in Chowan County, of which the majority would be leased and a small portion would be purchased.

Electricity Production in North Carolina

In this section, we provide a backdrop for the proposed Timbermill Wind project by profiling North Carolina's electricity production sector and the role that wind energy could play in that sector.

Overall Market

As shown in Figure 1, in 2018 electricity sales and direct use in North Carolina totaled 140.4 million megawatt hours. However, only approximately 90 percent of that demand was met by in-state utilities, independent producers, and other sources. As a result, North Carolina had to import additional electricity it consumed from producers in other states. As with all imports, this means that the jobs, wages, and economic output created by that production went to localities in those states, not to localities in North Carolina.⁷

⁷ Data Source: U.S. Energy Information Administration.

Sources of Production

Between 2008 and 2018, the total amount of electricity produced in North Carolina increased from 125.2 to 134.2 million megawatt hours, while retail and direct consumption of electricity increased slightly less from 132.9 to 140.4 million megawatt hours. Consequently, imports of electricity also declined during this time.

Figure 2 provides a comparison of the energy sources that were used to produce electricity in North Carolina in 2008 and 2018. As these data show, the most significant change between 2008 and 2018 was a decrease in the use of coal and an increase in the use of natural gas and renewable energy. Where coal was the state's largest source of electricity in 2008, accounting for 61 percent of production, by 2018 it accounted for only 24 percent of production. In contrast natural gas increased its proportion tenfold from only 3 percent of North Carolina's electricity production in 2008 to 32 percent in 2018. Additionally, solar increased its proportion of electricity production from 0 percent to 5 percent during this time, while wind energy entered the market in 2016 and comprised about 0.4 percent of total electricity production in 2018.

⁸ Data Source: U.S. Energy Information Administration. In this chart, "Net Imports" also takes into account losses during transmission. As a result, it does not directly equal the residual of "Total Net Generation" minus "Total Retail Sales and Direct Use."

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Figure 2: Electricity Generation in North Carolina by Energy Source⁹

Figure 3 provides similar data for the U.S. as a whole. A quick comparison of Figures 2 and 3 shows similarities, even though the degree of reliance on specific energy sources for electricity production is somewhat different. Nationally, as in North Carolina, the most pronounced trend between 2008 and 2018 was that cleaner-burning low-emissions energy sources replaced high-emissions sources over the period. Where coal accounted for 48 percent of all electricity production nationwide in 2008, by 2018 that proportion had fallen to 27 percent. While at the other end of the spectrum, where natural gas accounted for 22 percent of electricity production nationally in 2008, by 2018 that figure had grown to 35 percent. Similarly, nationwide the contribution of solar and wind power to electricity production increased, with solar rising from 0 to 2 percent of production between 2008 and 2018 and wind rising from 1 to 7 percent.

⁹ Data Source: U.S. Energy Information Administration. *The "Other" category includes hydroelectric, battery, wood, petroleum, other biomass, "other", and pumped storage.*

Figure 3: Electricity Generation in the U.S. by Energy Source¹⁰

Impact on the Environment

In discussing the impact of these trends on the environment, it is important to realize that electricity production is the U.S.'s largest source of greenhouse gas emissions. Figure 4 depicts carbon dioxide emissions from electricity production in 2008 and 2018 for both North Carolina and the U.S. As these data indicate, between 2008 and 2018, as the share of electricity in North Carolina produced by coal fell from 61 to 24 percent, carbon dioxide emissions from electricity production fell from 75.3 to 49.6 million metric tons. Where at the national level, as the share of electricity produced by coal fell from 48 to 27 percent, carbon dioxide emissions from electricity production fell from 2,484.0 to 1,874.3 million metric tons.

¹⁰ Data Source: U.S. Energy Information Administration. *The "Other" category includes battery, geothermal, hydroelectric, wood, petroleum, other biomass, other gas, "other", and pumped storage.*

Local Economic Profile

In this section, we provide context for the economic and fiscal impact assessments to follow by profiling the local economy of Chowan County.

