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March 31, 2015

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310 4th Street, NE, Suite 200
Charlottesville, Virginia 22902

Dear Client:

This report is a real estate consulting product completed at your request. The purpose of this analysis is to evaluate the potential impact of a utility scale wind energy project in Chowan County on the value of adjoining or abutting property. I understand that this issue is being considered by the Chowan County Planning Board. The focus of this report is an area consisting of approximately 12,500 acres located in Chowan County, North Carolina known locally as "Bear Swamp", which consists primarily of cropland and timberland (the "subject area").

A summary of the methodology employed and the conclusions reached regarding the impact of the proposed wind energy project in this geographic area is the subject of this report. Supporting documentation concerning the data used has been retained in the consultant's file. The depth of discussion contained in this report is specific to the needs of the client and the intended use stated below.

Development of the conclusions regarding the subject property may necessitate that value of various properties be presented in this report. These statements of value *are not* a real estate appraisal of the proposed site for this proposed project, any of the adjoining properties identified in this analysis or any of the comparable properties used in this analysis. The purpose of this analysis is to measure the impact, if any, on the market value of abutting, adjoining or nearby parcels of real property that may be attributed to the construction of a utility scale wind energy project.

The focus of this report is an area located in Chowan County is generally bounded by Center Hill Road on the north and the Chowan-Perquimans County line on the east. Sandy Ridge Road and Greenhall Road are located on the west boundary of the proposed site. A line projected in an easterly direction from the intersection of Greenhall Road and Paradise Road forms the study area's south boundary. The public roads and county boundaries referenced in this paragraph provide a general location of the proposed wind energy project.

The subject area is located on numerous parcels of agricultural cropland and timberland known locally as "Bear Swamp." Approximately 12,500 acres of land are included in the specific boundaries of the proposed project. The specific boundaries of the subject area are indicated on the map provided on page 10 of this report.

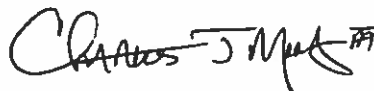
It should be noted that there is presently no utility scale wind energy project operating or under construction in North Carolina. The methodology employed in reaching the conclusions stated in this Impact Study are based on a review of extensive studies of other utility-scale wind energy projects, data collected during a site visit to an operating wind energy project, and data collected from Chowan County. The studies concluded that construction of a utility-scale wind turbine electrical power-generating facility would not result in measurable impairment to the value of adjoining or abutting property. The data collected during the site visit to a wind energy project similar in size and scope as that proposed for the Chowan County site is consistent with that used in the published studies.

Based on the data presented in this analysis, it is my professional opinion that the market value of properties abutting and adjoining the subject area would not be substantially impacted by a utility scale wind energy project within the subject area. This conclusion would logically extend to any real property within the study area that does not abut or adjoin a utility scale wind energy project.

This conclusion is based on the results of an analysis of data collected from Chowan County and the extensive value impact studies undertaken for similar wind energy facilities located in areas with similar economic and demographic characteristics as Chowan County.

Thank you for the opportunity to be of service.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Charles J. Moody III".

Charles J. Moody III, MAI
NC Certified General Real Estate Appraiser A264

SCOPE OF WORK

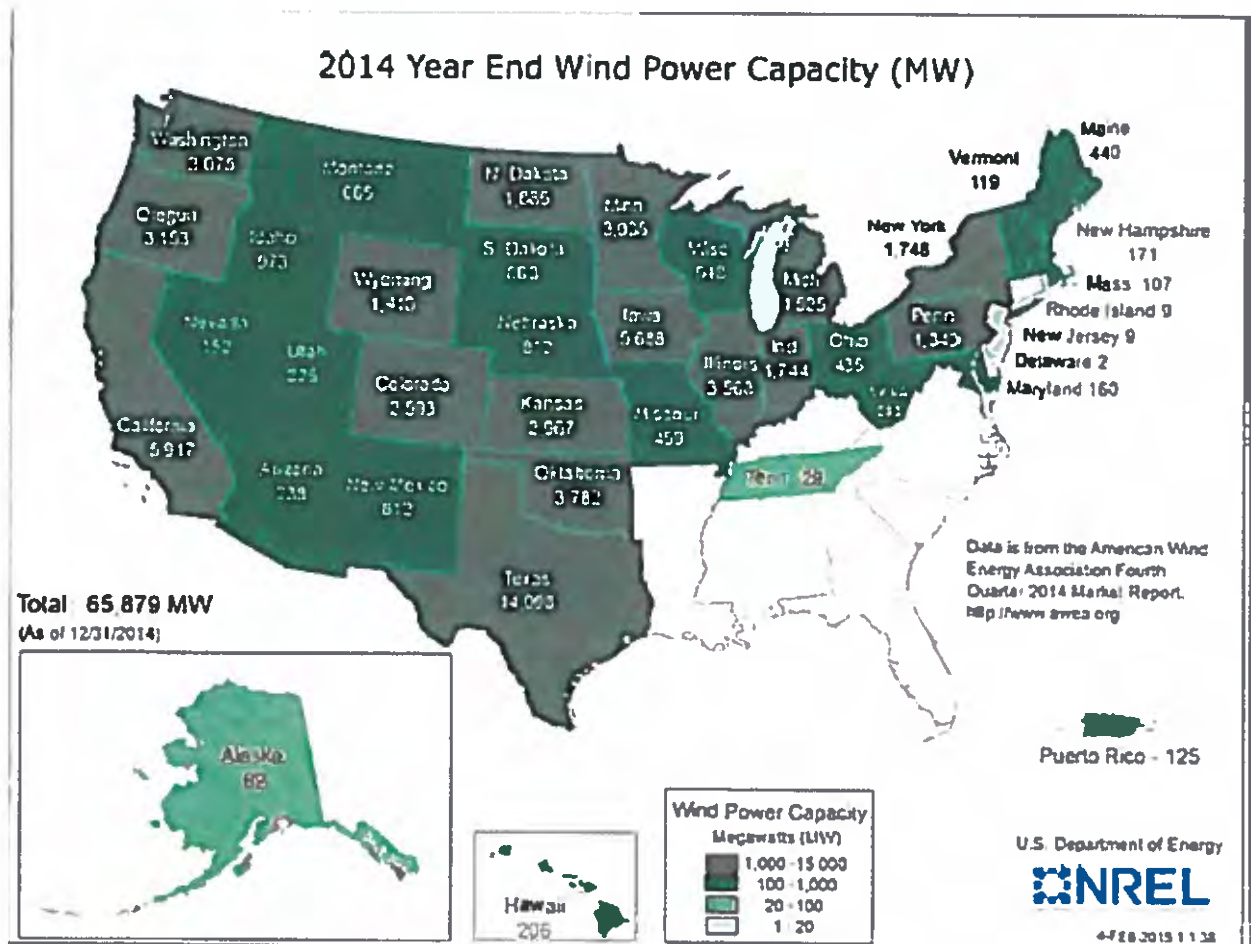
I. Background

Realty Services of Eastern Carolina, Inc. was engaged by Apex Clean Energy Management, LLC to evaluate the potential impact of a utility scale wind energy project in Chowan County on the value of adjoining or abutting property. I understand that this issue is being considered by the Chowan County Planning Board.

