CAPRICORN RIDGE 4 WIND FARM

Document Prepared by NextEra Energy Marketing, LLC

Project Title	Capricorn Ridge 4 Wind Farm
Version	7.0
Date of Issue	21-October-2021
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1 PROJECT DETAILS

1.1 Summary Description of the Project

The Capricorn Ridge 4 Wind Farm will be referred to throughout this document as “The Project”. It is owned by NextEra Energy Resources (“NextEra”), a subsidiary of NextEra Energy, Inc.. NextEra is the sole project proponent for the project.

The Project is the second phase of the Capricorn Ridge Wind Farm and became operational on May 20, 2008. The Project is located in Sterling City, Texas. The Project is a new addition that is metered separately from the existing phases of the wind farm. The Project has 75 GE 1.5 MW wind turbines with a capacity of 112.5 MW. The towers have a rate wind speed of 12 m/s, three rotor blades, a rotor diameter of 77 meters, sweep area of 4,657m^2 and a rotor speed of 10.1-20.4 rpm. The towers also come equipped with a control system that is a programmable logic controller and has a remote control and monitoring system. The objective of the project is to increase the amount of wind-generated electricity that is supplied to the Lower Colorado River Authority (LCRA) substation in Coke County, TX, a part of the Electricity Reliability Council of Texas (ERCOT) grid. The Project will produce clean renewable energy that will displace traditional fossil-fueled energy sources and reduce greenhouse gas emissions.

The initial crediting period was for ten years, which was from January 1, 2010 to December 31, 2019. Within the initial crediting period, the Project generated credits from the site in Sterling City, Texas. The second crediting period will also be for ten years, which will be from January 1, 2020 to December 31, 2029. Averages in the second crediting period will result in an estimated GHG emissions reductions of 186,578 tonnes carbon dioxide equivalent (tCO2e) in GHG emission reductions per year, totaling 1,865,780 tonnes CO2e over the ten-year crediting period for the second crediting period.

The Project completed an 80/20 repowering as of 12/22/2017. The project currently has 75 GE 1.62-87 MW wind turbines that are pending approval from ERCOT (Electric Reliability Council of Texas). 1.62MW will be used for the purposes of the calculations throughout this Project Description.

1.2 Sectoral Scope and Project Type

The Project is a Grid-connected Electricity Generation from Renewable Sources, which falls under CDM/VCS Sectoral Scope: 1. Energy industries (Renewable / non-renewable sources). The Project is not grouped.

1.3 Project Eligibility

The Project is located in West Texas which has an abundance of open lands very favourable for wind-based alternative energy production. The U.S. wind industry grew by 8 percent in 2018, a fourth of which was contributed by Texas-based projects. However, wind energy generation still only comprises 7% of the United States' total energy production in 2018[1].

The Project is expected to generate emissions reductions over the ten-year crediting period. The project will achieve GHG emissions reductions by replacing electricity into the ERCOT grid that might have been produced by conventional, fossil fuel means with that produced by renewable wind. This is illustrated in section 1.10 and section 4.

1.4 Project Design

The Project has a collection substation (300 MVA, 345/138 KVA transformer) for the 75 GE turbines, and approximately 4 miles of transmission line connecting the Capricorn Ridge 4 substation to LCRA's Divide Substation. The Project is an independently operating wind farm that produces renewable energy, which is the single, main activity. NextEra Energy provides maintenance for the wind turbines, the substation, and the transmission lines.

1.5 Project Proponent

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Organization name	NextEra Energy Resources
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[1] US EIA - Electricity in the United States: https://www.eia.gov/energyexplained/electricity/electricity-in-the-us.php

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1.6 Other Entities Involved in the Project

There are no legal entities involved in the project except for its legal owner (NextEra).

1.7 Ownership

It is owned by NextEra Energy Resources ("NextEra"), a subsidiary of NextEra Energy, Inc. NextEra is the sole project proponent for the project. Capricorn Ridge Wind II (the legal title of the Capricorn Ridge 4 Wind Project) completed the registration requirements for a power generation company under the Public Utility Commission of Texas on Feb. 27, 2008. Documents showing proof of titles and ownership of emissions reductions credits will be provided to the validator.

1.8 Project Start Date

The Project was approved on 22 June, 2007; commercial operation of the Project began on 20 May, 2008. One month prior to this, initiation of test electricity to the grid began.

1.9 Project Crediting Period

The renewal for the second, ten-year crediting period is from January 1, 2020 until December 31, 2029.

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

The Project is not considered a large-scale project since it does not meet or exceed the annual threshold of 300,000 tCO2e, per the VCS standard. The Project is expected to generate emissions reductions equivalent to 186,578 tCO2 per year (see section 4 GHG Emission Reductions). This calculation is based on a generating rate of 379,887 MWh/year using an expected net capacity factor of approximately 36%. Over the ten-year crediting period, the expected emissions reductions will be 1,865,780 tCO2.The Project net capacity factor is generated based on 31 months of historical met tower wind speed data at the site, then normalized with two 31-years' long-term NOAA stations (San Angelo and Abilene).

Project Scale	
Project	X
Large project	

Year	Estimated GHG emission reductions or removals (tCO_2e)
2020	186,578
2021	186,578
2022	186,578
2023	186,578
2024	186,578
2025	186,578
2026	186,578
2027	186,578
2028	186,578
2029	186,578
Total estimated ERs	1,865,780
Total number of crediting years	10
Average annual ERs	186,578

1.11 Description of the Project Activity

The Project will generate wind energy for an estimated 25 years. There are no GHG emissions produced by the project; it displaces electricity that might otherwise be generated by fossil fuel-fired plants. The Project will achieve GHG emissions reductions by replacing electricity into the ERCOT grid that might have been produced by conventional, fossil-fuel means (i.e., natural gas) with that produced by renewable wind. The project uses a small amount of power from the grid for offices, an equipment warehouse, an operations and maintenance building and substation back-up power. The project buys the retail electricity from Concho Valley Electric Cooperative. The emissions associated with the generation of this power is subtracted from the emissions reductions calculated for the Project so that the Project emission reductions are net of the emissions produced from grid consumed electricity (see Section 4.4 – Quantifying GHG emission reductions and removal enhancements for the GHG project).