Total Employment

Figure 5 depicts the trend in total employment in Chowan County from March 2015 to March 2020. As these data show, employment in the county demonstrated significant seasonal variation over this fiveyear period but generally trended slowly upward. As of March 2020, employment stood at 4,646 jobs in Chowan County, which represents an increase of 116 jobs, or 2.6 percent employment growth, over the period as a whole. To put this number in perspective, over this same period total statewide employment in North Carolina increased by 9.9 percent.¹²

¹² Data Source: U.S. Bureau of Labor Statistics.

¹¹ Data Source: U.S. Energy Information Administration.

Figure 5: Total Employment in Chowan County – March 2015 to March 2020¹³

To control for seasonality and provide a point of reference, Figure 6 compares the year-over-year change in total employment in Chowan County to that of North Carolina as a whole over the same five-year period. Any point above the zero line in this graph indicates an increase in employment, while any point below the zero line indicates a decline in employment. As these data show, year-over-year employment growth in Chowan County underperformed the statewide average over most of this period. Whereas the state of North Carolina saw consistent, positive employment growth over the last five years, Chowan County experienced multiple periods of declining employment. As of March 2020, however, the year-over-year change in total employment in Chowan County stood at 2.6 percent while total statewide employment growth had dropped to 0.9 percent.

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¹³ Data Source: U.S. Bureau of Labor Statistics.

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Figure 6: Year-Over-Year Change in Total Employment – March 2015 to March 2020¹⁴

Employment and Wages by Major Industry Sector

To provide a better understanding of the underlying factors motivating the total employment trends depicted in Figures 5 and 6, Figures 7 through 9 provide data on private employment and wages by major industry sector in Chowan County.

Figure 7 depicts the distribution of private sector employment across major industry categories in Chowan County in 2019. The largest employment sector that year was Trade, Transportation, and Utilities (1,117 jobs), followed by Education and Health Services (593 jobs), and Manufacturing (510 iobs).15

Figure 8 provides a similar ranking for private sector average weekly wages by major industry category. The highest paying industry sector in Chowan County in 2019 was Professional and Business Services (\$1,156 per week), followed by Manufacturing (\$951 per week), and Financial Activities (\$866 per week). To provide a point of reference, the average private sector weekly wage across all industries in 2019 was \$695.

¹⁵ Data Source: U.S. Bureau of Labor Statistics.

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¹⁴ Data Source: U.S. Bureau of Labor Statistics.

Figure 7: Private Employment by Major Industry Sector in Chowan County in 2019¹⁶

¹⁶ Data Source: U.S. Bureau of Labor Statistics.

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Figure 8: Average Private Sector Weekly Wages by Major Industry Sector in Chowan County in 2019¹⁷

¹⁷ Data Source: U.S. Bureau of Labor Statistics.

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Figure 9: Change in Private Employment by Major Industry Sector in Chowan County from 2018 to 2019¹⁸

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Lastly, Figure 9 details the year-over-year change in private sector employment between 2018 and 2019 by major industry sector in Chowan County. Over this period, the largest employment gain occurred in the Trade, Transportation, and Utilities sector (up 93 jobs) and the largest employment losses occurred in the Leisure and Hospitality (down 49 jobs) and Education and Health Services (down 45 jobs) sectors.

Unemployment

Figure 10 illustrates the unemployment trend in Chowan County over the five-year period from August 2015 through August 2020 and benchmarks those data against the statewide trend for North Carolina. As these data show, unemployment rates in Chowan County generally tracked one percentage point above the statewide norm prior to March 2020. Unemployment in February 2020 stood at 4.3 percent in Chowan County as compared to 3.7 percent in North Carolina as a whole. However, as a result of economic dislocations caused by the Covid-19 virus, in April 2020 unemployment rates in Chowan County, as well as unemployment rates for North Carolina and the rest of the United States, rose to levels not seen since the Great Depression of the 1930s. As of August 2020, unemployment stood at 5.7 percent in Chowan County compared to 6.8 percent statewide.