The focus of this report is an area consisting of approximately 12,500 acres located in Chowan County, North Carolina known locally as "Bear Swamp", which consists primarily of cropland and timberland with ownership vested in numerous individuals and entities. The subject area is located about seven miles north of the intersection of US Highway 17 and NC Highway 32. The subject area's main axis is oriented from east to west and extends for a distance of approximately 8 miles. The width of the subject area averages about four miles. A site map located on page 10 of this report provides a visual depiction of the subject area.

II. Review for Similar Projects in North Carolina

This is the first utility-scale wind energy project to be located in North Carolina. A review of information provided by the US Department of Energy indicated there are no similar wind energy projects located in the southeast United States coastal plain. A map provided by the Department of Energy illustrates the wind power capacity in the United States.



A review of the wind energy resource database for North Carolina maintained by Appalachian State University did locate several smaller wind turbines in the coastal plain. This inventory is summarized in the following table.

Installed Wind Turbines - NC Coastal Plain				
Owner	County Location	Capacity	Tower Description	
			Type	Height (Ft.)
Martin Bernholtyz	Carteret	2.4 kW	Monopole	35
Dean Carrico	Currituck	2.4 kW	Monopole	35
Greg Wilson	Currituck	10 kW	Lattice	110
Distinctive Landscaping	Currituck	2.4 kW	Monopole	35
Cape Hatteras National Seashore	Dare	2.5 kW	Guyed	65
State of NC Jennette's Pier	Dare	10.0 kW*	Monopole	90
State of NC Jockeys' Ridge SP	Dare	10.0 kW	Monopole	60
Outer Banks Brewing Station	Dare	10.0 kW	Lattice	80
Waldt Renewables	Dare	1.2 kW	VAWT	30
Edgecombe Community College	Edgecombe	1.0 kW	VAWT	30
Blue Sun Renew	Martin	1.2 kW	VAWT	30
Cape Fear Community College	New Hanover	0.9 kW	Monopole	35
Full Circle Crab Company	Tyrrell	1.8 kW	Not Known	42

*Capacity is for three turbines

These installations are not physically similar to a utility scale wind energy project. The U.S. Department of Energy defines "utility scale" renewable energy projects to be 10 megawatts in capacity or greater. Each of the sites was reviewed by consulting the respective county Geographic Information System ("GIS") database to determine the physical attributes of the site on which the wind turbine is located and the surrounding properties.

III. Review Analyses and Data from Similar Projects Outside North Carolina

Given the lack of local or even regional experience with utility scale energy projects, other resources were consulted to determine the value impact of utility-scale wind energy projects on real property values. This search led to two extensive studies of wind energy projects and real property values. These studies are:

The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis by Hoen, et al., Ernest Orlando Lawrence Berkley National Laboratory, December 2009.

Wind Farm Proximity And Property Values: A Pooled Hedonic Regression Analysis of Property Values In Central Illinois by Hinman, Illinois State University, May 2010.

The results of these two studies and their applicability to a utility scale wind energy project in Chowan County are discussed in more detail in the text of this report.

In addition to reviewing these two studies, other sources were consulted for general information regarding the installation and operation of wind energy projects. The background materials used have been retained in the consultant's file.

IV. Site Visit to a Utility Scale Wind Energy Project

The consultant conducted a site visit to the Cayuga Ridge wind farm, an existing 150-unit wind turbine installation located in Livingston County, Illinois. This location was selected as being comparable to the subject property's dominant land use and economic setting.

Property owners, real estate professionals and governmental officials were interviewed during the site visit to determine the impact, if any, the project may have on property values in the community. Specifically, the county's planning director was interviewed to determine the provisions in the zoning code that are applicable to utility scale wind farms and the process required to obtain the necessary approvals that were required to construct the Cayuga Ridge project. Based on this interview and the zoning materials obtained during this interview, the zoning regulations and approval procedure in Chowan County and Livingston County were confirmed to be similar.

Property owners who reside within the Cayuga Ridge wind farm were interviewed at their respective residences and the impact of the project on their daily activities were discussed. The proximity of the wind turbines to the resident was physically observed during this interview process.

Telephone interviews and office visits were made to real property appraisers who practice in Livingston County. These real estate professionals were interviewed to determine if the proximity of the wind farm is in any way reflected in market based property sales within the Cayuga Ridge project site. The appraisers stated they could not discern any difference in the purchase prices paid for properties located within the project site and sale of similar properties located outside the project site. Brokers advertising property for sale within the project site were contacted to determine if they noted buyer resistance to these properties. There was no indication buyers favored properties outside the project area above properties located within the project area. However, there were only a limited number of offerings within the project area. The limited number of properties listed for sale is indicative of the rural area in which the Cayuga Ridge project is located.

An effort was made to experience both shadow flicker and the sound level from operating turbines. Neither the shadow flicker nor sound experienced was considered unduly intrusive.

The Cayuga Ridge project is located in the general vicinity of the wind energy projects that were the subject of the Hoen and Hinman studies. The Twin Groves wind farm that was the subject of the 2010 Hinman study cited above is located immediately south of the Cayuga Ridge project in McLean County, Illinois. The Mendota/GSG wind farm, one of the 24 wind farms used in the Hoen study, is located in Lee County, Illinois. This wind farm is located approximately 65 miles northwest of the Cayuga Ridge project. The Twin Groves and Mendota/GSG wind farms are located in communities with economic and demographic profiles similar to Chowan County.

