



# Monitoring Report

## LARIMAR WIND FARM PROJECT

Document Prepared by MGM Innova Consulting

|                          |                                                                                                                                                                                                                |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project Title</b>     | <i>Larimar Wind Farm Project</i>                                                                                                                                                                               |
| <b>Version</b>           | <i>2.1</i>                                                                                                                                                                                                     |
| <b>Report ID</b>         | <i>MR02LR</i>                                                                                                                                                                                                  |
| <b>Date of Issue</b>     | <i>02-August-2022</i>                                                                                                                                                                                          |
| <b>Project ID</b>        | <i>1644</i>                                                                                                                                                                                                    |
| <b>Monitoring Period</b> | <i>01-January-2020 to 31- December-2021</i>                                                                                                                                                                    |
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# 1 PROJECT DETAILS

## 1.1 Summary Description of the Implementation Status of the Project

Empresa Generadora de Electricidad Haina - EGE Haina S.A., is the owner of the Larimar Wind farm Project, which consists of two wind farms located in Enriquillo Region, Dominican Republic. (i) “Larimar I” has 15 wind turbine generators with a total installed capacity of 49.5 MW<sup>1</sup>; and (ii) “Larimar II” has 14 wind turbines generators with a total installed capacity of 48.3 MW<sup>2</sup>. The total installed capacity of the Larimar project is 97.8 MW. Additionally, a double circuit – two conductors per phase (a 34.5 kV, 100 MW of 5 km), medium voltage transmission line connects the Larimar project to Los Cocos Substation, this substation interconnects the project to the National Interconnected Electrical System (SENI)<sup>3</sup>.

The construction of the first phase of the project “Larimar I” started on 11/02/2015 and its commercial operation began in August 2016. The Power Purchase agreement – PPA, was signed on 02/08/2016. The second phase “Larimar II” started its operation in October 2018.

The project activity supplies an average of 370 GWh per year to the SENI (Larimar I = 206 GWh/y<sup>4</sup> and Larimar II = 164 GWh/y<sup>5</sup>), avoiding part of the electricity generated by the grid-connected power plants. This is the current scenario (the scenario existing prior to the implementation of the project activity) and it is the same as the baseline scenario (the scenario that would occur in the absence of the project activity). The baseline scenario implies that all the 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 generation sources.

This monitoring report represents the second verification of the first crediting period of the Wind Farm Project. The monitoring period counts from the 1<sup>st</sup> of January 2020 to the 31<sup>st</sup> of December 2021. The total GHG emissions reduction achieved by the project for this monitoring period is 456,432 tCO<sub>2e</sub>.

Regarding relevant operational highlights partial stops of the equipment have occurred (represented in lower generation), which obeys the routine of the equipment warranty, maintenance, and common failures (See section 3.1).

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<sup>1</sup> 15 wind turbines – Vestas 112 with 3.3 MW (49.5 MW)

<sup>2</sup> 14 wind turbines – Vestas 117 with 3.45 MW (48.3 MW)

<sup>3</sup> In Spanish: Sistema Eléctrico Nacional Interconectado - SENI

<sup>4</sup> See for Larimar I - Energy Production file 18\_Energy Production Assesment EPA\_Larimar I.pdf

<sup>5</sup> See for Larimar II - Energy Production file 19\_Energy Production Assesment EPA\_Larimar II.pdf

## 1.2 Sectoral Scope and Project Type

Scope 1 - Energy (renewable/non-renewable).

The project is a Wind Farm Power Plant presented as a single bundled project. Where the first phase - Larimar I and second phase Larimar II, are operating together since October 2018.

## 1.3 Project Proponent

|                          |                                                                  |
|--------------------------|------------------------------------------------------------------|
| <b>Organization name</b> | EMPRESA GENERADORA DE ELECTRICIDAD HAINA S.A. (EGE HAINA)        |
| <b>Contact person</b>    | Ricardo Estevez                                                  |
| <b>Title</b>             | Project Director                                                 |
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| <b>Telephone</b>         | +1 809-947-4023                                                  |
| <b>Email</b>             | <a href="mailto:estevezr@egehaina.com">estevezr@egehaina.com</a> |

## 1.4 Other Entities Involved in the Project

|                            |                                                                  |
|----------------------------|------------------------------------------------------------------|
| <b>Organization name</b>   | MGM Innova Consulting                                            |
| <b>Role in the Project</b> | Consultancy firm for project development                         |
| <b>Contact person</b>      | Juliana Correa                                                   |
| <b>Title</b>               | Project Manager of MGM Innova                                    |
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| <b>Telephone</b>           | Juliana Correa, MGM Innova: (+574) 326 0584                      |
| <b>Email</b>               | <a href="mailto:jcorrea@mgminnova.com">jcorrea@mgminnova.com</a> |

## 1.5 Project Start Date

The starting date of the project is 01/08/2016<sup>6</sup>, date which the Wind Farm Project started its commercial period operation – injecting energy to Dominican Republic interconnected system, thus the beginning of the emission reduction generation of the project. Trial period operation started on 03/05/2016. The first wind turbine was connected to the national system on 23/05/2016<sup>7</sup>.

It is important to note that both wind farms have the SIE Resolution, that constitutes the temporary interconnection authorization permit and commissioning authorization for each farm. For Larimar I this SIE is given on 22/07/2016<sup>8</sup> and the SIE for Larimar II is dated 11/10/2018<sup>9</sup>.

In 16/10/2018<sup>10</sup> starts the commercial operation of the second phase of the project “Larimar II”, so since this date the generation and the emission reductions increased.

## 1.6 Project Crediting Period

The length of the project first crediting period is 10 years from 01/08/2016 to 31/07/2026.

## 1.7 Project Location

The project is located in Enriquillo Municipality, Barahona Province which belong to Enriquillo Region. Both wind farms Larimar I and Larimar II are approximately 240 km far from Santo Domingo, capital of the country.

The following maps show the general location of the project:

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<sup>6</sup> See for starting date of the Project file 56\_FAC EGE Haina-CDEEE FM-CO-14-2016.pdf

<sup>7</sup> See for trial period 49\_RESOLUCION SIE-024-2016-PS PROVISIONAL.pdf and operational period 50\_RESOLUCION\_SIE-053-2016-PS\_AUTORIZACION.pdf

<sup>8</sup> See support document – Resolution SIE for Larimar I:

RESOLUCION\_SIE-053-2016-PS\_\_AUTORIZACION\_PS\_PROYECTO\_PARQUE\_EOLICO\_LARIMAR.pdf

<sup>9</sup> See support document – Resolution SIE for Larimar II:

SIE-092-2018-PS\_-PERMISO\_INTERCONEXION\_PROVISIONAL\_PARQUE\_EOLIC\_LARIMAR II.pdf

<sup>10</sup> See support document: OC-2019-000336-GG-EGEHAINA-Certificaciones de Fechas de las Primeras Inyecciones\_LARIMAR II.pdf