Figure 10: Unemployment Rate – August 2015 to August 2020¹⁹

¹⁹ Data Source: U.S. Bureau of Labor Statistics.

Economic and Fiscal Impact

In this section, we quantify the economic and fiscal contribution that the proposed Timbermill Wind project would make to Chowan County. Our analysis separately evaluates the one-time pulse of economic activity that would occur during the construction phase of the project, as well as the annual economic activity that the project would generate during its ongoing operations phase.

Method

To empirically evaluate the likely local economic impact attributable to the proposed Timbermill Wind project, we employ a regional economic impact model called IMPLAN.²⁰ The IMPLAN model is one of the most commonly used economic impact simulation models in the U.S. and is commonly employed by universities, state agencies and research institutes. Like all economic impact models, the IMPLAN model uses economic multipliers to quantify economic impact.

Economic multipliers measure the ripple effects that an expenditure generates as it makes its way through the economy. For example, as when the Timbermill Wind project purchases goods and services – or when employees and contractors hired by the facility use their salaries and wages to make household purchases – thereby generating income for someone else, which is in turn spent, thereby becoming income for yet someone else, and so on, and so on. Through this process, one dollar in expenditures generates multiple dollars of income. The mathematical relationship between the initial expenditure and the total income generated is the economic multiplier.

One of the primary advantages of the IMPLAN model is that it uses regional and national production and trade flow data to construct region-specific and industry-specific economic multipliers, which are then further adjusted to reflect anticipated actual spending patterns within the specific geographic study area that is being evaluated. As a result, the economic impact estimates produced by IMPLAN are not generic. They reflect as precisely as possible the economic realities of the specific industry, and the specific study area, being evaluated.

In the analysis that follows, these impact estimates are divided into three categories. First round direct impact measures the direct economic contribution of the entity being evaluated (e.g. goods and services purchased by the Timbermill Wind project). Second round indirect and induced impact measures the economic ripple effects of this direct impact in terms of business to business, and household to business, transactions. Total impact is simply the sum of the preceding two. These categories of impact are then further defined in terms of employment (the jobs that are created), labor income (the wages and benefits associated with those jobs), and economic output (the total amount of economic activity that is created in the economy).

²⁰ IMPLAN is produced by IMPLAN Group, LLC.

Construction Phase

In this portion of the section, we assess the economic and fiscal impact that the one-time pulse of activity associated with construction of the proposed Timbermill Wind project would have on Chowan County.

Assumptions

In conducting our analysis, we employ the following assumptions:

- Total capitalized investment in the proposed Timbermill Wind project is estimated to be approximately \$246.0 million.²¹
 - Architecture, engineering, site preparation, installation and other construction costs are estimated to be approximately \$87.5 million.²² It is estimated that approximately 17 percent of that total would be spent with vendors in Chowan County.²³
 - It is anticipated that no capital equipment will be purchased from vendors in Chowan County.²⁴
- For ease of explication all construction expenditures are assumed to take place within a single calendar year.

Results

By feeding these assumptions into the IMPLAN model, we obtain the following estimates of one-time economic and fiscal impact. As shown in Table 1, construction of the proposed Timbermill Wind project would directly support approximately: 1) 113 job years, 2) \$4.0 million in labor income, and 3) \$14.6 million in economic output to the construction sector in Chowan County (in 2020 dollars).²⁵

Taking into account the economic ripple effects that direct investment would generate, we estimate that the total one-time impact on Chowan County would support approximately: 1) 152 job years, 2) \$5.5 million in labor income, 3) \$19.8 million in economic output, and 4) \$505,103 in state and local tax revenue (in 2020 dollars).²⁶

²⁵ A job year is equal to one job over one year. It is used to denote employment on construction projects where the construction schedule extends beyond one year and to account for the fact that actual on-site employment may vary over the period. For example, a construction project that lasted two years and employed 50 workers on-site the first year and 100 workers on-site the second year, would provide 150 job years of employment. It is important to note that construction sector jobs are not necessarily new jobs but the investments made can also support a job during the construction of the project.
²⁶ The analysis does not take into account the indirect and induced impact stemming from the additional specialized construction labor brought into the county.