V. Inspect Subject Area, Collect Data from Chowan County, and Form Conclusions

Based on the assignment premise, the consultant develops a Scope of Work that outlines the research completed and the methodology used to reach a creditable solution to the problem. The specific problem posed by the client for this assignment is to measure the influence wind energy projects have on real property values. The Scope of Work required to provide a creditable solution to the problem included the following:

- inspecting the subject area;
- inspection of the real property parcels that adjoin or abut the subject area;
- inspection of the vicinity surrounding the subject area;
- gathering and compiling economic and demographic data for Chowan County,

- gathering information on comparable vacant land and improved property sales for the previous three years in Chowan County that are located in the proximity of the subject area;
- gathering information on comparable vacant land and improved property sales in Chowan County that are not located in the proximity of the subject area;
- confirming and analyzing the sales data; inspecting the comparable sales;
- comparing the Chowan County real property sales data, the economic and demographic data to the published studies,
- and forming a conclusion as to the impact of the utility scale wind energy project on property values in rural areas of Chowan County.

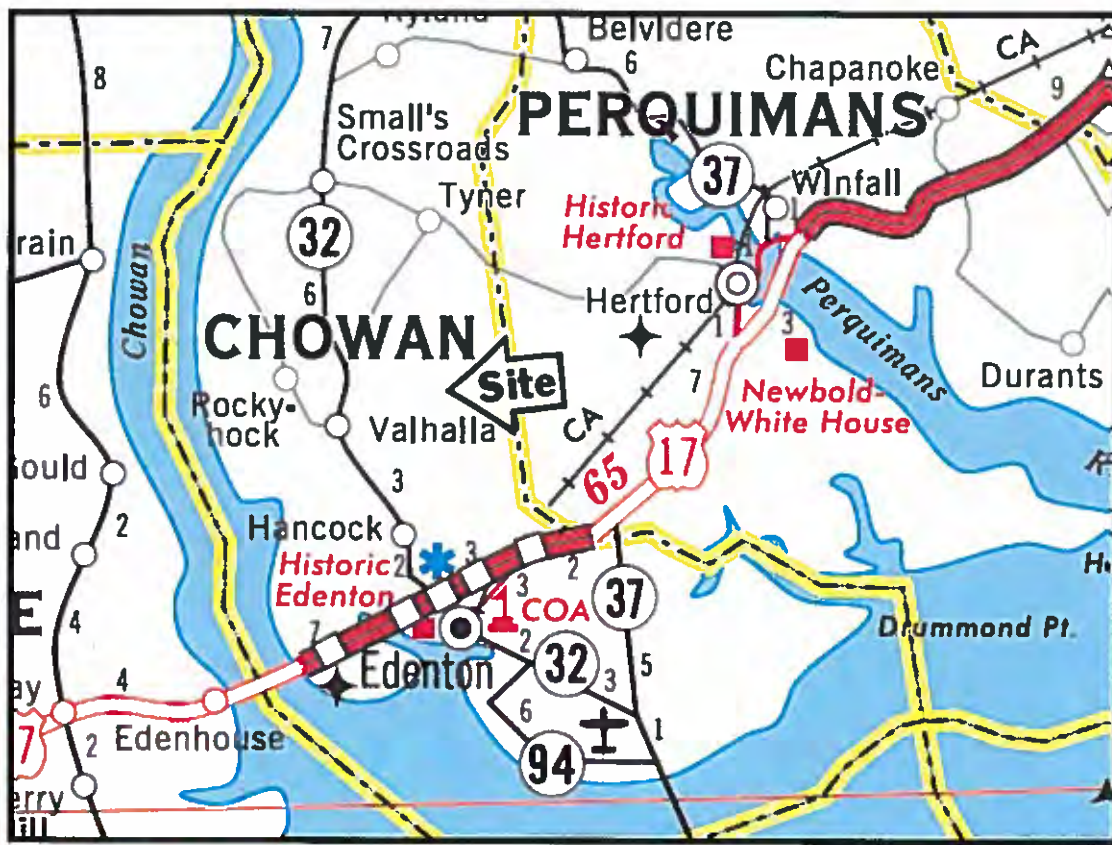
A physical inspection was conducted of the 12,500± acre subject area. This inspection also included the numerous parcels that adjoin the subject area plus the other parcels that are located along the various secondary roads bordering the subject area. Primary attention was paid to properties that are improved for residential use. The proximity of residential dwellings to the proposed project was noted and tabulated. This inspection formed the basis for a description of the subject area. Included in the analysis of the subject area, real estate brokers and appraisers were interviewed to determine the market reaction to public disclosure of a potential utility scale wind energy project. Brokers with current listings adjacent to the project were queried by telephone to determine if prospective purchasers had expressed concerns with respect to the proximity of a potential wind energy project to the project to sale offering.