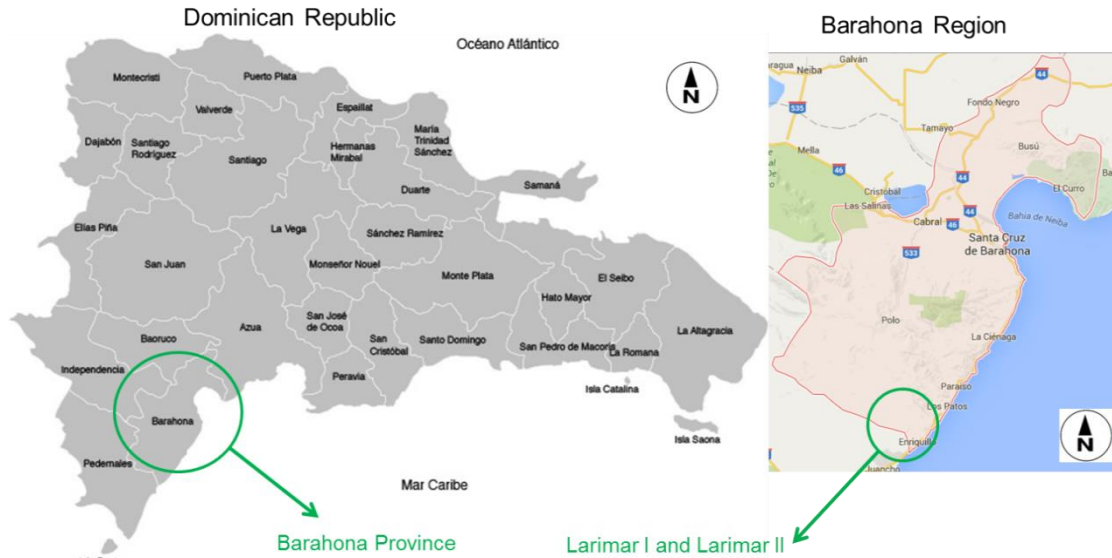


Figure 1. Location of Larimar Wind Farm Project

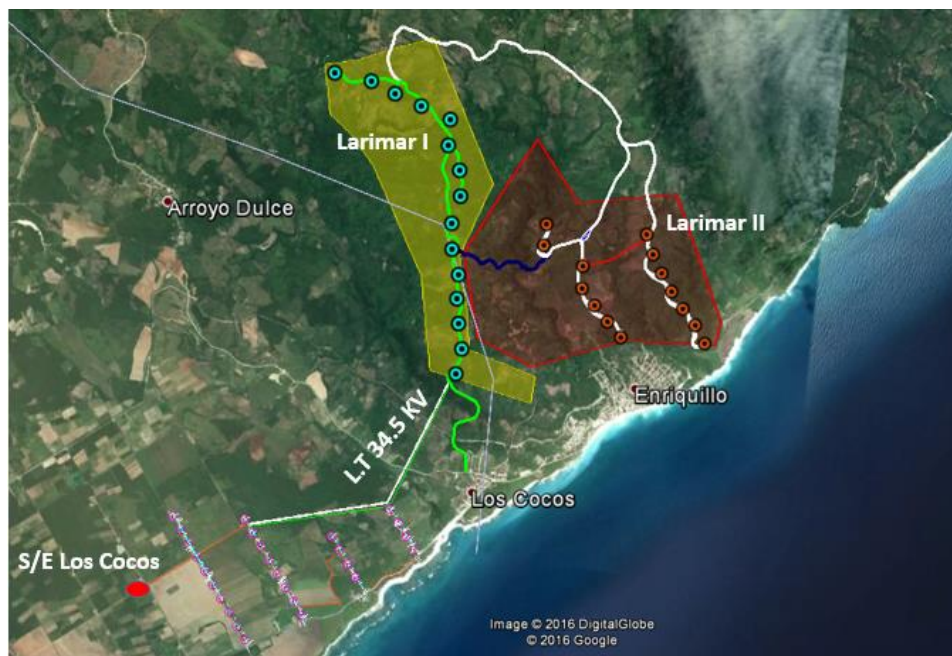


Figure 2. Larimar Wind Farm Satellite view<sup>11</sup>

Larimar I constructed area, is approximately 371,100m<sup>2</sup> including: 192,000 m<sup>2</sup> for internal and access roads, 42,000 m<sup>2</sup> for platforms and 137,100 m<sup>2</sup> for medium voltage transmission line. Furthermore, Larimar II construction area is approximately 158,500 m<sup>2</sup> including: 78,000 m<sup>2</sup> for roads, 25,600 m<sup>2</sup> for platforms, 5,300 m<sup>2</sup> for underground lines and 50,000 m<sup>2</sup> for interconnection with Larimar I.

<sup>11</sup> See Google earth application Files Attached 55\_Geographic Location – Concesion Larimar I.kmz, Concesion Larimar II.kmz and Posiciones de Molinos Larimar I.kmz , Posiciones de Molinos Larimar I.kmz.

Each wind farm lies in a perimeter defined by the following UTM coordinates at zone sector 19Q:

**Table 1. Larimar I Perimeter (Permanent concession by CNE)**

| LARIMAR I – Zone 19Q |        |         |
|----------------------|--------|---------|
| ID                   | East   | North   |
| LAR2-1               | 260545 | 1984394 |
| LAR2-2               | 261442 | 1982799 |
| LAR2-3               | 261102 | 1981910 |
| LAR2-4               | 261318 | 1980841 |
| LAR2-5               | 262157 | 1980574 |
| LAR2-6               | 262134 | 1980248 |
| LAR5-7               | 260869 | 1980521 |
| LAR2-8               | 260660 | 1981645 |
| LAR2-9               | 259951 | 1982885 |
| LAR2-10              | 259379 | 1983442 |
| LAR2-11              | 259273 | 1984030 |

**Table 2. Larimar II Perimeter (Permanent concession by CNE)**

| LARIMAR II – Zone 19Q |        |         |
|-----------------------|--------|---------|
| ID                    | East   | North   |
| LAR2-1                | 261951 | 1983345 |
| LAR2-2                | 262488 | 1982652 |
| LAR2-3                | 263669 | 1982861 |
| LAR2-4                | 264387 | 1981369 |
| LAR2-5                | 264328 | 1981101 |
| LAR2-6                | 263217 | 1981068 |
| LAR5-7                | 262120 | 1980650 |
| LAR2-8                | 261432 | 1980915 |
| LAR2-9                | 261162 | 1981921 |

The UTM coordinates of each generator for both Wind Farms are the following:

**Table 3. Larimar I Generators coordinates**

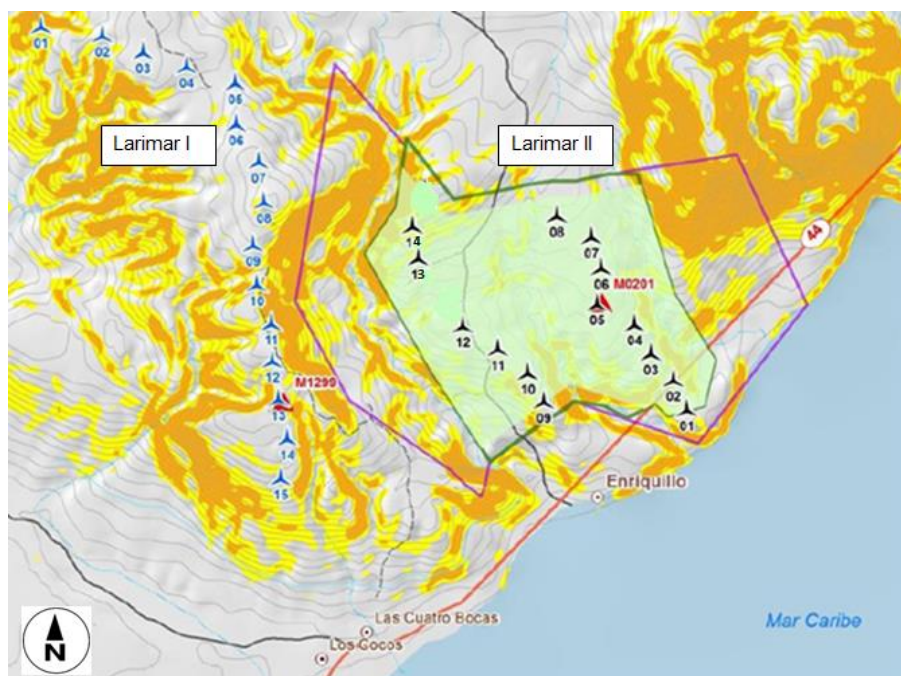
| Wind turbines | Coordinates – Larimar I |            |
|---------------|-------------------------|------------|
|               | East                    | North      |
| LM01          | 19Q259392.98            | 1983946.15 |
| LM02          | 19Q259853.00            | 1983884.00 |
| LM03          | 19Q260154.98            | 1983758.17 |

| Wind turbines | Coordinates – Larimar I |            |
|---------------|-------------------------|------------|
|               | East                    | North      |
| LM04          | 19Q260481.98            | 1983647.18 |
| LM05          | 19Q260845.98            | 1983520.19 |
| LM06          | 19Q260923.38            | 1983515.19 |
| LM07          | 19Q261015.68            | 1982926.20 |
| LM08          | 19Q261069.58            | 1982633.20 |
| LM09          | 19Q260972.08            | 1982305.20 |
| LM10          | 19Q261003.18            | 1981986.20 |
| LM11          | 19Q261050.48            | 1981708.20 |
| LM12          | 19Q261133.98            | 1981422.20 |
| LM13          | 19Q261166.38            | 1981122.20 |
| LM14          | 19Q261230.78            | 1980844.20 |
| LM15          | 19Q261187.18            | 1980554.20 |

Table 4. Larimar II Generators coordinates

| Wind turbines | Coordinates – Larimar II |         |
|---------------|--------------------------|---------|
|               | East                     | North   |
| LMII01        | 19Q264208                | 1981174 |
| LMII02        | 19Q264069                | 1981382 |
| LMII03        | 19Q263896                | 1981562 |
| LMII04        | 19Q263736                | 1981754 |
| LMII05        | 19Q263593                | 1981960 |
| LMII06        | 19Q263466                | 1982174 |
| LMII07        | 19Q263366                | 1982404 |
| LMII08        | 19Q263167                | 1981151 |
| LMII09        | 19Q262984                | 1981321 |
| LMII10        | 19Q262807                | 1981502 |
| LMII11        | 19Q262635                | 1981689 |
| LMII12        | 19Q262622                | 1981956 |
| LMII13        | 19Q262124                | 1982155 |
| LMII14        | 19Q262133                | 1982405 |

The following image shows the location of the project facilities (wind turbines).



**Figure 3. Larimar I and Larimar II – Wind turbines location**

## 1.8 Title and Reference of Methodology

The project activity is developed in accordance with the approved large-scale consolidated methodology ACM0002 “Grid-connected electricity generation from renewable sources” (version 17.0 sectoral scope: 01)<sup>12</sup>.

According to the methodology, the grid emission factor is calculated using the - “Tool to calculate the emission factor for an electricity system” (version 5.0)<sup>13</sup> and the project additionality is demonstrated using the “Tool for the demonstration and assessment of additionality” (version 07.0.0)<sup>14</sup>.

## 1.9 Participation under other GHG Programs

The project is not registered under any other GHG program and has no intends to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program.

<sup>12</sup> <https://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN>

<sup>13</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf> within the link:  
[https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v1.1.pdf/history\\_view](https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v1.1.pdf/history_view)

<sup>14</sup> <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

## 1.10 Other Forms of Credit

The project has not been registered and is not seeking registration under any other GHG programs.

For Larimar Wind Farm Project, the following information is applicable:

- Emission Trading Programs and Other Binding Limits: The PP has not applied this project in any Emission Trading Programs and other Binding Limits.
- Other Forms of Environmental Credit: The PP has not applied this project in any other form of environmental credits.
- Participation under Other GHG Programs: The PP has not participated under other GHG Programs with this project activity.

Therefore, EGE Haina as PP will warrantee that no double – counting of emission reductions will occur in case of this Wind Farm project during its VCS crediting period. The project has not been registered or is seeking registration under any other GHG programs. The project neither has, nor intends to generate any other credit form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program.

## 1.11 Sustainable Development Contributions

Larimar Wind Farm Project involves the implementation of two wind farms connected to the National Electrical Interconnected System of Dominican Republic. The wind farms are: (1) Larimar I which has 15 wind turbine generators with a total installed capacity of 49.5 MW<sup>15</sup> and (2) Larimar II which has 14 wind turbines generators with a total installed capacity of 48.3 MW<sup>16</sup>. The 29 wind turbine generators allow an installed capacity of 97.8 MW, and an expected annual supply of electricity to the grid of 370 GWh with associated average annual emission reductions of 265,391 tCO<sub>2</sub>; as it was assessed for registration purpose at validation time<sup>17</sup>.