²¹ Data Source: Apex Clean Energy, Inc.

²² Data Source: Apex Clean Energy, Inc.

²³ Data Source: IMPLAN Group, LLC.

²⁴ Data Source: IMPLAN Group, LLC.

Table 1: Estimated One-Time Economic and Fiscal Impact on Chowan County from Construction of the
Timbermill Wind Project (2020 Dollars)27

Economic Impact	Employment – Job Years ²⁸	Labor Income	Output ²⁹
1 st Round Direct Economic Activity	113	\$4,044,124	\$14,600,000
2 nd Round Indirect and Induced Economic Activity	39	\$1,483,309	\$5,164,253
Total Economic Activity	152	\$5,527,432	\$19,764,253
Fiscal Impact			
State and Local Tax Revenue			\$505,103
**			

*Totals may not sum due to rounding.

Ongoing Operations Phase

In this portion of the section, we assess the annual economic and fiscal impact that the proposed Timbermill Wind project would have on Chowan County over a 30-year period.

Assumptions

In conducting our analysis, we employ the following assumptions:

- Timbermill Wind would employ approximately 11 individuals. Timbermill would annually spend approximately \$1.0 million for salaries, building maintenance, and other operational expenditures.³⁰
- The Timbermill Wind project would involve a total investment of approximately \$246.0 million.³¹
 - \$218.0 million would be assessed as personal property, and
 - \$28.0 million would be real property improvements to the site.³²
- Applicable tax rates are the Chowan County property tax rate of \$0.755 per \$100 and the County Fire District tax rate of \$0.055 per \$100.³³ Tax rates are assumed to remain constant throughout the analysis.

 ³² Data Source: Apex Clean Energy, Inc. Real property improvements include investments made in site preparation, utilities system update, architecture and engineering costs, operations building, meteorological towers and other improvements.
 ³³ Data Source: Chowan County Tax Department.

²⁷ It is important to note that construction sector jobs are not necessarily new jobs but the investments made can also support a job during the construction of the project.

²⁸ A job year is equal to one job over one year. It is used to denote employment on construction projects where the construction schedule extends beyond one year and to account for the fact that actual on-site employment may vary over the period. For example, a construction project that lasted two years and employed 50 workers on-site the first year and 100 workers on-site the second year, would provide 150 job years of employment. It is important to note that construction sector jobs are not necessarily new jobs but the investments made can also support a job during the construction of the project.
²⁹ Economic output is an accounting of all of the money that changes hands in a local economy.

³⁰ Data Source: Apex Clean Energy, Inc.

³¹ Data Source: Apex Clean Energy, Inc.

- The proposed Timbermill Wind project would make confidential lease and royalty payments to local landowners.³⁴
- The proposed Timbermill Wind project would install 45 turbines.³⁵
- The combined impact of roads, substations and turbines would result in taking approximately 75 acres out of agricultural production.³⁶ Of this affected acreage:
 - Approximately 40 percent (30 acres) are currently assessed at market value.
 - Approximately 60 percent (45 acres) are currently part of the Present Use Value (PUV)
 Program. It is assumed that only these 45 acres would be taken out of the PUV Program and the remainder of the affected parcel would not be impacted.³⁷

Results – Economic Impact

By feeding these assumptions into the IMPLAN model, we obtain the following estimates of annual economic impact. As shown in Table 2, annual operation of the proposed Timbermill Wind project would directly support approximately: 1) 12 jobs, 2) \$959,754 in labor income, and 3) \$1.0 million in economic output in Chowan County (in 2020 dollars). Taking into account the economic ripple effects that direct impact would generate, we estimate that the total annual impact on Chowan County would support approximately: 1) 17 jobs, 2) \$1.1 million in labor income, and 3) \$1.5 million in economic output (in 2020 dollars).