1.12 Project Location

The Project is located about five miles east of Sterling City, Coke County, Texas at latitude 31.900878 and longitude -100.817413. Of the 75 turbines, 33 are located in Coke County and 42 are located to the west in adjacent Sterling County. The Project occupies approximately 11,000 acres.

1.13 Conditions Prior to Project Initiation

Prior to The Project construction, there was electricity generation from the other phases of the Capricorn Wind Farm. This project is a new addition that is separately metered.

1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

There are no local laws and regulations pertaining to construction of this Project.

1.15 Participation under Other GHG Programs

1.15.1 Projects Registered (or seeking registration) under Other GHG Program(s)

The Project is not registered or seeking registration in Other GHG Programs.

1.15.2 Projects Rejected by Other GHG Programs

The project has not been rejected by GHG Programs.

1.16 Other Forms of Credit

1.16.1 Emissions Trading Programs and Other Binding Limits

The Project is not currently seeking other forms of environmental credits.

1.16.2 Other Forms of Environmental Credit

The Project originally requested renewable energy certificates for the Capricorn 4 expansion through the ERCOT REC program. The ERCOT REC tracking system will be used as an independent third-party certification of the generation (MWh) from the Project. Periodically, the project owner will seek to create Verified Emission Reductions (VERs) for the output of the project. To create the VERs, the project owner will retire the RECs associated with the output in the ERCOT REC tracking system. A third-party verifier will be provided supporting documentation (i.e., registry screen shot of retirement activity) to validate that the RECs have been retired for the VER issuance. Once a REC is retired in the ERCOT REC tracking system, it cannot be "unretired"[2].

1.17 Additional Information Relevant to the Project

Leakage Management

The Project doesn't participate in any activities that produce emissions. The Project is a renewable wind energy project that sends all the electricity generated to a grid for purchase.

Commercially Sensitive Information

Any discussion of internal rate of return, project financial modelling and project approval process is considered confidential.

Sustainable Development

The Project does not currently have any nationally stated sustainable development priorities, including any provisions for monitoring and reporting same.

Further Information

The Texas Renewable Portfolio Standard ensures that the public benefits of renewable energy continue to be recognized as electricity markets become more competitive. It requires companies that sell electricity to retail customers to support renewable energy generation. The RPS mandates that electricity providers (competitive retailers, municipal electric utilities and electric cooperatives) collectively obtain 2,000 MW of additional renewable energy by 2009, increases include 5,880 MW by 2015 and a target of 10,000 MW in 2025. The mandate does not require electricity producers to build new renewable

[2] ERCOT Protocols Section 14: State of Texas Renewable Energy Credit Trading Program, Section 14.10 Retiring of RECs or Compliance Premiums, and Section 14.10.2, Voluntary Retirement

energy plants; rather the mandate encourages electric utilities and power producers to support and invest into renewable energy development. The Texas Public Utility Commission has approved additional transmission lines that may be able to deliver up to 25,000 MW of wind energy from rural areas to the urban centers in the state.

The project was not built for regulatory (RPS) purposes. NextEra has minimal RPS obligations in ERCOT – only the very small parasitic load of the Forney and Lamar fossil plants. Furthermore, the supply of RPS eligible RECs in TX far exceeded the demand for the RECs. RECs generated in TX were being sold into both the RPS market and the national voluntary REC market. RECs sold into the national voluntary market were being used by entities making "carbon neutral" claims and "green energy" usage claims. The TX RPS RECs and the national voluntary RECs were, and still are, trading at the same price.

The Texas wind industry contributes millions of dollars to the State's Permanent School Fund from requisite state land usage fees. Additional funds are generated as royalty income for landowners, and thousands of jobs are created by the wind industry.[3]

2 SAFEGUARDS

2.1 No Net Harm

The Project does not have any potential negative environmental and socio-economic impacts.

2.2 Local Stakeholder Consultation

The Project did not activate NEPA or any other state permitting process that requires formal stakeholder scoping or public comment. Stakeholder outreach was handled on a case-by-case basis. Any stakeholder comment is considered relevant; however, no significant adverse stakeholder comments were encountered. Stakeholders have a right to file a complaint with the Public Utility Commission of Texas (PUCT). Any complaints deemed to be material would be coordinated between the Project and PUCT. Communications with stakeholders can be made electronically (i.e. e-mail) or through physical mail.

2.3 Environmental Impact

[3] Texas State Energy Conservation Office

The Project is on private land thus had no federal activation of NEPA. NextEra performs its own critical issues analyses (CIAs) and environmental evaluations that identify endangered plant and animal species habitat as well as any significant archaeological areas. Disturbance of archaeologically significant areas is avoided.

ASTM (American Society for Testing and Materials) Phase I Environmental Site Assessment was also conducted by a contractor. The purpose of the Phase I ESA was to evaluate existing environmental conditions, if any, as they pertained to the then-proposed construction of wind turbines and/or their supporting infrastructure.

The findings of the Phase I ESA were general oil staining of soils at several sites due to historic oil production throughout the area. The full Phase I ESA is available upon request from FPL.

The Black-capped Vireo (*Vireo atricapilla*), a thumb-sized endangered bird, has habitat that stretches from central Oklahoma through central Texas, to Coahuila, Mexico. NextEra Energy Resources wind power projects intersect this habitat. In accordance with our corporate commitment to sustainability, NextEra Energy works diligently with State and Federal agencies and experts to meet all legal obligations to protect and advance Black-capped Vireo (BCV) populations. To date, NextEra Energy's research has contributed significantly to agency understanding about the species. Biologists have discovered a sizable number of BCVs on wind power property, and we continue to work with the U.S. Fish & Wildlife Services (USFWS) to learn more about protecting the species.

NextEra Energy's work with the USFWS and Texas Parks and Wildlife Department (TPWD) started before construction, and they participated in helping us design this site. We continued to work together to ensure that the BCV species was not impacted during construction of the project. In addition to consultation with USFWS and TPWD in advance of beginning wind farm construction, the following steps were taken to avoid disturbing the bird's habitat.