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>SDG7.2, By 2030, increase substantially the share of renewable energy in the global energy mix.</p> <p>Explanation: The project uses renewable wind resources to generate power electricity. The project has an installed capacity of 97.8 MW consisting of 29 wind turbines (15 turbines adding 49.5 MW and 14 turbines adding 48.3 MW). The annual power delivered to the grid is</p> |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

<sup>15</sup> 15 wind turbines – Vestas 112 with 3.3 MW (49.5 MW)

<sup>16</sup> 14 wind turbines – Vestas 117 with 3.45 MW (48.3 MW)

<sup>17</sup> See project web page for documents: <https://registry.terra.org/app/projectDetail/VCS/1644>

|                                                                                   |                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | 370,000 MWh on average, that helps to increase the renewable energy participation in the national electricity grid.                                                                                                                                                                                                                       |
|  | Explanation for SDG13.2, The scenario prior to the implementation of the project activity is that the same electricity was generated by the operation of fossil power plants. The project uses wind to generate electricity, which is zero CO <sub>2</sub> emissions. Therefore, the project is able to reduce CO <sub>2</sub> emissions. |

Table 5. Sustainable Development Contributions

| Row number            | SDG Target        | SDG Indicator                                                                                           | Net Impact on SDG Indicator                                                                               | Current Project Contributions                                                                                                                                                                       | Contributions Over Project Lifetime                                                                                                                                     |
|-----------------------|-------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sequential row number | SDG Target number | Number and text of SDG indicator or, if no official SDG indicator is applicable, user-defined indicator | Indicate the project's contribution to the SDG Indicator (implemented activities to increase or decrease) | Brief description of the quantifiable impact of the project's activities related to the SDG indicator, during the monitoring period.                                                                | Brief description of the cumulative quantifiable impact of the project's activities related to the SDG indicator, over the project lifetime.                            |
| 1)                    | 7.2               | 7.2.1 - Renewable energy share in the total final energy consumption                                    | Implemented activities to increase                                                                        | During this reporting period (01-Jan-2020 to 31-Dec-2021), the project with 29 wind turbines and an installed capacity of 97.8 MW contributed 636,367 MW hours to the national grid (See Table 11). | During the project lifetime, the project with 29 wind turbines and an installed capacity of 97.8 MW contributed 1,446,884 MW hours to the national grid <sup>18</sup> . |

<sup>18</sup> For this case, as the second monitoring report is being reported, the current project contributions and contributions over project lifetime are the summatory of the first and second monitoring periods reported (636,367 + 810,517 = 1,446,884 MWh).

| Row number | SDG Target | SDG Indicator                                                                    | Net Impact on SDG Indicator               | Current Project Contributions                                                                                                                                                                                  | Contributions Over Project Lifetime                                                     |
|------------|------------|----------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 2)         | 13.2       | User define the indicator: Tonnes of greenhouse gas emissions avoided or removed | <i>Implemented activities to increase</i> | By generating 636,367 MWh during the reporting period (penalized generation 636,319 MWh), Larimar Wind Farm Project has prevented the release of 456,432 tonnes of carbon into the atmosphere (See Table 16 ). | Prevented the release of 1,037.816 tonnes of carbon into the atmosphere <sup>19</sup> . |

<sup>19</sup> For this case, as the first and second monitoring periods have been reported, the current project contributions and contributions over project lifetime are summatory of both periods monitored – 581,384 + 456,432 = 1,037,816 tCO<sub>2</sub>

## 2 SAFEGUARDS

### 2.1 No Net Harm

During the present monitoring period there was not potential negative environmental or socio-economic impacts.

The Environmental Impact Declaration for Larimar I Wind Farm was submitted for approval on 27/11/2014 and the Environmental License given by the Dominican Republic Ministry of Environment and Natural Resources was obtained on 11/02/2015.

In the same way, the Environmental Impact Declaration for Larimar II Wind Farm was submitted for approval on 01/02/2016, the Environmental License given by the Ministry of Environmental and Natural Resources was granted on 13/12/2016.

It is important to remark that with the environmental license Larimar Wind Farm Project is conditioned to issue an Environmental Compliance Report (ICA), used to report on progress, effectiveness and compliance of environmental management programs presented in the Environmental Management Plan of the project (Includes Larimar I and Larimar II). In consequence, being coherent with the ICAs during the present monitoring period it is possible to identify some potential negative environmental and socio-economic impacts. Table 6 present the most frequent impacts during this period and mitigation measures.

**Table 6. Potential negatives environmental and socio-economic impacts and mitigation**

| Summarize any potential negative socio-environmental impact identified              | Strategy to mitigate it                                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 1. Impact on Birdlife: Loss of individuals due to collision                         | Regular annual monitoring of individual collisions, accounted for by species                                                  |
| 2. Impact on soil and water: generation of solid hazardous and non-hazardous waste. | Classification by type of waste, storage, registration and disposal by managers authorized by the Ministry of the Environment |
| 3. Impact on soil and water: Generation of liquid hazardous waste.                  | Adequate storage and disposal through management companies authorized by the Ministry of the Environment                      |
| 4. Impact to soil and water: Fuel storage                                           | Containment buckets against spills                                                                                            |
| 5. Impact on soil and water: Generation of domestic residuals.                      | Septic tank and waste removal through management companies authorized by the Ministry of the Environment                      |
| 6. Impact to soil and water: Pest and weed control                                  | Regular annual control of pests and weeds using authorized products                                                           |

| Summarize any potential negative socio-environmental impact identified | Strategy to mitigate it                                                                                                                                              |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7. Socio-economic impact: Risk of occupational accidents               | 1. Mandatory use of personal protective equipment<br>2. Training and safety meetings<br>3. Medical check-ups<br>4. Incident report<br>5. Conduct of emergency drills |
| 8. Socioeconomic Impact Employment generation                          | 1. Recruitment of required personnel for the operation of the company<br>2. Recruitment of unskilled labor from the communities                                      |
| 9. Impact on flora: loss of vegetation                                 | Reforestation of areas, follow-up inspections                                                                                                                        |
| 10. Alteration to air quality                                          | Air quality measurements                                                                                                                                             |

Also, EGE Haina manage a Socio/environmental Matrix where aspects and impacts of Larimar I and Larimar II are identify, classified, and prioritized, in this sense can be followed in order to satisfy the Environmental Management Plan and present the Environmental Compliance Report - ICAs.

## 2.2 Local Stakeholder Consultation

From 2016 several activities have been developed in order to involve local stakeholders and generate community participation, Table 7 presents the different methods to involve the community and the respective mechanisms used to document the results.

It is important to remark the socio-economical work sponsored by EGE Haina. The company has a policy and a program of social responsibility which promotes a continuous sustainable communitarian development, helping the people within the Larimar Wind Farm Project area (known as Enriquillo, Barahona), to improve their quality of life. This program has helped the population in the area of influence of the project, seeking to enhance the company's social and environmental commitment<sup>20</sup>

1. Scholar partnering
2. Income generation training
3. Health promotion
4. Environmental Protection
5. Promotion of Communitarian institutions
6. Sports promotion
7. Civil society promotion and its organizations
8. Donation of food and supplies to the most vulnerable families

<sup>20</sup> See link of EGE Haina's web page - <https://www.egehaina.com/Sostenibilidad>

Figure 4 and Figure 5 gives a graphic overview of the different events and activities framed in the social responsibility program for the current Monitoring period of the Wind Farm Project.



Figure 4. Social Responsibility Program evidence 2020<sup>21</sup>

<sup>21</sup> See support document – 2020: Informe de Responsabilidad Social zona sur – 2020.doc



Figure 5. Social Responsibility Program evidence 2021<sup>22</sup>

<sup>22</sup> See support document - 2021: Informe de Responsabilidad Social zona sur – 2021.doc

EGE Haina carries out different mechanisms to maintain fluid and efficient communication with the people close to the project, apart from their development and social commitment to the community, it is also monitoring the observations that may arise in relation to the project, in this case communication is maintained through social leaders and workshops mainly. These mechanisms indicated above and the way the information has been recorded are shown in Table 7.