Table 2: Estimated Annual Economic Impact on Chowan County from the Ongoing Operation of theTimbermill Wind Project (2020 Dollars)

Economic Impact	Employment	Labor Income	Output
1 st Round Direct Economic Activity	12	\$959,754	\$1,001,763
2 nd Round Indirect and Induced Economic Activity	5	\$122,760	\$498,180
Total Economic Activity	17	\$1,082,513	\$1,499,943

*Totals may not sum due to rounding.

Results – Fiscal Impact

In this portion of the section, we quantify the direct fiscal contribution that the proposed Timbermill Wind project would make to Chowan County. It should be noted at the outset, however, that the analysis that follows likely understates the actual fiscal impact that Timbermill Wind would have on the

³⁷ Data Source: Apex Clean Energy, Inc. and Chowan County Real Estate search website.

³⁴ Data Source: Apex Clean Energy, Inc.

³⁵ Data Source: Apex Clean Energy, Inc. Apex cannot build the proposed project until approvals are received from the Federal Aviation Administration, the U.S. Army Corps of Engineers, the N.C. Department of Environmental Quality, the N.C. Utilities Commission, and possibly, other government agencies. The final number of turbines will be subject to review from those entities.

³⁶ Data Source: Apex Clean Energy, Inc.

county as it only accounts for the direct fiscal impact that Timbermill Wind would generate. It does not take into account any additional tax revenue that would be generated as a result of the indirect economic activity attributable to the ongoing operation of the Timbermill Wind project.

In the following sections, we will first consider the additional revenue generated from taxation of the capital investment in personal property and then the revenue generated from taxation of the real property improvements and taxation of the land.

Taxation of Capital Investment in Personal Property

Table 3 details the estimated assessed value of the capital investment in personal property and the associated potential future tax revenue over a 30-year period. These calculations are based on: 1) the original capitalized cost of the investment, times 2) the North Carolina Department of Revenue "Percent Good Factor" for wind power electricity generation systems, Schedule T, Life 18, times 3) the applicable Chowan County tax rate.

As the data in Table 3 indicate, the appraised value of the investment in personal property is estimated to be approximately \$204.9 million in year 1 of the project, thereafter increasing to approximately \$224.5 million in year 2, and then gradually declining to approximately \$54.5 million in year 16 and thereafter as depreciation plateaus (in 2020 dollars).

Based on these appraised market values, the additional Chowan County tax revenue from taxation of personal property is estimated at approximately \$1.7 million in year 1 of the project, thereafter increasing to approximately \$1.8 million in year 2, and then gradually declining to approximately \$441,450 in year 16 and thereafter – for a cumulative total of approximately \$26.2 million over 30 years (an average of \$871,717 annually) (in 2020 dollars).

This \$26.2 million in cumulative tax revenue is comprised of approximately \$24.4 million (an average of \$812,526 annually) in Chowan County general tax revenue, and approximately \$1.8 million (an average of \$59,191 annually) in Chowan County Fire District tax revenue (in 2020 dollars).