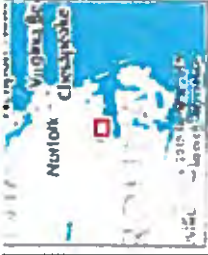
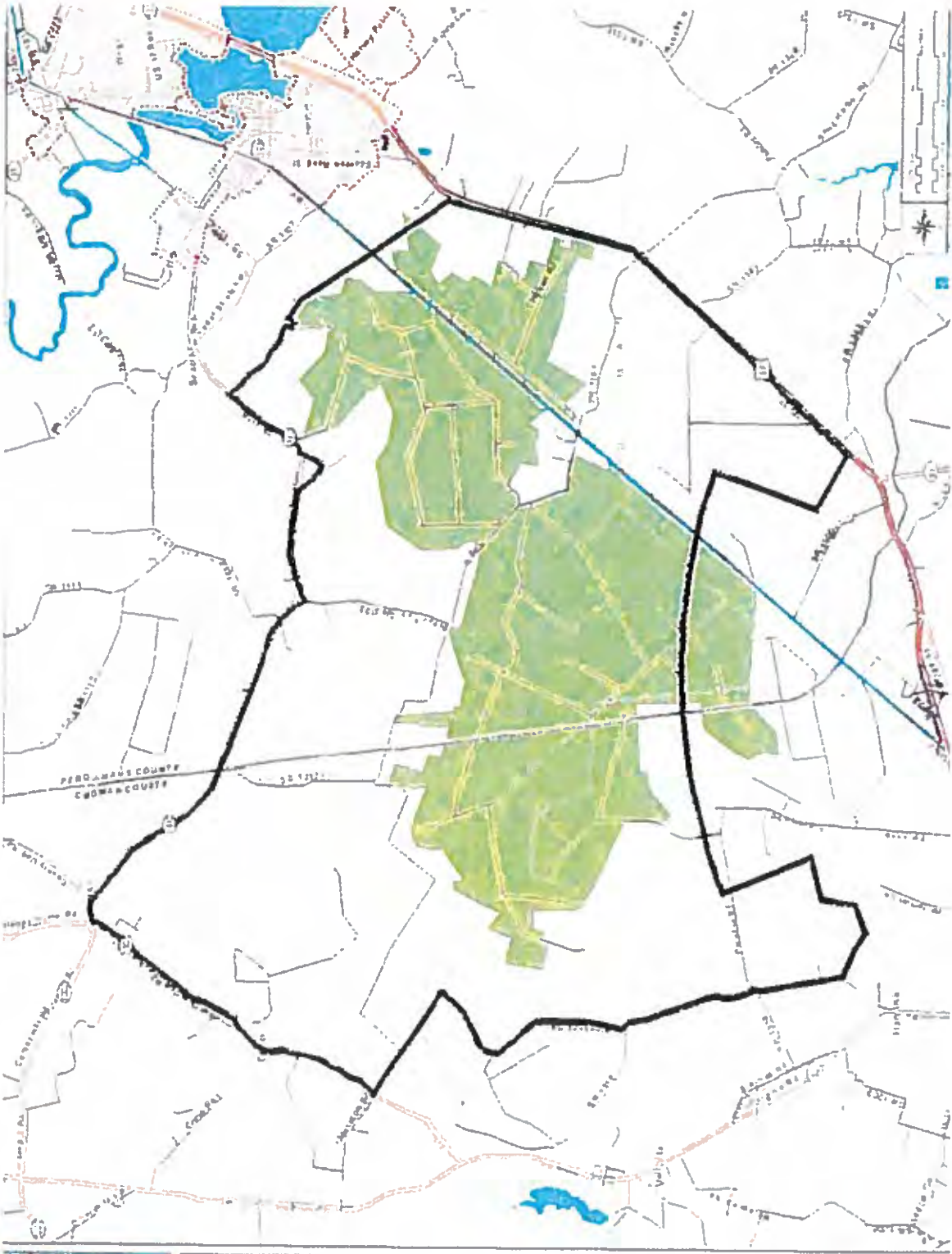
The county's zoning ordinance requires a Conditional Use Permit for a variety of specific, defined land uses. A utility scale wind energy project is included in the uses for which a Conditional Use Permit is required. Typically, a Conditional Use Permit application is for a specific parcel. The adjoining and abutting parcels can be readily defined and located. A matched paired analysis is utilized to determine the value impact the proposed use may have on the abutting and adjoining properties. This methodology locates market-based transactions of properties that adjoin a parcel with the same use as that proposed in the Conditional Use application. The purchase price paid for the parcels that adjoins the conditional use is then compared with the purchase price paid for a property that does not adjoin the conditional use. Adjustments are made as appropriate for all physical differences between the two sales. Any remaining difference in the purchase price is indicative of the impact on value that is a result of the conditional use.

Unlike impact studies undertaken to obtain a Conditional Use Permit for a specific use on a designated site, a potential wind energy project within the subject area has the potential to affect numerous adjoining and abutting properties. The published studies recognize this fact and evaluate the potential impact of the wind energy project on all residential properties within a specified distance from the wind energy project. This impact study utilizes this approach. The studies are more comprehensive in their scope and track residential value changes over the life of the project from pre-announcement through construction and subsequent operation of the wind energy project.

The only potential property value impact in Chowan County resulting from a potential utility scale wind energy project in the subject area at this point would be that experienced in the pre-announcement stage. For this reason, the comprehensive studies of the long term impact of wind farms on residential property values is deemed as more appropriate to evaluate the potential impact of a utility scale wind energy project in the subject area.

Location of the Subject Area in Chowan County



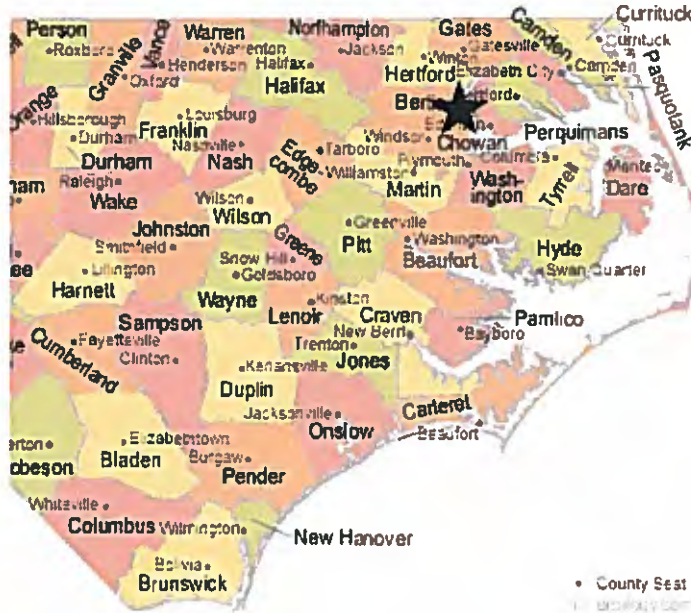


**Study Area
 Bear Swamp**

- Project Boundary
- County Boundary
- Incorporated Areas
- Unincorporated Areas
- Utility Lines**
- 1011KV 230KV
- 138KV 138KV
- Floods**
- Highways
- Major Floods
- Streets
- Alluvial Low

COUNTY AND AREA PROFILE

The subject area is located to the northwest of US Highway 17 and east of NC Highway 32. The site lies generally along the Chowan-Perquimans County line about eight miles north of Edenton, the county seat. The subject area is located in central Chowan County, North Carolina. Chowan County is situated in the upper coastal plain in the



northeastern section of North Carolina. The county encompasses an area of 233 square miles and has an average elevation of 16 feet above sea level. There are approximately 172 square miles of land area. Chowan County is relatively rural in nature. Bertie and Hertford Counties adjoin Chowan to the west, with Gates County to the north and Perquimans County to the east.

The main highways serving Chowan County are US Highways 17 and 13 as well as the state's secondary roads. The Chowan River serves as

the western boundary of the county.

Edenton, the county seat, is the only municipality in Chowan County. Fronting on the Albemarle Sound, Edenton is a city with historic significance that attracts many tourists each year.

Chowan County has a stable economy that is well balanced between agri-business, marine fisheries, and light manufacturing.

POPULATION		
	Estimated Population at 07/01/10	% Change (04/01/00 to 07/01/10)
USA	308,745,538	9.7%
North Carolina	9,535,483	18.5%
Chowan County	14,793	1.8%
Edenton	5,004	-1.1%

Source: Office of State Budget and Management and the U.S. Census

Population of this rural county has not kept pace with the state or national averages.

Basic medical care is provided by East Carolina Health, Inc. with practicing physicians in Chowan County. Higher levels of treatment, including hospital care, is available in Elizabeth City, North Carolina.