1. The BCV habitat was mapped in advance of construction.
2. "Presence/absence" surveys were conducted prior to construction.
3. The BCV habitat was avoided during construction, especially during the bird's March through September mating season.

NextEra Energy Resources has an ongoing BCV monitoring program in cooperation with the USFWS.

Science to Protect the Black Capped Vireo: NextEra Energy studies the BCV and its activities at the wind farms. Prior to NextEra Energy's 2006 research, conducted by Turner Biological, no recent occurrences of Black-capped Vireo were known in Sterling County. NextEra Energy's Capricorn Ridge wind farms are in Coke and Sterling counties. Sterling County is in the Concho Valley Recovery Unit as defined by the Black-capped Vireo Recovery Plan (U.S. Fish & Wildlife Service 1991). In the most recent comprehensive

accounting, only 32 males were known from this Recovery Unit (U.S. Department of Agriculture 2004). The results of the 2006 surveys added 20 to 22 males to the total known from the region and the 2007 surveys added another 65 – 73 males in Coke and Sterling Counties. Black-capped Vireos were detected in 7 of the 8 areas resurveyed from 2006 and 6 of the 11 new survey locations in 2007. Across 2006 and 2007, 14 of the 21 presence absences (P/A) survey plots contained at least one BCV. BCV also occupy habitat outside of these sampling plots.

Since 2007, NextEra Energy has added additional components to the BCV research. In March of 2008, research began to understand population dynamics and nesting ecology of the Black-capped Vireo populations at operational wind facilities. Monitoring techniques were centered on areas that had the highest potential to impact nesting vireo. Nesting ecology of breeding pairs was closely examined to observe other potential threats to the species such as brood parasitism and scavenging.

Research included:

-Habitat Mapping

-Presence/Absence Surveys

-Nest Searches

-Nest Monitoring

-Nest Site Evaluations

These data have been shared with state and federal agencies and are currently being analyzed. Through a partnership with Pandion Systems Inc., the Shrub Nesting Passerine Collaborative Project (SNP) and the Environmental Bio-indicators Foundation, Inc. BCV research is also being conducted at other sites in Texas, to determine the relationship between reproductive success and distance to wind turbines in the Black-capped Vireo.

2.4 Public Comments

The Project did not receive any material public comments.

2.5 AFOLU-Specific Safeguards

The Project is considered a non-AFOLU project and this section is not required.

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

The methodologies that will be used are:

- Version 20 of the consolidated baseline and monitoring methodology ACM0002 – "Grid-connected electricity generation from renewable sources"
- TOOL07: "Tool to calculate the emission factor for an electricity system", Version 07.0, Option 1
- TOOL11: "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period"; Version 3.0.1

For more information about the methodology consult the following link:

http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

3.2 Applicability of Methodology

The Capricorn Ridge 4 Wind Farm is connected to the NERC TRE (ERCOT) regional grid. The greenhouse gases and emission sources included in or excluded from the project boundary are shown in Section 3.3. Also:

- The Project Activity consists of grid-connected renewable energy power generation from a wind power plant supplying electricity to a regional grid

- The Project Activity is located on a site where there was no previous renewable power plant prior to the implementation of the Project

- The Project Activity is not a capacity addition, retrofit, rehabilitation, or replacement to an existing grid-connected power plant

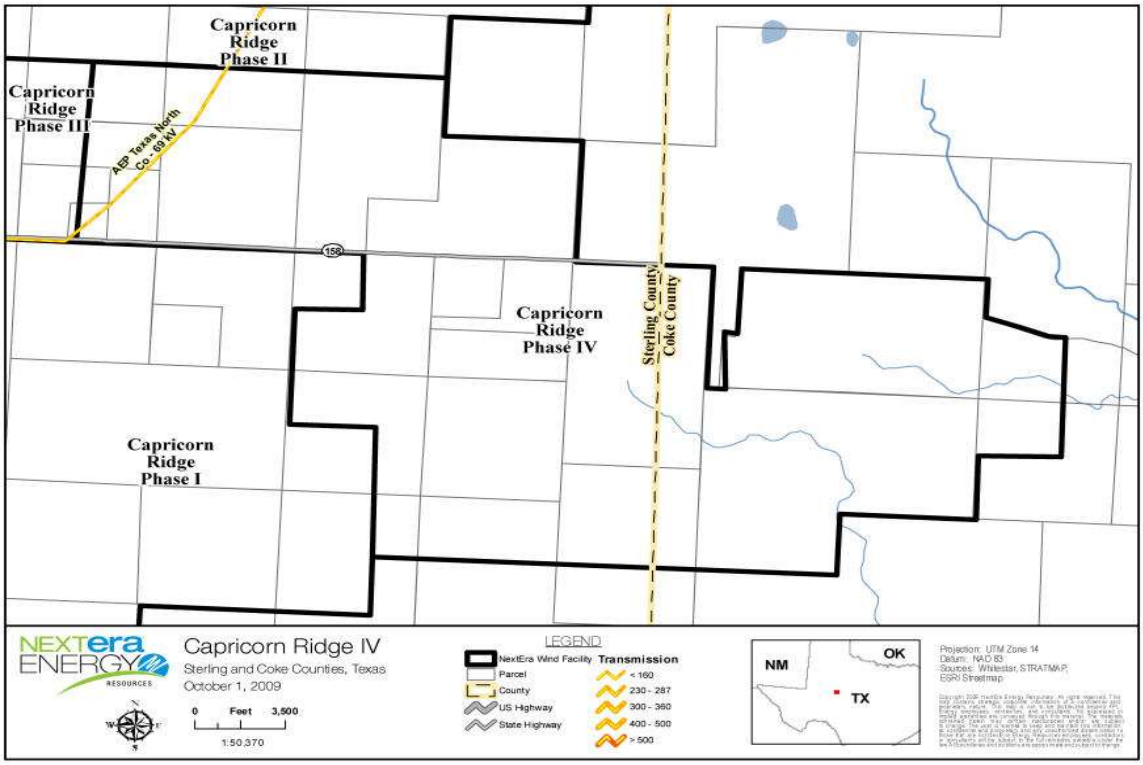
- The Project Activity does not involve fuel switching at the site of the Project Activity or biomass-fired power plants

- The Project Activity electricity system does not include off-grid power plants

- The Project is renewing for a second crediting period; therefore, a stepwise procedure will be used to assess the validity of the current baseline and/or update the current baseline for the second crediting period

3.3 Project Boundary

According to ACM0002, version 20, the spatial extent of the Project boundaries includes the Project power plant and all power plants physically connected to the electricity system that the VCS Project power plant is connected to. The map below demonstrates the Project boundaries, size and general locality of the Project and the other NextEra Energy wind farm projects.