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Year	Original Cost of Investment ³⁸	Percent Good Factor ³⁹	Appraised Market Value	Additional General County Revenue ⁴⁰	Additional County Fire District Revenue ⁴¹	Total Additional County Revenue
1	\$218,000,000	94%	\$204,920,000	\$1,547,146	\$112,706	\$1,659,852
2	\$218,000,000	103%	\$224,540,000	\$1,695,277	\$123,497	\$1,818,774
3	\$218,000,000	98%	\$213,640,000	\$1,612,982	\$117,502	\$1,730,484
4	\$218,000,000	94%	\$204,920,000	\$1,547,146	\$112,706	\$1,659,852
5	\$218,000,000	88%	\$191,840,000	\$1,448,392	\$105,512	\$1,553,904
6	\$218,000,000	85%	\$185,300,000	\$1,399,015	\$101,915	\$1,500,930
7	\$218,000,000	86%	\$187,480,000	\$1,415,474	\$103,114	\$1,518,588
8	\$218,000,000	81%	\$176,580,000	\$1,333,179	\$97,119	\$1,430,298
9	\$218,000,000	78%	\$170,040,000	\$1,283,802	\$93,522	\$1,377,324
10	\$218,000,000	71%	\$154,780,000	\$1,168,589	\$85,129	\$1,253,718
11	\$218,000,000	63%	\$137,340,000	\$1,036,917	\$75,537	\$1,112,454
12	\$218,000,000	55%	\$119,900,000	\$905,245	\$65,945	\$971,190
13	\$218,000,000	45%	\$98,100,000	\$740,655	\$53,955	\$794,610
14	\$218,000,000	37%	\$80,660,000	\$608,983	\$44,363	\$653,346
15	\$218,000,000	28%	\$61,040,000	\$460,852	\$33,572	\$494,424
16	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
17	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
18	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
19	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
20	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
21	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
22	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
23	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
24	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
25	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
26	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
27	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
29	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450
30	\$218,000,000	25%	\$54,500,000	\$411,475	\$29,975	\$441,450

Table 3: Estimated Assessment Value of the Proposed Wind Project Investment over 30-Years (2020Dollars)

³⁸ Data Source: Apex Clean Energy, Inc.

⁴⁰ Based on Chowan County's property tax rate of \$0.755 per \$100. Tax rate assumed to remain constant throughout analysis.

⁴¹ Based on Chowan County's fire district tax rate of \$0.055 per \$100. Tax rate assumed to remain constant throughout analysis.

³⁹ Data Source: North Carolina Department of Revenue, <u>2020 Cost Index and Depreciation Schedule</u>. Schedule T, Life 18 for Wind Power Electricity Generation Systems. Personal property includes wind turbines, support shafts and foundations, ancillary lines, transformers, and other equipment necessary to move the electricity from the wind turbines to the utility's transmission line.

Table 3: Estimated Assessment Value of the Proposed Wind Project Investment over 30-Years (2020 Dollars)

Year	Original Cost of Investment ³⁸	Percent Good Factor ³⁹	Appraised Market Value	Additional General County Revenue ⁴⁰	Additional County Fire District Revenue ⁴¹	Total Additional County Revenue
Cumula	ative Total			<u>\$24,375,779</u>	<u>\$1,775,719</u>	<u>\$26,151,498</u>
Averag	e Annual		<u>\$107,619,333</u>	<u>\$812,526</u>	<u>\$59,191</u>	<u>\$871,717</u>

*Totals may not sum due to rounding.

Taxation of Real Estate

Table 4 details the additional Chowan County tax revenue from taxation of real property improvements and from taxation of the 75 acres directly used for the operations of the wind installation. Based on an estimated assessment of approximately \$28.0 million in real property improvements and an assessed value of approximately \$98,163 of the 75 acres directly impacted, we estimate the total Chowan County real property tax revenue from the project to be approximately \$227,595 per year, for a cumulative total of approximately \$6.8 million over a 30-year period (in 2020 dollars).⁴²

This \$6.8 million in cumulative total tax revenue is comprised of approximately \$6.4 million (an average of approximately \$212,141 annually) in Chowan County general tax revenue, approximately \$463,620 (an average of approximately \$15,454 annually) in Chowan County Fire District tax revenue, and a one-time Present Use Value deferred tax payment on the estimated 45 acres taken out of the agricultural exemption status of approximately \$810 (in 2020 dollars).

In contrast, the property currently generates approximately \$526 per year in real property tax revenue, for a cumulative total of approximately \$15,762 over 30 years (in 2020 dollars).⁴³

⁴³ Data Source: Chowan County online property card database. Derived from average value of all parcels leased for the project.

⁴² Please note that Timbermill Wind would only pay real property taxes on leased parcels on the value of the increase in assessments stemming from the project.