**Table 7. Stakeholder consultation methods and documentation.**

| Procedures/methods used to involve local stakeholders between 2020 and 2021  | Procedures or methods used to document the results                                                                                                              |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Diagnoses and uprising of leaders and authorities                            | The credentials of the results are supported in documents, such as: letters, reports, report of complaints, pictures, videos, minutes, brochures, among others. |
| Direct and telephone contact with local authorities and leaders              |                                                                                                                                                                 |
| Visits and meetings with local authorities and leaders in their communities. |                                                                                                                                                                 |
| Meetings, sport activities, talks and workshops for developing capacities.   |                                                                                                                                                                 |

EGE Haina continually seeks to develop and maintain respectful, permanent, and collaborative relationships with communities and their representatives in the immediate vicinity of operations and projects.

The communication channels they use are direct contact through visits and meetings, telephone calls and chats via WhatsApp between the leaders of the communities and the coordinator of social responsibility of EGE Haina and the manager of the plant in the area. These actions guarantee them to maintain fluid communication between the community and the company.

In addition, they have mass media: the company's website and social media accounts, annual report, advertising, and news broadcast through local media.

Regarding claims and complaints management in the project area, no claims and/or complaints were filed by the communities during the current monitoring period 2020-2021.

It is important to note that these requests (claims and complaints), are classified according to the procedure<sup>23</sup> established by the company, in complaints and petitions, submitted as follows:

<sup>23</sup> See document: Procedimiento Reclamaciones Rurales Parque Eolicos.pdf

**Table 8. Suggestions and Grievance mechanism**

| Action order | Suggestions and Grievance mechanism                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1            | EGE Haina receives and registers the claim and notifies it to the corresponding areas, including Communications and Social Responsibility, Operations and Patrimonial Security. When applicable, the Legal Department and the General Management are also notified.                                                                                                                                                                                                                                       |
| 2            | The relevance of the claim is internally evaluated.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3            | If it does not apply, it is communicated to the claimant explaining why the claim does not apply or indicating to whom the claim should be addressed. N-P02.F04 Final Claims Form. <sup>24</sup>                                                                                                                                                                                                                                                                                                          |
| 4            | If the claim applies and the solution is internal responsibility, a solution is requested. For this, it is verified that the claim includes the following information: name of the person (s) that submits the claim; date it was received; nature of it; date of the follow-up actions and the response offered; names of company members who have been contacted or to whom a copy of the correspondence has been sent; measures taken, if any, and coordination of the implementation of the solution. |
| 5            | Interested parties are notified in writing and verbally about the complaint solution implementation <ul style="list-style-type: none"> <li>- In the event that a more thorough investigation is required and a delay is anticipated, the complaining party should be informed that more time will be required and, if necessary, periodically updated information will be provided.</li> </ul>                                                                                                            |
| 6            | If the solution to the claim is not of internal responsibility directly, but the company is indirectly related to the claim (e.g., related to the impact of a contractor during the construction or operation of a company project, or the free supply claim or 24 hours of electrical service), the communication received is sent to the corresponding organizations and awaits their response.                                                                                                         |
| 7            | If the answer is sent to EGE Haina, the Social Responsibility Coordination informs the claimants about the implementation of the agreed solution or indicates to whom they should address their claim.                                                                                                                                                                                                                                                                                                    |
| 8            | Once the solution is implemented, if applicable, thank you letters are prepared and sent, and details of participation of each organization involved in the solution of the claim.                                                                                                                                                                                                                                                                                                                        |
| 9            | End of the procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

<sup>24</sup> See document 10 - N-P02.F04 Formulario Reclamos Final.doc

## 2.3 AFOLU-Specific Safeguards

Not applicable – The monitored project is not AFOLU.

# 3 IMPLEMENTATION STATUS

## 3.1 Implementation Status of the Project Activity

The implementation status of the project activity includes the following information:

- The project activity has been in operation since 01/08/2016 until now giving energy supply to the SENI . There is not any event of break down or non-operational phase during the monitoring period, but partial stops of the equipment (represented in lower generation), which obeys the routine of the equipment warranty, project maintenance or minor failures<sup>25</sup>.
- Project is implemented and operational as per the VCS Project description submitted.
- In 16/10/2018 the second phase of the project has started “Larimar II”, generating more energy and having more emissions reductions.

For the project, all maintenance operations are tracked through an Excel file called “Master Schedule”. There is a file for each wind farm where the approximate duration of maintenance work by wind farm and by turbine is stored.

This duration is regulated by contract, corresponding to the operation and maintenance contract signed with the Vestas company.

For both Larimar I and Larimar II, a preventive maintenance control is carried out (see Annex 1 or SIF Scheduled Maintenance<sup>26</sup>). The duration of this maintenance may vary slightly, but in general per turbine, it usually lasts 2 days in 8-hour working day, with 3 technicians and is carried out annually.

For unplanned corrective maintenance (forced shutdowns), Vestas has a SCADA system that monitors the status of the parks 24/7/365, as well as a vibration monitoring system (CMS). For the project, there is a type of SAA contract (AOM4000) where these corrective measures are the responsibility of Vestas, both the labor and the cost of the corresponding materials.

The response to these failures or forced shutdowns are immediate - remotely or in person, as required - seeking to reduce the impact of this loss of production due to the failure.

<sup>25</sup> See document: LISTADO DE EVENTO 24H 2020-2021.xls

<sup>26</sup> See document 13\_Schedule 1 to Annex 1 - Service Inspection Form (SIF).pdf

Usually, the most common alarms that maintain a turbine with a prolonged failure over time are usually caused by:

- a) External fault in the network affecting the Wind Farm, classified as CCE (network or electrical system deficiency).
- b) Lack of spare parts, lack of specialized tool or alarm of considerable difficulty in troubleshooting, classified as Forced.
- c) Failure in the 34.5kV transmission line from Larimar to Los Cocos, classified as CCE.

The most significant events of both parks are presented in the excel files:

For 2020 - DATA 2020 EVENTOS LARI and DATA 2020 EVENTOS LAR II

For 2021 - DATA 2021 EVENTOS PELRI AND DATA 2021 EVENTOS PELARII

Discriminating the duration of the failure in hours, date on which the failure occurred, turbine on which occurred and failure name<sup>27</sup>.

## 3.2 Deviations

### 2.1.1 Methodology Deviations

Not applicable. No methodology deviations are made.