Source		Gas	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Included	In the absence of the Capricorn Ridge 4 project, natural gas fired plants located in the ERCOT system would produce electricity that would cause GHG emissions. Potential GHG emissions are affected by presence or absence of project activity.
		CH_4	Excluded	Minor Emission Source. Potential GHG emissions are affected by presence or absence of project activity.
		N_2O	Excluded	Minor Emission Source. Potential GHG emissions are affected by presence or absence of project activity.

Source		Gas	Included?	Justification/Explanation
Project Activity	For dry or flash steam geothermal power plants, emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam	CO_2	Excluded	The project emission source is not applicable to the Project activity.
		CH_4	Excluded	The project emission source is not applicable to the Project activity.
		N_2O	Excluded	The project emission source is not applicable to the Project activity.
Project Activity	For binary geothermal power plants, fugitive emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam	CO_2	Excluded	The project emission source is not applicable to the Project activity.
		CH_4	Excluded	The project emission source is not applicable to the Project activity.
		N_2O	Excluded	The project emission source is not applicable to the Project activity.
Project Activity	For binary geothermal power plants, fugitive emissions of hydrocarbons such as n-butane and isopentane (working fluid) contained in the heat exchangers	Low GWP hydrocarbon/ refrigerant	Excluded	The project emission source is not applicable to the Project activity.

Source		Gas	Included?	Justification/Explanation
Project Activity	CO2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	Excluded	The project emission source is not applicable to the Project activity.
		CH_4	Excluded	The project emission source is not applicable to the Project activity.
		N_2O	Excluded	The project emission source is not applicable to the Project activity.
Project Activity	For hydro power plants, emissions of CH4 from the reservoir	CO_2	Excluded	The project emission source is not applicable to the Project activity.
		CH_4	Excluded	The project emission source is not applicable to the Project activity.
		N_2O	Excluded	The project emission source is not applicable to the Project activity.

3.4 Baseline Scenario

In the absence of the project activity, the clean electricity generated by The Project and dispatched to the ERCOT system would have been generated by the addition of new generation sources and non-renewable power plants connected to the interconnected grid, which would have resulted in the emissions of green-house gases. Thus, The Project displaces greenhouse gas emissions that would otherwise be produced by a fossil-fuel powered plant.

According to the methodology ACM0002, assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period, the baseline scenario is the following:

- Tool 11 v3.0.1 provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism
- The tool consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period

Step 1: Assess the validity of the current baseline for the next crediting period

The "Procedures for the renewal of the crediting period of a registered CDM project activity" approved by the CDM Executive Board require assessing the impact of new relevant national and/or sectoral policies and circumstances on the baseline. The validity of the current baseline is assessed using the following Sub-steps:

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

The alternatives to this project are capacity electric generation from fossil-fuel fired (combined gas) plants. The Project activity is not mandated by any Texas or federal law. Texas state government passed a Renewable Portfolio Standard (RPS), which required electricity providers to purchase prescribed amounts of renewable energy. This required more renewable power to be added to the grid which encouraged the building of renewable power plants, but no law requires electricity generators to build new renewable energy plants to meet RPS mandates. Currently, the baseline complies with all relevant mandatory federal and State of Texas laws which have come into effect after the submission of the previous request for the initial crediting period and are applicable at the time of requesting renewal of the crediting period and there are no other policies to consider.

Step 1.2: Assess the impact of circumstances

The Project is a merchant wind site. Fossil-fuel fired plants is the baseline and is not being affected with the Project activity. Although there are technology alternatives to fossil-fired plants such as wind and solar plants, the grid is still reliant on fossil-fuels. This remains to be the current common practice of the ERCOT region and fossil continues to have market share regarding the power delivered to the grid and is economically more reliable and easier to dispatch.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.

This is not applicable because the project activity is considered baseline grid activity and not a continuation.

Step 1.4: Assessment of the validity of the data and parameters

The emission factor calculations are provided in section 4 of this project description while section 5 provides a listing of the parameters. The calculations are still relevant to use wherever required. The data and parameters have been updated as needed to produce more reliable, recent calculations for the assessment of the related project activity.

Step 2: Update the current baseline and the data and parameters

This step is not applicable since Steps 1.1, 1.2, 1.3 and/or 1.4 showed that the current baseline did not need to be updated.

Step 2.1: Update the current baseline

The current baseline is still applicable and was not updated.

Step 2.2: Update the data and parameters

Please refer to section 5 of this project description for the updated parameters.

3.5 Additionality

Based on the current VCS standard, a full assessment of additionality is not required for the renewal of a crediting period. With regards to the VCS requirement to identify regulatory surplus in VCS Standard 3.8.9 (Paragraph 1), the Project demonstrates this by not being mandated by any law, statute, regulatory frameworks, or policies implemented since November 2001 that give comparative advantage to less emissions-intensive technologies or activities relative to more emissions-intensive technologies or activities. No law in Texas or federal law requires electricity generators to build new renewable energy units to meet Renewable Portfolio Standard (RPS) mandates. Therefore, the project is voluntary, and the project emission reductions are considered surplus in nature.