Table 4:Estimated Tax Revenue Generated by the Proposed Timbermill Wind Project over 30-Years from
Real Property Taxes (2020 Dollars)

	Taxable Value ⁴⁴	Chowan County General	Chowan Fire District	Total Chowan County
Tax Rate (per \$100) ⁴⁵		0.755	0.055	
Annual Real Estate Tax – Improvements	\$28,000,000	\$211,400	\$15,400	\$226,800
Annual Real Estate Tax – Land ⁴⁶	\$98,163	\$741	\$54	\$795
Total Annual Revenue		\$212,141	\$15,454	\$227,595
Cumulative Revenue over 30 years		\$6,364,234	\$463,620	\$6,827,854
PUV Deferred Tax Payments (45 acres) ⁴⁷		\$755	\$55	\$810
TOTAL Cumulative Real Property Revenue over 30 years		<u>\$6,364,989</u>	<u>\$463,675</u>	<u>\$6,828,664</u>

*Totals may not sum due to rounding.

Total Fiscal Impact

Table 5 combines the results from the calculations depicted in Tables 3 and 4 to provide an estimate of the cumulative fiscal contribution that the proposed Timbermill Wind project would make to Chowan County over a 30-year period. As these data indicate, that cumulative total is approximately \$30.7 million in Chowan County general tax revenue and approximately \$2.2 million in Chowan County fire district tax revenue for total revenue of approximately \$33.0 million (an average of approximately \$1.1 million annually) (in 2020 dollars).

Table 5:Estimated Cumulative Tax Revenue from Proposed Timbermill Wind Project over 30-Years
(2020 Dollars)

	Chowan County	Chowan Fire District	Total County Revenue
Taxation of Personal Property	\$24,375,779	\$1,775,719	\$26,151,498
Taxation of Real Property and Improvements	\$6,364,989	\$463,675	\$6,828,664
TOTAL Cumulative Revenue over 30-years	<u>\$30,740,768</u>	<u>\$2,239,394</u>	<u>\$32,980,162</u>
Average Annual	<u>\$1,024,692</u>	<u>\$74,646</u>	<u>\$1,099,339</u>

*Totals may not sum due to rounding.

⁴⁷ Data Source: Chowan County online property card database. Tax deferment calculated as tax on the difference in PUV and market value for 45 acres for three years (current year included in annual revenue).

⁴⁴ Assumes entire value of investment in real property improvements is assessed and taxed as real property.

⁴⁵ Data Source: Chowan County Tax Department. Assumes tax rates remain constant throughout analysis.

⁴⁶ Data Source: Chowan County online property card database. Assessed value of 75 acres at market value. Derived from average value of all parcels leased for the project. Please note that the proposed Timbermill Wind project would only pay real property taxes on leased parcels on the value of the increase in assessments stemming from project.

Relative Comparisons

To put these numbers into perspective, the \$1.1 million in average annual Chowan County tax revenue from the Timbermill Wind project estimated above is equivalent to about 4.7 percent of Chowan County's total FY '19 revenues or 28.9 percent of FY '19 countywide education funding.⁴⁸

Moreover, Table 6 provides a comparison to the five largest taxpayers in Chowan County in fiscal year 2019. The county's largest taxpayer that year, Jimbos Jumbos, Inc. had a 2019 assessed valuation of \$114.0 million, which is equivalent to approximately 7.6 percent of the 2019 total countywide assessed valuation. The second largest taxpayer, Dominion North Carolina Power had an assessed valuation of approximately \$22.7 million, which is equivalent to approximately 1.5 percent of the 2019 total countywide assessed valuation. If Timbermill Wind were added to the county's tax base, its average assessed value of personal and real property investments of \$135.6 million would make it the county's largest taxpayer, with an average assessed valuation equivalent to approximately 9.0 percent of the 2019 total countywide assessed valuation.