### 2.1.2 Project Description Deviations

During the desk review stage for the project first verification (from 2016 to 31/12/2019), it was noted a typo mistake in the registered PD. The combined emission factor for electrical interconnected grid in Dominican Republic was calculated using the simple OM method, and its value was fixed during the first crediting period,  $EF_{grid,CM,y} = 0.7173 \text{ tCO}_2\text{e/MWh}$ , as it was presented by the PP (see attached file<sup>28</sup>) after responded the audit team findings. However, in registered PD section 4.1 it is stated that  $EF_{grid,CM,y} = 0.6435 \text{ tCO}_2\text{e/MWh}$ , despite that in section 3.4 of registered PD it was described the calculations for this parameters and also is stated the final value for  $EF_{grid,CM,y} = 0.7173 \text{ tCO}_2\text{e/MWh}$ . Considering this typo

<sup>27</sup> The nature of the failure can be: Planned (even if it is a corrective, but having planned its solution), Forced (failure that is not planned, accidental), Reserved (the turbine stops producing but due to an environmental circumstance), CCE (for network or electrical system deficiency), Force Majeure (turbine time out of service due to an event that could put the integrity of the unit at risk, eg: Hurricane, earthquakes, strikes, attacks, wars, etc.).

<sup>28</sup> See excel file of Emission Factor Calculation at validation stage – 41\_Larimar EF Calculation.xls

mistake, section 4.1 of registered PD named PROJ\_DESC\_1644\_01SEP2017.pdf has been updated with the correct combined emission factor,  $EF_{grid,CM,y} = 0.7173 \text{ tCO}_2\text{e/MWh}^{29}$ .

### 3.3 Grouped Projects

Larimar Wind Farm Project is not a grouped project, therefore is not necessary to provide information in this paragraph.

## 4 DATA AND PARAMETERS

### 4.1 Data and Parameters Available at Validation

|                                                                                              |                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $EF_{grid,CM,y}$                                                                                                                                                                                           |
| Data unit                                                                                    | tCO <sub>2</sub> /MWh                                                                                                                                                                                      |
| Description                                                                                  | Combined margin CO <sub>2</sub> 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” |
| Source of data                                                                               | Calculated based on information provided by the grid operator - Organismo Coordinador del Sistema Eléctrico Nacional OC-SENI.                                                                              |
| Value applied                                                                                | 0.7173 tCO <sub>2</sub> /MWh.                                                                                                                                                                              |
| Justification of choice of data or description of measurement methods and procedures applied | As per the most recent “Tool to calculate the emission factor for an electricity system” at the time of project validation.                                                                                |
| Purpose of Data                                                                              | Calculation of baseline emissions                                                                                                                                                                          |
| Comments                                                                                     | -                                                                                                                                                                                                          |

### 4.2 Data and Parameters Monitored

|                  |                                                                                                        |
|------------------|--------------------------------------------------------------------------------------------------------|
| Data / Parameter | $EG_{facility,y}$ – Larimar I - $EG_{SMC \text{ LINEA } 10}$ Larimar II - $EG_{SMC \text{ LINEA } 11}$ |
| Data unit        | MWh/y                                                                                                  |
| Description      | Quantity of net electricity generation supplied by the project plant/unit to the grid in year y        |

<sup>29</sup> See updated registered PD - PROJ\_DESC\_1644\_01SEP2017-updated.pdf

| Source of data                                                  | Electricity meter(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                               |                                           |                                               |      |            |            |      |            |            |       |            |            |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------|-----------------------------------------------|------|------------|------------|------|------------|------------|-------|------------|------------|
| Description of measurement methods and procedures to be applied | <p>EGE Haina Commercial direction, monitors Larimar wind farm energy production from the Dispatch Center - CDH in real time.</p> <p>There is a Software available, which download automatically and on a daily basis the commercial measurement systems (SMC) data, that by law, has the Wind Farm for recording the measurements.</p> <p>In real time, the dispatch center verifies through the Scada system of Larimar Wind Farm the parameters of generation and service quality. After each day, there is a download and information management software of the plant measurement system (PrimeRead) that automatically performs the discharge of these measurements.</p> <p>The measurement systems have a communication link for remote access. Monthly or as often as required, information can be obtained from the download database.</p> <p>Therefore, the parameter is both monitored by EGE Haina and the Organismo Coordinador del Sistema Eléctrico Nacional OC-SENI. OC-SENI, check energy meters remotely in order to define the quantity of electricity supplied by the project plant/unit to the grid.</p> |                                               |                                           |                                               |      |            |            |      |            |            |       |            |            |
| Frequency of monitoring/recording                               | <p>Operation managers monitor and issue daily reports of the plant energy production, the information is consolidated monthly with the SMC data.</p> <p>Also, technicians have the task to download, process, store and deliver to the OC-SENI the information coming from the SMC monthly, for the settlement of monthly economic transaction</p> <p>Typically, the measured data can be seen on-line in real time by the owner and the OC-SENI.</p> <p>The data is filed instantly on the meter, daily in a download database and monthly processed data for settlement.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                               |                                           |                                               |      |            |            |      |            |            |       |            |            |
| Value monitored                                                 | <p>636,367 MWh</p> <table><tr><th>Year</th><th>EG<sub>PJ,y</sub> Total Generation (MWh)</th><th>EG<sub>PJ,y</sub> Penalized Generation (MWh)</th></tr><tr><td>2020</td><td>303,096.76</td><td>303,049.41</td></tr><tr><td>2021</td><td>333,270.45</td><td>333,270.45</td></tr><tr><td>Total</td><td>636,367.22</td><td>636,319.86</td></tr></table> <p>See excel file: ER_LARIMAR_MR2_v1.0 xls. For generation data.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Year                                          | EG <sub>PJ,y</sub> Total Generation (MWh) | EG <sub>PJ,y</sub> Penalized Generation (MWh) | 2020 | 303,096.76 | 303,049.41 | 2021 | 333,270.45 | 333,270.45 | Total | 636,367.22 | 636,319.86 |
| Year                                                            | EG <sub>PJ,y</sub> Total Generation (MWh)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | EG <sub>PJ,y</sub> Penalized Generation (MWh) |                                           |                                               |      |            |            |      |            |            |       |            |            |
| 2020                                                            | 303,096.76                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 303,049.41                                    |                                           |                                               |      |            |            |      |            |            |       |            |            |
| 2021                                                            | 333,270.45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 333,270.45                                    |                                           |                                               |      |            |            |      |            |            |       |            |            |
| Total                                                           | 636,367.22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 636,319.86                                    |                                           |                                               |      |            |            |      |            |            |       |            |            |

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Monitoring equipment</b>           | Commercial measurement systems – SMC of Larimar Wind Farm have 2 meters ION 8650, with accuracy class 0.2. See Table 9.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>QA/QC procedures to be applied</b> | <p>Calibration tasks follow national standards and are in accordance with the calibration instructive specified in Dominican Republic standard for electricity metering devices.</p> <p>The equipment is calibrated by the SENI. The frequency is every 2 years according to regulations, or if any element of the SMC is changed, intervened, or modified.</p>                                                                                                                                                                                                                                                                                                                          |
| <b>Purpose of the data</b>            | Calculate of baseline emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Calculation method</b>             | <p>All data collected as part of the monitoring process is archived electronically and kept.</p> <p>The data is stored on a company server. It is used the manufacturer's software (Schneider's ION Setup 3.0) and / or PrimeRead.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Comments</b>                       | <p>Larimar Wind Farm has a Certificate of granting authorization of the measurement system, a Proof of Commercial habilitation visits and the certification of the meter's calibration. (See Table 10Table 9).</p> <p>For this monitoring period a calibration was performed for both installed meters every 2 years. Considering these facts, the project generation was penalized during the monitoring period from 08/02/2020 to 25/02/2020 with the maximum permissible error of the meter 0.2 S. The system measurement elements have a valid calibration certificate, issued by the OC-SEN, this calibration tasks follow national standards for electricity metering devices.</p> |

### 4.3 Monitoring Plan

The Monitoring Plan basically consists in the procedures to meter the project's electricity generation. Since this is the only parameter that is measured and the emission factor is already set ex ante, the process is straightforward, as described in the following.