While gradually trending downward, the 2014 county unemployment rate is slightly above that of the state and below the national average.

UNEMPLOYMENT RATES						
	2009	2010	2011	2012	2013	2014
USA	9.3%	9.6%	8.9%	8.1%	7.4%	7.2%
North Carolina	10.4%	10.8%	10.2%	9.2%	8.0%	6.6%
Chowan County	11.6%	11.3%	11.3%	10.4%	9.5%	6.7%

Source: N.C. Employment Security Commission

The following are the largest employers in the county as of the third quarter of 2014.

TOP EMPLOYERS – CHOWAN COUNTY			
Employer	Employees	Employer	Employees
Edenton – Chowan Schools	250-499	Regulator Marine	100-249
East Carolina Health System, Inc.	250-499	Colony Tire	100-249
Chowan County	100-249	Principle Long Term Care, Inc.	100-249
McHerrin Agricultural & Chem. Co	100-249	Economic Improvement Council, Inc.	100-249

Source: N.C. Commerce, Labor and Economic Analysis Division

Median household income statistics reveal Chowan County residents to be well below the state average and national average.

MEDIAN HOUSEHOLD INCOME 2009-2013	
USA	\$53,046
North Carolina	\$46,334
Chowan County	\$34,420

Source: U.S. Census

According to U.S. Census information, building permits issued in the United States peaked in 2006. Listed below is a summary of residential building permits issued locally.

RESIDENTIAL BUILDING PERMITS						
	2008	2009	2010	2011	2012	2013
Chowan County	43	24	29	11	10	12
Unincorporated Chowan County	35	21	25	10	8	10
Edenton	8	3	4	1	2	2

Source: U.S. Census

Growth in Chowan County is assisted by the availability of relatively inexpensive vacant land and an extensive amount of vacant acreage suitable for waterfront development. Chowan County offers extensive frontage on the Albemarle Sound and the Chowan River. The economic forecast indicates this situation should remain the same in the immediate future, commensurate with general economic conditions.

The portion of Chowan County located along the Albemarle Sound, and in close proximity to Edenton, has become a desirable retirement location. The more recent development in the county has been located in this area. Some commercial development has occurred within the past five-to-seven years at the intersection of US Highway 17 and NC Highway 32. These locations are to the south of the proposed project area. The upgrade of US Highway 17 to four travel lanes, with a median beginning at the Virginia state line, extends through Chowan County. This highway improvement has made the area more convenient to the metropolitan Hampton Roads section of Virginia.

The subject area's vicinity is generally the section of Chowan County to the northwest of the US Highway 17 corridor. The proposed project is located in a rural district located about six miles north of Edenton, the county seat. This section of Chowan County contains a large area of commercial timberland owned by Weyerhaeuser Company. The area's boundaries are Center Hill Road on the north and the Chowan-Perquimans County boundary on the east. Sandy Ridge Road and Greenhall Road are the area's western boundary. A line projected in an easterly direction from the intersection of Greenhall Road and Paradise Road forms the study area's south boundary. These boundaries describe the central section of Chowan County.

The dominant land use within the proposed project's boundaries is land utilized for agricultural crop production and commercial timber production. Maps of the area reference this location as Bear Swamp. This area has little topographic relief and few natural drainage outlets. The poorly drained soils that compose Bear Swamp have a history of utilization for timber production. Better-drained areas in the northwest and southeast sections of the subject area have been developed for agricultural crop production. The soils that compose the site, with artificial drainage, are highly productive for agricultural crops, primarily corn and soybeans, and commercial timber production. An extensive network of open ditches and private soil surfaced roads provide access to farm fields and commercial timberland located within the proposed project site.

Edenton is the center of commercial activity in Chowan County. Edenton is primarily located to the south of the US Highway 17 Bypass. US Highway 17 is a controlled access highway with two travel lanes in each direction. Various secondary roads, US Highway 17 Business and NC Highway 32 provide access into the Edenton central business district. The interchange between US Highway 17 Bypass and NC Highway 32 has developed into a commercial center of the area.

Other residential communities are located within Edenton and along the Albemarle Sound frontage generally to the east of Edenton. Continued steady growth, primarily in the residential sector, is predicted for those portions of the area that front on- or have convenient access to- the area's water frontage. There are no economic or demographic trends evident at this time that would support a significant demand for land to be used for residential development, commercial or light industrial development within the study area.

Some changes in land use within the subject area have occurred within the past three to five years. However, the majority of the neighborhood is expected to remain in a predominantly agricultural crop or timber production land use within the foreseeable future.

EVALUATION

I. Basis of Approach

As noted, there are no wind energy facilities in North Carolina. A survey of the literature regarding the impact of utility-scale wind farms on property values located a number of studies that address the issue. The two studies cited on page 6 are the most comprehensive of those located. Again, these are the Hoen and Hinman studies.

The Hoen study is based on sales data collected from ten study areas that included 24 wind farms in nine states. The Mendota Hills/GSG wind farm located in Lee County, Illinois is one of the 24 utility-scale wind farms used in the Hoen study.

The Hinman study analyzes the Twin Groves wind farm in McLean County, Illinois.

In addition, the consultant conducted a site visit to the Cayuga Ridge wind farm, an existing 150-unit wind turbine installation located in Livingston County, Illinois. Property owners, real estate professionals and governmental officials were interviewed during the site visit to determine the impact the project had on the community.

The Hoen and Hinman studies, along with the data gathered from the consultant's visit to the Cayuga Ridge wind farm, were reviewed to determine if the demographic and economic characteristics of the areas in which those wind farms are located are similar to Chowan County and if the methodology used in those studies would be applicable to a potential utility scale wind energy project in the subject area.

II. Comparison of a Hypothetical Chowan County Wind Project with Existing Projects

A. Physical Features of Wind Farm Projects

The following table presents a comparison of the physical features of these three wind farms and a potential utility scale wind energy project in the subject area. This analysis assumes a hypothetical utility scale wind project existing in the subject area would consist of 110 turbines.