	2019 Assessed Valuation ⁴⁹	% of Total Assessed Valuation
Jimbos Jumbos, Inc.	\$114,022,838	7.6%
Dominion North Carolina Power	\$22,734,595	1.5%
Bank of America Leasing	\$9,270,135	0.7%
Cameron-Edenton Company LLC	\$9,082,027	0.6%
Gemini Edenton Village 14 LLC	\$8,676,892	0.6%
Total Countywide Assessed Valuation	\$1,507,282,000	100%
Timbermill Wind Average Annual Assessed Value of Investment ⁵⁰	\$135,619,333	9%

Table 6: Chowan County Five Largest Taxpayers for the Year Ended June 30, 2019

⁴⁸ Data Source: Chowan County Annual Financial Report for the Year Ended June 30, 2019.

⁴⁹ Data Source: Chowan County Annual Financial Report for the Year Ended June 30, 2019.

⁵⁰ Average assessed value of Timbermill Wind personal property and real property improvements over 30 years. Does not include assessed value of land.

Current Agricultural Use

In this section, we provide a benchmark for the previous estimates of the economic and fiscal contribution that the proposed Timbermill Wind project would make to Chowan County by estimating the economic and fiscal contribution that the site would make to the county in an active agricultural use. In conducting that analysis, we employ the following assumptions:

- The proposed Timbermill Wind project would take approximately 75 acres out of agricultural production.⁵¹
- The current taxable value of this acreage is estimated at approximately \$64,864⁵²
- The land is currently primarily used for silviculture and other agricultural production.
- Average annual revenue per acre for Chowan County farmland is approximately \$944.72.⁵³

By feeding these assumptions into the IMPLAN model, we obtain the following estimates of annual economic impact. As shown in Table 7, in an agricultural use, we estimate that the affected 75-acre portion of the proposed Timbermill Wind project site would directly support approximately: 1) <1 job, 2) \$3,904 in labor income, and 3) \$71,137 in economic output in Chowan County. Taking into account the economic ripple effects that direct impact generates, we estimate that the total annually supported impact on Chowan County would be approximately: 1) <1 job, 2) \$10,014 in labor income, and 3) \$91,709 in economic output (in 2020 dollars).

Table 7:Total Annual Economic Impact of the Timbermill Wind Project Acreage on Chowan County –
Agricultural Use (2020 Dollars)

Economic Impact	Employment	Labor Income	Output
1 st Round Direct Economic Activity	<1	\$3,904	\$71,137
2 nd Round Indirect and Induced Economic Activity	<1	\$6,110	\$20,572
Total Economic Activity	<1	\$10,014	\$91,709

*Totals may not sum due to rounding.

Table 8 details the estimated current property tax revenue generated from taxation of the affected acreage under an agricultural use. We estimate the total Chowan County property tax revenue from the affected 75 acres to be approximately \$526 per year, for a cumulative total of approximately \$15,762 (in 2020 dollars) over a 30-year period. This total consists of approximately \$14,692 in general county taxes and approximately \$1,070 in fire district tax revenue over a 30-year year period (in 2020 dollars).

⁵³ Data Source: Estimated based on data from the U.S. Department of Agriculture 2017 Census.

⁵¹ Data Source: Apex Clean Energy, Inc.

⁵² Data Source: Chowan County online property card database. Based on average values of all parcels. Assumes 45 acres in PUV program and 30 acres assessed at market value.

Table 8:Estimated Tax Revenue Generated by the Proposed Timbermill Wind Project over 30-Years under
its Current Agricultural Use (2020 Dollars)

	Taxable Value	Chowan County General	Chowan Fire District	Total Chowan County
Tax Rate (per \$100) ⁵⁴		0.755	0.055	
Annual Real Estate Tax – Land ⁵⁵	\$64,864	\$490	\$36	\$526
Cumulative Revenue over 30 year	s	<u>\$14,692</u>	<u>\$1,070</u>	<u>\$15,762</u>

The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing that information. However, because these estimates attempt to foresee circumstances that have not yet occurred, it is not possible to provide any assurance that they will be representative of actual events. These estimates are intended to provide a general indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

⁵⁵ Data Source: Chowan County online property card database. Assumes 45 acres in PUV program and 30 acres assessed at market value.

⁵⁴ Data Source: Chowan County. Assumes tax rates remain constant throughout analysis.