3.6 Methodology Deviations

None.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

The Electric Reliability Council of Texas (ERCOT) is the appropriate electricity system for determining the emission factor to use in calculating the emission reduction from the Capricorn Ridge project since it is an "isolated" electrical operating system. ERCOT has

very limited interconnections to the rest of the North American power grid. Unlike the Eastern Interconnection region where the various power pools have alternating current (AC) ties to each other, ERCOT has no AC ties to the rest of the U.S. power grid. There are only two direct current (DC) ties - the 600 MW east tie into the Southwest Power Pool (SPP) and the 200 MW north tie also into SPP.[4] Due to this very limited interconnection to other parts of the U.S. power grid, ERCOT is the only logical electrical system to use in calculating the effects the Capricorn Ridge project on other electrical generators interconnected to the power grid.

"Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generating sources, as reflected in the combined margin calculations described in the 'Tool to calculate the emission factor for an electricity system (TOOL7 v7.0)'."

The calculation of the CO_2 emission factor follows the methodological tool "Tool to calculate the emission factor for an electricity system" approved by the CDM Executive Board. The data used for the calculation are from the most recent Environmental Protection Agency (EPA) data in eGRID (eGRID2019 Plant File (Year 2019 Data)) and Energy Information Administration (EIA) 860 Year 2019 data.

BE_y Calculation (Baseline emissions in year y (tCO_2e/year)

The baseline methodology ACM0002 establishes that baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The CDM Methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The ex-ante baseline emission is calculated as follows:

$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$; Note: $EG_{PJ,y} = EG_{facility,y}$ **Equation 1**

Where:

BE_y = Baseline Emission in year y (tCO_2e/year)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh / y)

[4] ERCOT presentation to the Gulf Coast Power association, Austin, TX, September 26, 2005, "Today's ERCOT In Plain English", K. Saathoff, B. Bojorquez, R. Gruber, B. Day, P. Wattles, page 3, page 5

http://www.ercot.com/content/news/presentations/2006/Gulf_Coast_Power_Association.pdf

$EF_{grid,CM,y}$ = Ex ante combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (TOOL07)

Capricorn Ridge 4 is a wind power plant connected to the ERCOT interconnected grid. The ex-ante $EG_{facility,y}$ is calculated as follows:

$EG_{PJ,y}$ = (# turbines * turbine capacity) * 365 days * 24 h/day

* net capacity factor **Equation 1a**

= (75 * 1.62MW) * 365day * 24h/day * 0.3569

= 379,887.46 MWh; this value was rounded to 379,887 MWh.

The expected net capacity factor of approximately 36% was developed by NextEra Energy Resources based on 31 months of historical met tower wind speed data at the site.

To calculate $EF_{grid,CM,y,}$ data supplied by the US EPA (in the eGRID database system) and EIA is used. The CDM "Tool to calculate the emission factor for an electricity system" (version 07.0) will be used to calculate the build margin, the operating margin and the combined margin. No off-grid power plants were included in the determination of the grid emission factor.

eGRID "is a comprehensive inventory of the environmental attributes of electric power systems" in the United States, that provides data including but not limited to all U.S. electricity generating plants, resource mix (for renewable and non-renewable generation), and emissions rates for carbon dioxide (CO_2), methane (CH_4), and nitrogen oxides (N_2O). The eGRID data system subdivides the inventory data into 27 eGRID sub-regions and 10 NERC regions. The US EIA system provides information on the existing and planned capacities, generation of electricity by source and producer as well as information on the sales, revenues and prices associated with the generation and supply of electricity in the US. The eGRID and EIA information is considered to be the best available data on US electricity production and transmission and is widely used by governmental, academic and professional organizations. Therefore, the data used to calculate the combined margin is considered to be representative of the NERC region TRE and will be used to calculate the emissions reductions from the Capricorn Ridge 4 Project.

The combined margin emissions factor will be calculated as follows:

$$EF_{grid,CM,y} = (EF_{grid,OM,y} \times w_{OM}) + (EF_{grid,BM,y} \times w_{BM}) \quad \textbf{Equation 2}$$

Where:

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year y (tCO_2/MWh)

$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year y (tCO_2 /MWh)

w_{OM} = Weighting of operating margin emissions factor (%)
w_{BM} = Weighting of build margin emissions factor (%)

The following default values should be used for w_{OM} and w_{BM}:

Wind and solar power generation project activities: w_{OM} = 0.75 and w_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods.

The operating margin CO_2 emission factor will be calculated using ex-ante data and the ex-ante methodology will be used to calculate the build margin. As previously discussed, the build margin emission factor and operating margin emission factors are calculated according to CDM "Tool to calculate the emission factor for an electricity system." The data sources used for the operating and build margin are based on the latest available data generated and distributed by the US EPA eGRID system and the US EIA system.

The combined margin was calculated by using the operating and build margins and applying the equation above. As prescribed by the methodology The Project used w_{OM} = 0.75 and w_{BM} = 0.25 to calculate the combined margin.

BEy Calculation (Baseline emissions in year y (t CO_2e/year)

The Project is expected to have a max generation capacity of 379,887 MWh per year. Therefore, the baseline calculation for the project is as follows:

$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$

Where:
$EG_{PJ,y}$ = 379,887 (MWh)

$EF_{grid,CM,y}$ = 0.491142 (tCO_2/MWh)

Then BE_y = 379,887 (MWh) * 0.491142 (tCO_2/MWh) = 186,578 (tCO_2)

Therefore, the baseline scenario is 186,578 (tCO_2) would be emitted by fossil-fueled power plant in the absence of the project activity.

The table below summarizes the baseline scenario data and baseline calculation results for the Capricorn Ridge IV Wind Farm in the TRE (ERCOT) interconnected grid.

Baseline Scenario Data and Results

Operating Margin (tCO_2/MWh)	Build Margin (tCO_2/MWh)	Combined Margin (tCO_2/MWh)	Baseline Scenario (tCO_2)
0.5862	0.2060	0.491142	186,578

4.2 Project Emissions

For most renewable energy power generation project activities, $PE_y = 0$. Project emissions are not applicable to the Project's activities.

4.3 Leakage

Leakage emissions are no longer considered per the CDM Methodology.