Selected Wind Farm Statistics					
Wind Farm			Wind Turbines		
Name	Location	Acres	Number	Ac./Each	Capacity
Mendota Hills/GSG	Lee Co., IL	4,800	103	46.6	130.4 MW
Twin Groves	McLean Co., IL	22,000	240	91.7	396.0 MW
Cayuga Ridge	Livingston Co., IL	29,500	150	196.7	300.0 MW
Hypothetical Project	Chowan Co., NC	12,500	110	113.6	220.0MW

The wind farm located in Lee County is the smaller of the two utilized in the published studies in terms of both total land area and the number of turbines. However, as measured based on the number of acres per turbine, this project had the highest density of the four wind farms in the table. This wind farm was included in the Hoen study. The Twin Groves wind farm that was the subject of the Hinman has a density that is higher than the Cayuga Ridge project and the Hypothetical Chowan County Project. Based on density or the average number of acres on which a turbine is located, the Cayuga Ridge project has the lowest density of the four utility scale projects. The turbine density of the Hypothetical Chowan County Project is effectively bracketed by the wind farm for which the extensive study was performed and the wind farm on which the site visit was conducted. The two wind farms included in the published value impact studies effectively bracket the number of turbines and rated capacity of the Hypothetical Chowan County Project.

B. Demographic and Economic Statistics of Counties

Demographic and economic statistics provided in the studies and obtained from public sources for three counties in Illinois and Chowan County is used to determine the similarity of the four locations. Population and income statistics are represented in the following table.

County	2013 Est. Population	Change From 2010	2013 Median Income	Population Per Square Mile
Lee Co., IL	34,858	-3.3%	\$50,060	49.7
Livingston Co., IL	38,186	-2.0%	\$54,614	37.3
McLean Co., IL	174,647	3.0%	\$62,089	143.3
Chowan Co., NC	14,726	-0.5%	\$34,420	63.5

Source: US Census

The estimated population and the population density per square mile confirm Lee and Livingston Counties, like Chowan County, are primarily rural locations. The population density per square mile is indicative of the larger land area of Lee and Livingston Counties as compared to Chowan County. Both Lee and Livingston Counties have experienced some decrease in population since the 2000 census. The higher total population and decrease in total population for Lee and Livingston Counties is in contrast to the total population and a slight increase in population growth indicated for Chowan County. As evidenced by newer residential construction, the population increase in Chowan County has been primarily located in the Edenton area and along the Albemarle Sound. The population in the immediate vicinity of the subject area has not increased commensurate with the remainder of Chowan County.

The Hinman study indicated that the Twin Groves facility was located in McLean County Townships that had experienced a decline in population. This location appears to have a similar economic profile as the subject area. McLean County is more urban than either Lee County or Livingston County. The largest cities in the county are Bloomington and Normal. These two municipalities adjoin and are frequently referenced as a single urban area. Normal is the home of Illinois State University. Illinois Wesleyan University is located in Bloomington. The universities plus major employers such as State Farm Insurance, Country Insurance & Financial, and BroMenn HealthCare provide a more diverse economic base than is found in either Lee County or Livingston County. The median income for McLean County is indicative of the wages and salaries paid by the universities and major employers in Bloomington-Normal. The population growth in McLean County is centered in the Bloomington-Normal area rather than the outlying townships.

Chowan County is more rural and does not have a substantial local employment base, as does McLean County, Illinois. Elizabeth City in neighboring Pasquotank County provides the single largest source of employment in the area. Elizabeth City is the location of Elizabeth City State, a component of the University of North Carolina system is the closest higher education facility to Chowan County. The student population and economic impact of Elizabeth City State on the region and Chowan County is less than that for Illinois State University on McLean County. The US Coast Guard's primary support and air facility for the east coast is also located in Elizabeth City. Other major employers for persons residing in Chowan County tend to be in the Tidewater, Virginian area.

C. Employment Statistics of Counties

Employment statistics for the four localities are presented in the following table

County	December 2013	November 2014
	Total Employed	Current Unemployment
Lee Co., IL	12,918	6.1%
Livingston Co., IL	13,869	5.6%
McLean Co., IL	85,200	5.4%
Chowan Co., NC	5,238	7.5%

Source: Bureau of Labor Statistics

The employment statistics for Chowan County indicate a more favorable economic climate than either Lee County or Livingston County. The work force and rate of unemployment for the three counties in which the existing wind farms are located effectively bracket Chowan County.

The size of the total employed labor force located in McLean County is indicative of the concentration of the universities and large employers in the Bloomington-Normal area. The high concentration of government employment is also reflected in the lowest unemployment of the four areas. This provides McLean County with a stronger economic base than the other three areas.

However, Hinman notes in her report that the Twin Groves wind farm is located in townships where population is declining. It would be reasonable to conclude the declining population is indicative of less favorable economic opportunities. This would likely translate into a higher localized rate of unemployment in the vicinity of the wind farm than is indicated for McLean County as a whole.

D. Owner Occupied Residential Property Statistics of Counties

Owner occupied residential property is the primary area of concern with respect to the impact of this project on property values. The number and median value of the owner occupied residential property is provided in the following table.

County	2013 Owner Occupied Housing		2013 Building Permits
	Number	Median Value	
Lee Co., IL	15,002	\$112,100	26
Livingston Co., IL	15,791	\$110,200	30
McLean Co., IL	70,708	\$157,200	408
Chowan Co., NC	10,473	\$85,500	12

Source: US Census

The estimated number of owner occupied dwellings in Chowan County and the median home price is in line with the rural areas of Lee County and Livingston County.

The median value of owner occupied housing in McLean County included dwellings located in Bloomington-Normal. The employment base in this municipal area accounts for the higher median value for residential property. The median value of owner occupied housing in the immediate vicinity of the Twin Groves wind farm was not available, but the project is located in a rural section of McLean County to the east of Bloomington.

E. Conclusion Drawn From Comparison

The demographic and economic data examined for Chowan County, the subject area, and the three locations where extensive studies have been undertaken to evaluate the market reaction to operating utility-scale wind farms illustrate a reasonable degree of similarity.

As a result, a reasonable conclusion arising from comparison of the four geographic areas is that the findings of the Hoen and Hinman impact studies can be applied to determine the effect of the proposed Apex project on the real property values of adjoining and abutting properties in Chowan County.

III. Market Value Analysis of Hoen and Hinman Impact Studies

A. Focus on Impact on Residential Property Values

The Hoen and Hinman studies focus on the impact of utility-scale wind farms on residential property values.

Utility-scale wind farms are normally sited in rural communities where there are few physical obstructions. A wind turbine requires an open, unobstructed site to operate at peak efficiency. Agriculture use land provides this type of land resource. The supporting structures for wind turbines have a relatively small footprint and cause a minimal amount of interference with normal agricultural, grazing or forestry activities. The purchase price paid for these types of agricultural properties rarely considers attributes such as view and aesthetics. Therefore, a wind farm and land used for agricultural production are compatible land uses. Consequently, there is virtually no published literature addressing potential value impacts of wind farms on agricultural properties.