Monitoring tasks are implemented according to the monitoring plan in order to ensure that the real, measurable and long-term greenhouse gas (GHG) emission reduction for the project is monitored and reported.

#### Data metering and recording

Larimar Wind Farm Project (Larimar I and Larimar II) has a commercial measurement system - SMC in accordance with the requirements of current legislation, which govern commercial operations in the electricity industry. According to this regulation, the measurement systems of each injection point of the Larimar Wind Farm Project are located at the 34.5Kv Lines (Larimar I and Larimar II) and are recognized as SMC 1 and SMC 2 (as shown in Figure 7and Figure 8). Each SMC have a main meter, a backup meter, and an emergency measurement system, which must have a continuous power supply system (even at

times when the entire system has failed). These meters must be class 0.2. and have the capability to store data for 3 months.

Also due to regulations, transactions must be settled monthly, so these meters are discharged with this frequency. The data is stored by the company but is also stored by the coordinating agency – OC SENI, which has a system of data acquisition and storage of all meters in the system.

The SMC according to current regulations, are reviewed and calibrated every two years. Coordinated Agency – OC, contrasts all the SMCs in the system with this frequency.

According to methodology ACM0002 version 17.0.0, the main parameter that need to be monitored during the operation of the Wind Farm is:  $EG_{\text{facility},y}$  = Quantity of net electricity supplied by the project plant/unit to the grid in year y (MWh/yr). Therefore, considering Larimar I and Larimar II, there are two energy meters considered to monitor this parameter (see Table 9, Figure 7 and Figure 8).

**Table 9. Monitoring equipment and calibration frequency**

| Energy Meter installed                                           | ID meter                                                          | Description                                                                                   | Type of meters                                                | Location / Substation                    | Calibration frequency                                                    |
|------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------|
| Larimar I - $EG_{\text{SMC1 LINEA 10}}$ (Main and backup meter)  | SMC 1 LARIMAR I G10: Main meter.<br><br>Serie:<br>MW-1507A003-02  | Sistema de Medición Comercial (SMC) LARIMAR G10<br><br>ID: 3276-PELAK-G10<br><br>Main meter   | Brand: SCHNEIDER<br>Model: ION8650C<br>Type: 9S<br>Class: 0.2 | At the 34.5 Kv line<br><br>S/E Los Cocos | Every 2 years according to regulations of General Electricity Law 125-01 |
|                                                                  | SMC 1 LARIMAR I G10: Backup meter<br><br>Serie:<br>MW-1507A004-02 | Sistema de Medición Comercial (SMC) LARIMAR G10<br><br>ID: 3276-PELAK-G10<br><br>Backup meter | Brand: SCHNEIDER<br>Model: ION8650C<br>Type: 9S<br>Class: 0.2 | At the 34.5 Kv line<br><br>S/E Los Cocos |                                                                          |
| Larimar II - $EG_{\text{SMC2 LINEA 11}}$ (Main and backup meter) | SMC 2 LARIMAR II G20: Main meter.<br><br>Serie:<br>MW-1507A001-02 | Sistema de Medición Comercial (SMC) LARIMAR G20<br><br>ID: 3276-PELAK-G20<br><br>Main meter   | Brand: SCHNEIDER<br>Model: ION8650C<br>Type: 9S<br>Class: 0.2 | At the 34.5 Kv line<br><br>S/E Los Cocos | Every 2 years according to regulations of General Electricity            |
|                                                                  | SMC 2 LARIMAR II G20: Backup meter.                               | Sistema de Medición Comercial (SMC) LARIMAR G20                                               | Brand: SCHNEIDER<br>Model:                                    | At the 34.5 Kv line                      |                                                                          |

| Energy Meter installed | ID meter                 | Description                        | Type of meters                     | Location / Substation | Calibration frequency |
|------------------------|--------------------------|------------------------------------|------------------------------------|-----------------------|-----------------------|
|                        | Serie:<br>MW-1507A009-02 | ID: 3276-PELAK-G20<br>Backup meter | ION8650C<br>Type: 9S<br>Class: 0.2 | S/E Los Cocos         | Law 125-01            |

The project activity is connected to the National Interconnected Electrical System (SENI). Thus, the Larimar Wind Farm Project sites and all power plants connected to the SENI are included in the project boundary.