4.4 Net GHG Emission Reductions and Removals

According to ACM0002 methodology (version 20), the emission reduction is calculated as follows:

$$ER_y = BE_y$$ **Equation 3**

ER_y = Emission Reductions in year y (tCO_2e/year)
BE_y = Baseline emissions in year y (tCO_2e/yr)

As described in section 4.1, the quantification of the baseline scenario was done according to version 20 of the ACM0002 methodology where only CO_2 emissions from electricity generation from fossil fuel fired power plants that are displaced due to the project activity are included. The ex-ante baseline emissions were, therefore, calculated according to Equation 1, described in section 4.1.

Operating Margin

The Operating Margin (OM) was calculated according to the "Tool to calculate the emission factor for an electricity system." The specific method chosen was the Simple OM Option A.

The OM is calculated ex ante using a three-year generation-weighted average, based on the most recent data available at the time of PD submission. Based on the EIA data, this is the years of 2019, 2018, and 2016, where the OM emission factor is calculated for each year then averaged. Per application of Option A for computing the simple OM, the OM calculation correctly included the LCMR<50% analysis to confirm the applicability of Option A. No off-grid power plants were used in the computations. The OM was calculated as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_{i,m} FC_{i,m,y} \bullet NCV_{i,y} \bullet EF_{CO2,i,y}}{\sum_{m} EG_{m,y}}$$

$EF_{grid,OMsimple,y}$ =

2016 OM: (176,715,695.8)/(287,574,559.2) = 0.615

2018 OM: (173,238,719.2)/(295,132,935.4) = 0.587

2019 OM: (163,948,211.0)/(293,989,672.8) = 0.558

Weighted Avg OM: (.615 * .202)+(.587 * .198)+(.558 * .187) = .5862 **Equation 4**

Where:

$EF_{grid,OMsimple,y}$	Simple operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
$FC_{i,m,y}$	Amount of fossil fuel type *i* consumed by power plant/unit *m* in year *y* (mass or volume unit)
$NCV_{i,y}$	Net calorific value (energy content) of fossil fuel type *i* in year *y* (GJ/mass or volume unit)
$EF_{CO2,i,y}$	CO_2 emission factor of plant m in year *y* (tCO_2/GJ)
$EG_{m,y}$	Net electricity generated and delivered to the grid by power plant / unit *m* in year *y* (MWh)
m	All power plants / units serving the grid in year y except low-cost / must-run power plants / units
i	All fossil fuel types combusted in power plant / unit m in year y
y	The most recent year for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex-ante option), 2019 (y-1)

Build Margin Calculation

The Build Margin (BM) is calculated according to Option 1 as required per the EF Tool (CDM Tool 07). As defined in the "Tool to calculate the emission factor for an electricity system," the Build Margin (BM) Emissions Factor (EF) is the generation-weighted average

emission factor (tCO2e/MWh) of all power units m during the most recent year y for which power generation data is available. The BM EF is calculated ex-ante for the second 10-year crediting period, based on the most recent year of data of built power plants from a sample group m. The sample group is taken to be the power units with the larger power generation of:

- The five power units, excluding those registered as VCS projects, that started to supply electricity to the grid most recently ($EGset_{5,i,y}$); and

- The power units, excluding those registered as VCS projects, that started to supply electricity to the grid most recently and comprise 20% of the total electricity system generation ($EGset_{20\%,i,y}$).

- GHG offset projects were excluded from the sample data.

There are additional steps in the case that one or more of the power units in the sample group started to supply electricity to the grid more than 10 years ago, as detailed in the CDM EF Tool. This is determined to not apply. Per CDM instructions, power plants registered under VCS and/or other offset standards were excluded from sample group m. The power units in the selected sample group (SET_{sample}) are taken as the units m in the following equation to calculate the BM EF as follows, based on Option 1 (CDM Tool 07 – Emission Factor Tool):

$$EF_{grid,BM,y} = \frac{\sum_{m} EG_{m,y} \times EF_{EL,m,y}}{\sum_{m} EG_{m,y}}$$

Equation 5

Where:

$EF_{grid, BM, y}$	= Build margin CO_2 emission factor in year *y* (tCO_2/MWh)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)

$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
m	= Power units included in the build margin
y	= Most recent historical year for which power generation data is available

The data for the above equation is from the most recent eGRID data from the EPA[5], and the 2019 EIA databases[6] The most recent electrical generation plants in the TRE/ERCOT grid that have a combined annual net generation comprising 20% of the total annual net generation in TRE/ERCOT were used (*m*). The compiled data and the calculation of the equation are shown below. A spreadsheet of the source data for the OM will be provided to the validator.

$EF_{grid, BM, y}$ = (17,349,201)/(84,208,215) = 0.2060

The table below contains the operating margin for the TRE/ERCOT region in its published form (lbs/MWh) and in the converted form of t/MWh. Also included within the table is the calculated value of the build margin.

Operating and Build Margins

Operating Margin calculated from CDM methodology	Build Margin (calculated from CDM methodology)
0.5862 (t/MWh)	0.2060 (t/MWh)

Combined Margin Calculation

The combined margin emission factor $EF_{grid,CM,y}$ for the baseline year is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM} \quad \textbf{Equation 6}$$

[5] http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html

[6] (http://www.eia.doe.gov/cneaf/electricity/page/eia906_920.html).

Where:

$EF_{grid,BM,y}$	=	0.2060 (tCO_2/MWh)
$EF_{grid,OM,y}$	=	0.5862 (tCO_2/MWh)
w_{OM}	=	0.75
w_{BM}	=	0.25

Then, $EF_{grid,CM,y}$ = (0.5862 (tCO_2/MWh) × 0.75) + (0.2060 (tCO_2/MWh) × .25) = 0.49114

Therefore, the Capricorn Ridge 4 **combined margin is 0.49114 (tCO_2/MWh)**.

As described in section 4.1, the project emission reductions will be calculated according to the ACM0002 methodology version 20. Therefore, the emission reductions calculation has been simplified to the following equation:

$ERy = BE_y - PE_y$

Where:

ER_y	=	Emission Reduction in year y (t CO_2/yr)
BE_y	=	186,578 (t CO_2/yr)
PE_y	=	0 (tCO_2/yr)

Then ER_y = 186,578 (tCO_2/yr) – 0 (tCO_2/yr) = 186,578 (tCO_2/yr)

The emission reductions for each crediting year were calculated in the same manner using the current combined margin and the electrical output of the project activity; updates to these projections can be amended when the crediting period ends and the Project is filing for renewal. Actual electricity consumption will be used to calculate emission deductions from the Project.