The literature survey did not disclose any specific concerns regarding the proximity of a wind farm to commercial or industrial use properties. The sites chosen for utility-scale wind farms are generally not in locations with extensive commercial or industrial development. The subject area is located within an area where there is only a minimal amount of commercial or industrial development. For these reasons, no consideration is given to potential value impacts on agricultural land, timberland, commercial or industrial properties.

B. Methodology Used In Impact Studies

The Hoen and Hinman studies are similar in their approach to determining the value impact the wind farms may have on residential property values. The studies attempt to isolate value changes in the market to specific phases of development for the wind farms. Sales data used to measure the impact on value was divided into time intervals that corresponded to pre-project announcement, project construction and fully operational status. The market reaction to each of these time intervals was measured.

Hoen and Hinman designed their respective studies to provide an objective analysis of market based sales transaction data to determine the actual, measurable property value impact that could be related to the proximity of the wind energy project. The goal was to demonstrate the actual value impact as opposed to the perceived value impact.

Both studies incorporated statistical methodology that measured the impact on residential property values based on distance from the wind turbine installation and the actual view of the facility. The potential aesthetic and nuisance impacts from the wind farm diminish as the distance from the project increases. Hinman set the maximum distance of 3.0 miles from a turbine as the limiting distance for the wind farm to exert any impact on purchase price. Her study concluded that beyond this distance the wind farm would not influence the purchase price. Hoen included sales that were greater than 5.0 miles from the nearest wind turbine.

The Hoen report contained comprehensive analysis of the potential impacts of wind projects on nearby residential sales prices. This study utilized data from 7,459 residential transactions that surrounded 24 individual wind projects in nine states and 14 counties. The large sample size, the diversity of wind projects included in the analysis, and the depth of information collected enabled Hoen to perform a number of different analyses.

The methodology used relied heavily on a hedonic regression model.¹ The Hoen study used various forms of that model to investigate potential effects on market price. To confirm the value impacts indicated by the hedonic regression model, a repeat sales model and a sales volume model were also utilized. This study utilized sales transaction data that extended 12 years beginning January 1, 1996. The specific beginning and ending dates for the data collection was specific for each site included in the study. The dates for each project included in the study are noted in the report.

The Hinman study also employed a hedonic regression model to analyze the sale data. This study utilized 3,851 residential sales transactions. The study period extended from January 1, 2001 to December 1, 2009. The market reaction to a single 396.0 MW, 240-turbine wind farm was the object of this study.

In summary, the Hoen study provided an analysis of multiple wind farms in diverse market areas and the Hinman study provided a more focused analysis of a single market area and one utility-scale wind energy project.

¹ The Hoen study provides a detailed explanation of the hedonic regression model:

Hedonic pricing models are frequently used by economists and real estate professionals to assess the impacts of house and community characteristics on property values by investigating the sales prices of homes. A house can be thought of as a bundle of characteristics (e.g., number of square feet, number of bathrooms). When a price is agreed upon by a buyer and seller there is an implicit understanding that those characteristics have value. When data from a large number of residential transactions are available, the individual marginal contribution to the sales price of each characteristic for an average home can be estimated with a hedonic regression model. Such a model can statistically estimate, for example, how much an additional bathroom adds to the sale price of an average home. A particularly useful application of the hedonic model is to value non-market goods – goods that do not have transparent and observable market prices. For this reason, the hedonic model is often used to derive value estimates of amenities such as wetlands or lake views, and disamenities such as proximity to and/or views of high-voltage transmission lines, roads, cell phone towers, and landfills. It should be emphasized that the hedonic model is not typically designed to appraise properties (i.e., to establish an estimate of the market value of a home at a specified point in time), as would be done with an automated valuation model. Instead, the typical goal of a hedonic model is to estimate the marginal contribution of individual house or community characteristics to sales prices.

C. Conclusions of Impact Studies

Hoehn Report. Hoehn concluded that the models used and the analysis of the data failed to uncover conclusive evidence of the presence of any of three property stigmas. These three stigmas are:

Area Stigma: A concern that the general area surrounding a wind energy facility will appear more developed, which may adversely affect home values in the local community regardless of whether any individual home has a view of the wind turbines.

Scenic Vista Stigma: A concern that a home may be devalued because of the view of a wind energy facility, and the potential impact of that view on an otherwise scenic vista.

Nuisance Stigma: A concern that factors that may occur in close proximity to wind turbines, such as sound and shadow flicker, will have a unique adverse influence on home values.

The Hoehn study found no evidence that home prices surrounding wind facilities are consistently, measurably and significantly affected by either the view of the wind facility or the distance between the home and the wind facility. The analysis did not dismiss the possibility that individual or small numbers of houses could have been negatively impacted. These impacts, if any, were either too small or too infrequent to result in a consistent, statistically observable impact.

The report's authors also state to the degree that the homes in the sample used are similar to homes in other areas where wind energy development is occurring, the results of the study are expected to be transferrable.

Hinman Report. The Hinman study indicated property value impacts vary based on the different stages of wind farm development. The risk perceived by local residents corresponds with the stages of the wind farm development. Hinman concluded the results of the Twin Groves study did provide evidence of a negative *location effect* on property values exists before the wind farm is approved. Hinman found support for *wind farm anticipation stigma* or a general uncertainty regarding the perceived aesthetic, noise and disruption arising from development of the facility.

However, the Hinman study demonstrated property values rebounded to levels higher in real terms than before the wind farm was approved. This study presented evidence that close proximity to an operating wind farm does not necessarily negatively influence property value appreciation rates or property value levels.

IV. Information Gathered on Property Value Impact of Cayuga Ridge

Anecdotal evidence collected from the interviews conducted with the Livingston County Planner, the residents within the Cayuga Ridge Wind Farm project and the real estate professionals located in the market area indicated the project has not adversely affected residential values either within the project's boundaries or in the Town of Odell, which adjoins the Cayuga Ridge site. Interviews conducted with real property brokers serving the Chowan-Perquimans County market indicate there is no resistance on the part of potential buyers to considering the purchase of residential properties located in the subject area assuming the collocation of a potential utility scale wind energy project.

This evidence is consistent with the extensive property sales data used to support the Hoen and Hinman studies.