Year	Estimated baseline emissions or removals (tCO_2e)	Estimated project emissions or removals (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated net GHG emission reductions or removals (tCO_2e)
2020	186,578	0	0	186,578
2021	186,578	0	0	186,578
2022	186,578	0	0	186,578
2023	186,578	0	0	186,578
2024	186,578	0	0	186,578
2025	186,578	0	0	186,578

2026	186,578	0	0	186,578
2027	186,578	0	0	186,578
2028	186,578	0	0	186,578
2029	186,578	0	0	186,578
Total	1,865,780	0	0	1,865,780

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	W_{OM}
Data unit	Percentage
Description	Weighting of operating margin CO2 emission factor.
Source of data	CDM Tool to calculate the emission factor for an electricity system, v7.0
Value applied	0.75
Justification of choice of data or description of measurement methods and procedures applied	Default value for wind power projects in the CDM Tool to calculate the emission factor for an electricity system, v7.0.
Purpose of Data	Calculation of the Combined Margin Emission Factor for the Project electricity system.
Comments	None

Data / Parameter	W_{BM}
Data unit	Percentage
Description	Weighting of build margin CO2 emission factor.
Source of data	CDM Tool to calculate the emission factor for an electricity system, v7.0

Value applied	0.25
Justification of choice of data or description of measurement methods and procedures applied	Default value for wind power projects in the CDM Tool to calculate the emission factor for an electricity system, v7.0.
Purpose of Data	Calculation of the Combined Margin Emission Factor for the Project electricity system.
Comments	None

Data / Parameter	$FC_{i,m,y}$
Data unit	MMBtu
Description	Quantity of fuel type i consumed by power plant m in year y.
Source of data	EPA (eGrid) and EIA (860, 923) data sets.
Value applied	Varies by plant.
Justification of choice of data or description of measurement methods and procedures applied	Published values from the EPA and EIA dataset.
Purpose of Data	Calculation of the emission factor for all plants in the Project electricity system.
Comments	None

Data / Parameter	$EF_{i,m,y}$
Data unit	kg CO2 / MMBtu
Description	CO2 emission factor for fuel type i consumed by power plant m in year y
Source of data	EPA (eGrid) and EIA (860, 923) data sets.
Value applied	Varies by plant.
Justification of choice of data or description of measurement methods and procedures applied	Published values from the EPA and EIA dataset.

Purpose of Data	Calculation of the emission factor for all plants in the Project electricity system.
Comments	None

Data / Parameter	$EG_{m,y}$
Data unit	MWh
Description	Net quantity of electricity generated by power plant m in year y.
Source of data	EPA (eGrid) and EIA (860, 923) data sets.
Value applied	The expected generation capacity of 379,887 MWh/year was used to calculate the expected emission reductions
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to CDM Tool to calculate the emission factor for an electricity system, v7.0.
Purpose of Data	Calculation of the operating and build margin emission factors for project electricity system.
Comments	None

Data / Parameter	$NCV_{i,y}$
Data unit	Plant annual CO2/Plant annual Heat Input
Description	Net caloric value of fuel type i in year y
Source of data	EPA (eGrid) and EIA (860, 923) data sets.
Value applied	Varies by plant.
Justification of choice of data or description of measurement methods and procedures applied	Published values from the EPA and EIA dataset.
Purpose of Data	Calculation of the weighted average Operating Margin
Comments	None

Data / Parameter	$EF_{grid,OM}$
Data unit	tCO2 / MWh
Description	Simple Operating Margin CO2 emission factor, calculated ex ante for the Project's second crediting period
Source of data	EPA (eGrid) and EIA (860, 923) data sets. No off-grid power plants were used in the computations.
Value applied	.5862
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to CDM Tool to calculate the emission factor for an electricity system, v7.0.
Purpose of Data	Calculation of the Combined Margin Emission Factor for the Project electricity system.
Comments	None

Data / Parameter	$EF_{grid,BM}$
Data unit	tCO2 / MWh
Description	Build Margin CO2 emission factor, calculated ex ante for the Project's second crediting period
Source of data	EPA (eGrid) and EIA (860, 923) data sets.
Value applied	.2060
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to CDM Tool to calculate the emission factor for an electricity system, v7.0.
Purpose of Data	Calculation of the Combined Margin Emission Factor for the Project electricity system.
Comments	None

Data / Parameter	($EF_{grid,CM,y}$) Combined Margin CO_2 Emission Factor

Data unit	tCO_2/MWh
Description	The combined margin CO_2 emissions factor ($EF_{grid,CM,y}$) for a grid connected power generation plant in year y, will be calculated using the latest version of CDM Tool to calculate the emission factor for an electricity system, v7.0.
Source of data	The Combined Margin Emissions Factor ($EF_{grid,CM,y}$) used for the NextEra project will be calculated from the operating margin ($EF_{grid,OM,y}$) and build margin ($EF_{grid,BM,y}$) according to the CDM methodology as described. Both EPA (eGrid) and EIA (860, 923) data sets were used to compute the Combined Margin, which also serves as the underlying data for the operating margin and build margin calculations.
Value applied	.49114
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to CDM Tool to calculate the emission factor for an electricity system, v7.0.
Purpose of Data	Calculation of the baseline GHG emission reductions representing the Project emission reductions.
Comments	None

5.2 Data and Parameters Monitored

Data / Parameter	Electricity Supplied to the Grid ($EG_{facility,y}$)
Data unit	MWh
Description	Electricity supplied by the Project activity to the grid
Source of data	Shared substation meters (See calculation methods and Comments row)
Description of measurement methods and procedures to be applied	The electricity supplied to the grid is measured continuously by the Project Meter and is sent to the ERCOT electronic data gathering system. NextEra compiles the continuous readings into monthly reports. The generation is also confirmed via the

	ERCOT registry as the RECs from the Project are issued based on the power generated.
Frequency of monitoring/recording	Continuously; This is done on an hourly, daily, monthly, and annual basis.
Value applied	The expected generation capacity of 379,887 MWh/year was used to calculate the expected emission reductions
Monitoring equipment	Project Meter Name: Cap Ridge 4 M1-35; Model: ION 8650A; Serial Number: LW-1808B021-02
QA/QC procedures to be applied	At a minimum, all meters identified within the calculation methodology row are calibrated annually.
Purpose of data	Calculation of baseline emissions
Calculation method	Cap Ridge electricity generation is determined from total substation generation allocation based on the following shared substation meters (5 meters: M345 M1, M1-35 M2, M3-35 M3, M2-35 M4, M4-35 M5). Electricity generation allocation is performed in accordance with "CAP RIDGE WIND IV, LLC & BLUEBELL SOLAR METERING PROTOCOL" (May 1, 2020, Version 5)
Comments	The Project is using a shared substation. Electricity generation from solar feeders pass through the substation and associated meters. However, generation from each individual generator must be known for ERCOT reporting purposes. As such, a process for metering and generation allocation was developed: CAP RIDGE WIND IV, LLC & BLUEBELL SOLAR METERING PROTOCOL" (May 1, 2020, Version 5). This document explains in detail the process by which generation allocation and reporting occurs.

5.3 Monitoring Plan

Responsibility

Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with NextEra Energy. The Site Manager is responsible for the monitoring and reporting of the wind farm. The Production Manager will assist the Site Manager to complete the monitoring and reporting.

Training

The Project VCU project management office will assign and train the dedicated people carrying out the monitoring work.

Installation of meters

The net electricity supplied to the grid will be monitored through the main revenue meter installed at the point of interconnection into the Lower Colorado River Authority's Divide Substation power grid in Coke County. The Project also has a back-up meter installed at the Capricorn Ridge 4 substation.

In addition, at the project site, electricity from the turbines and the transmission lines connected to the turbines are controlled by a computerized turbine control and data systems. The turbines are monitored by site personnel and are also monitored remotely by a 24- hour control room.

The substation or transmission lines with the Capricorn Ridge 4 wind farm are currently shared. Separate meters installed allow for the calculation of each projects share of the net supply to the grid. This process is explained more in depth within the "Additions to the proposed generating capacity" section below.

Calibration

The metering equipment at the point of interconnection is required to be maintained and calibrated in accordance with good utility practice and ERCOT requirements.

The main and back-up meters shall be jointly inspected and sealed on behalf of the parties concerned and shall not be interfered with by either party except in the presence of the other party or its accredited representatives. All the meters installed shall be tested by a qualified entity after: the detection of a difference larger than the allowable error in the readings of both meters; the repair of all or part of meter caused by the failure of one or more parts to operate in accordance with the specifications.

At a minimum, all meters identified are calibrated annually.

Monitored data

During the next ten operating years, the net electricity supplied to the grid ($EG_{faclity,y}$) will be monitored and recorded following the procedures above.

Meter failure

Should any previous months reading of the main meters be inaccurate by more than the allowable error, or otherwise function improperly, the net energy output shall be determined by: (a) reading the backup meter installed, unless a test by either party reveals it is inaccurate; (b) if the backup system is not within acceptable limits of accuracy or is otherwise performing improperly the developer and Grid Company shall jointly prepare an estimate of the correct reading; or, (c) if the Grid Company and the developer fail to agree then the matter will be referred for arbitration according to agreed procedures.

Additions to the proposed generating capacity

The Project shares the substation with other projects. Project specific generation, losses, curtailments, etc. for the shared substation will be based on individual meters dedicated to each project sharing the substation along with an allocation method/calculation used by the project Production/Site managers to determine periodic activity.

To elaborate further, the output data from turbines and other relevant data are monitored and used to calculate the share of the project in the overall net output. NextEra utilizes Schneider Electric 8650ION meters for these purposes. Specifically, the “M1-35” meter is dedicated to the Capricorn Ridge 4 Wind Farm’s periodic activity and the “M345” meter is the Master meter. The meters are interconnected via Ethernet communications. The Master meter polls all other meters for the data required to perform the calculations for determining the net supply of each project and/or generator to the grid. This meter will assist in performing the calculations and record the determined net energy for each of the generators. This meter will then provide real-time data for the NextEra SCADA system which can be shared with the various NextEra entities that require this information as well as with the LCRA. There is a formal write-up, known as the “CAP RIDGE WIND IV, LLC & BLUEBELL SOLAR METERING PROTOCOL” (May 1, 2020, Version 5), that has this process documented and is updated as there are revisions to the site or protocols.

7. Quality control

Net electricity supplied to the grid will be double checked with receipt of sales and purchases and relevant commercial data and will be approved and signed off by VCU manager before it is accepted and stored.

This internal audit will also identify potential improvements to procedures to improve monitoring and reporting in future years. If such improvements are proposed these will be reported to VCS and only operated after approval by VCS and the validator and verifier.

8. Data management system

Physical document such as paper-based maps, diagrams and environmental assessments will be collected in a central place. In order to facilitate auditors' reference of relevant literature relating to The Project, the project material and monitoring results will be indexed. All paper-based information will be stored by the technology department of The Project and all the material will have a copy for backup. The Project will also follow the VCS Standard record retention policy and shall archive all data collected as a part of the project monitoring electronically and keep all paper and electronic records for at least 2 years after the end of the last crediting period.

9. Reporting

The necessary steps to meet the requirements for emissions reduction monitoring include:

• NextEra reviews the ERCOT meter readings continuously for The Project.

• NextEra generates monthly reports of the readings.

• NextEra carries out an internal audit and reports the readings to VCS before the verification is requested.

10. Verification

NextEra will facilitate the verification of The Project by providing the verification body with all required necessary information at any stage.

All units are controlled by a computerized turbine control and data system. The turbines are monitored by site personnel and are also monitored remotely by a 24-hour control room.

Generation for The Project is metered at the point of interconnection into the Lower Colorado River Authority's Substation in Coke County. Routine/standard maintenance is performed on the control and data system as needed. Total generation from the control and data system is frequently compared to the generation metered at the point of interconnect.