V. Application of Impact Studies to a Potential Wind Energy Project in the Subject Area

As demonstrated on pages 16-18 of this report, the geographic locations of the projects analyzed in the Hoen and Hinman reports, as well as the Cayuga Ridge site, correspond with a potential utility scale wind energy project in the subject area. The subject area, the Cayuga Ridge site, and the sites described in both studies are rural areas where agricultural crop production is the dominant land use. Residential values in the vicinity of all four sites are similar. However, in many ways, a utility scale wind energy project in the subject area is even more appropriate for a wind farm than the studied locations, which were shown not to have an injurious impact on property values.

Substantial portions of the subject area are wooded. These woodlands provide an additional screening and buffer to mitigate potential noise and visual impacts. In comparison, the larger site on which the Cayuga Ridge wind farm is located lacks extensive woodland screening. A wind energy project designed and in conformance with the existing Chowan County Zoning Ordinance should result in minimal exposure to shadow flicker and sound on occupied buildings in the vicinity of the project.

There are significant changes in elevation throughout the Cayuga Ridge site. The combination of open, cultivated cropland and topographic relief enhance the visibility of the wind turbines located on the Cayuga Ridge project. The descriptive information provided in the two studies and other data examined indicated the Mendota Hills/GSG and Twin Groves sites are physically similar in topography and land use to the Cayuga Ridge site. In comparison, the topography within the subject area is level with little change in elevation, thus reducing the project's visibility.

Public roads extend through the entire Cayuga Ridge site. Similar public road access is provided to the Mendota Hills/GSG and Twin Groves sites. Public road access to the subject area is limited to a single gravel surfaced road. All other roads within the site's boundaries are private.

Numerous homes are located within the Cayuga Ridge project boundaries. The location maps provided in the Hoen and Hinman studies indicate that a number of the residential properties that sold were located within the boundaries of the Mendota Hills/GSG and Twin Groves wind energy projects.

Based on this information, a reasonable conclusion can be drawn that the residential properties located at the periphery of the subject area are less likely to be burdened with potential visual and noise impact than the dwellings that were located within the projects studied by Hoen and Hinman, as well as the Cayuga Ridge project. Again, these projects were found not to have negatively impacted adjoining or abutting property values.

VI. Conclusion

In conclusion, based on the above analysis, it is my professional opinion that construction of a utility scale wind energy project in the subject area will not result in measurable impact to the value of adjoining or abutting property. This conclusion would logically extend to any real property within the study area that does not abut or adjoin a utility scale wind energy project.

VII. Credentials

Credential for Charles J. Moody III are provided on the following two pages.

QUALIFICATIONS OF APPRAISER

Charles J. Moody III, MAI
Realty Services of Eastern Carolina, Inc.

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Mailing Address

Post Office Box 15069
New Bern, NC 28561-5069
Tel. 252 633-6484

Street Address

2313 Grace Avenue
New Bern, NC 28562
FAX: 252 638-3683

Education

Bachelor of Science in Forest Management
Virginia Polytechnic Institute and State University, 1969

Real Estate Training

Introduction to Green Buildings, Appraisal Institute, Sunset Beach, NC, July 2014
Evaluation Appraisal Seminar, Appraisal Institute, Greensboro, NC, October 2014
7-Hour National USPAP Update Course, Appraisal Institute, Asheville, NC, January 2014
Timberland Investment Conference, The University of Georgia, February 2013
Business Practices and Ethics, Appraisal Institute, Deep River, NC, September 2012
2012 Southern Forest Economics Workers Annual Meeting, Charlotte, NC, March 2012
Rates and Ratios: Making Sense of GIMs, OARs, and DCFs, Appraisal Institute, October 2011
Essential Topics for Proper Appraising, Greenville, NC, May 2011
2011 Timberland Investment Conference, The University of Georgia, March 2011
USPAP Update Course – Appraisal Institute, Wilmington, NC, March 2010
The Timberland Asset: Stable Investments for Turbulent Times
University of Georgia, Greensboro, GA, March 2009
National USPAP Update Course, Cary, NC, 2008
Valuation of Conservation Easements, Cary, NC, 2008
Business Practices and Ethics, Greensboro, NC, 2007
The Yellow Book Seminar, Indianapolis, IN, 2006
Advanced Applications, Washington, DC, 1997
Real Estate Investment Analysis, University of North Carolina, 1985
Report Writing and Valuation Analysis, University of North Carolina, 1980
Case Studies in Real Estate Valuation, University of North Carolina, 1980
Basic Income Capitalization, University of Georgia, 1978
Appraisal Principles, University of North Carolina, 1977

Continuing education includes numerous quarterly updates and educational programs sponsored by the North Carolina Chapter of the Appraisal Institute and the University of Georgia Center for Forest Business.

Licenses

NC State Certified General Real Estate Appraiser #A264
SC State Certified Real Estate Appraiser #C1546
VA State Certified Real Estate Appraiser #1941

Registered Forester #469 - State of North Carolina

Charles J. Moody III, MAI
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Professional Affiliations

Member, the Appraisal Institute (MAI), #7361, Designated 1986
Forest Farmer's Association
North Carolina Forestry Association
Virginia Forestry Association

Experience and Current Status

Prior to 1980, the appraiser held various timber procurement, land management and sales positions with Weyerhaeuser Company and its wholly owned subsidiary, Weyerhaeuser Real Estate Company. Responsibilities included stumpage purchase, land acquisition and exchange, mineral lease administration, land use studies and evaluation, and land sales.

The appraiser and Curtis D. Jernigan, MAI, began a professional association in 1980, which ultimately led to the formation of Realty Services of Eastern Carolina, Inc., a firm specializing in real property valuation and land brokerage. This firm provides valuation experience in all types of real property including residential, commercial, industrial, development properties, farmland and timberland. In addition to industrial and commercial appraisals, the appraiser has handled a majority of the rural property valuations performed by Realty Services since its organization.

Valuation assignments include large acreage and/or multiple parcel ownerships. The appraiser has developed valuation and consulting services to assist property owners, conservation non-profits and government agencies to recognize the potential highest and best use of vacant acreage located in urban fringe areas. These services typically result in the valuation of potential development acreage for conservation easements. The appraiser has developed and made presentations to conservation easement seminars and land preservation educational programs on the subject of property valuation. Major clients, other than individuals, commercial banks and attorneys, include Weyerhaeuser Company, International Paper Company, The Nature Conservancy (North Carolina Chapter), RMK Timberland Group, the North Carolina Coastal Land Trust, and other conservation non-profits. Other clients served also include investment managers for pension funds and local, state and federal agencies and departments. While geographic scope of these services is normally in the Coastal Plain and Piedmont of North Carolina and Southern Virginia, the appraiser has accepted assignments in a number of states.

The appraiser currently serves on the North Carolina Appraisal Board.