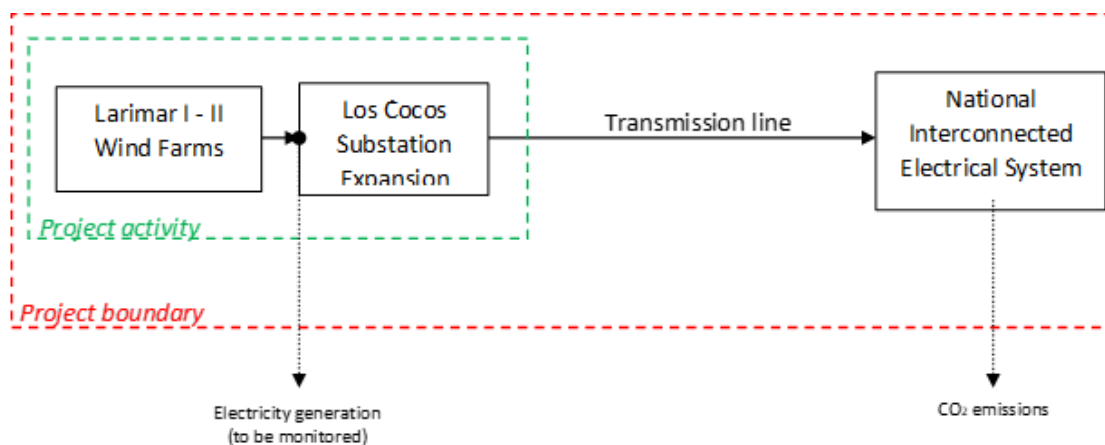


Figure 6. Line Diagram and Spatial Project Boundary

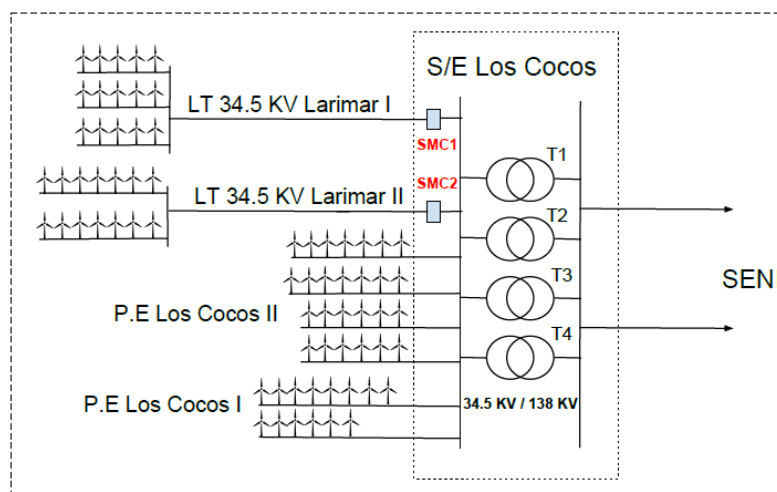
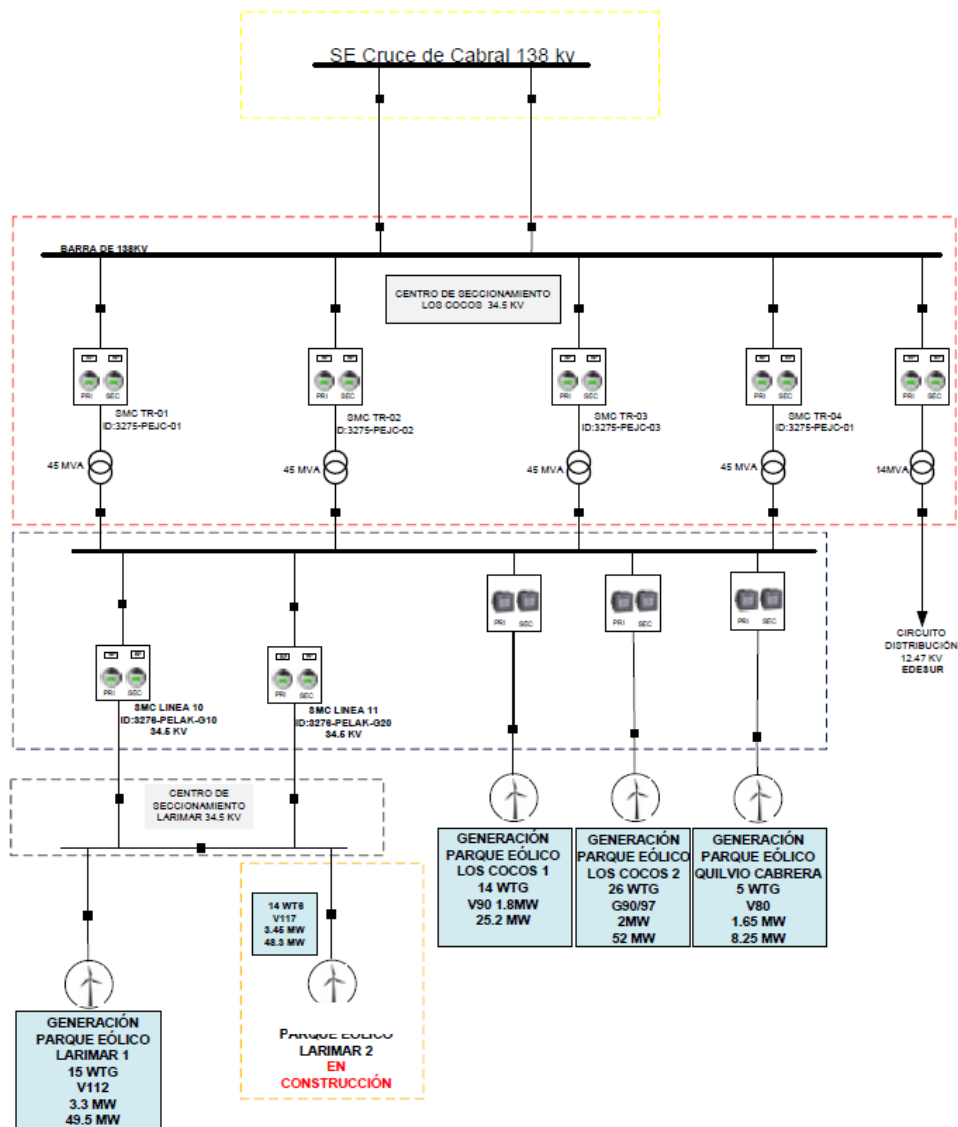


Figure 7. Monitoring Points – Larimar Wind Farm Project (SMC1 and SMC2)

It is important to remark that while Larimar II was not operating, Larimar I was using both meters (SMC1 half and SMC 2 half generation). Now both wind farms are operating (since October 2018), so SMC 1 measures only Larimar I generation and SMC 2 Larimar II.



**Figure 8. Monitoring Points SMC1 and SMC2 (Linea 10 and Linea 11) within All Wind Farms**

It is important to point that EGE Haina's Commercial direction, monitors Larimar Wind Farm energy production from the Haina's Dispatch Center – CDH, in real time.

There is a Software available, which download automatically and on a daily basis the commercial measurement systems (SMC) data, that by law, has the Wind Farm for recording the measurements.

In real time, the dispatch center verifies through the Scada system of Larimar Wind Farm the parameters of generation and service quality. After each day, there is a download and information management software of the plant measurement system (PrimeRead) that automatically performs the discharge of these measurements.

The measurement systems have a communication link for remote access. Monthly or as often as required, information can be obtained from the download database.

Therefore, the parameter is both monitored by EGE Haina and the OC-SENI, check energy meters remotely in order to define the quantity of electricity supplied by the project plant/unit to the grid.

Operation managers monitor and issue daily reports of the plant energy production, the information is consolidated monthly with the SMC data.

Also, technicians have the task to download, process, store and deliver to the OC-SENI the information coming from the SMC monthly, for the settlement of monthly economic transaction. Typically, the measured data can be seen on-line in real time by the owner and the OC-SENI. The data is filed instantly on the meter, daily in a download database and monthly processed data for settlement.

Monthly, the Coordinating Body prepares for the Regulatory System and the Agents, a detailed report of the commercial measurement activities of the SENI facilities, where is presented a follow-up and registration of any eventuality in any of them and the tasks carried out.

### **Management Structure and Responsibilities**

Roles and responsibilities are defined for the relevant staff involved in VCS project monitoring. There is a VCS project Manager which have the overall responsibility for the monitoring system on this Project, including the reviewing of project data, quality assurance and quality control and definition of monitoring duties and responsibilities of project staff.

The monitoring of electricity generation and emission reductions of the project is carried out by the project staff as described below. They will be responsible for the maintenance of traceable and updated records for verification purposes.

VCS Project Coordinator:

- Responsible for data monitoring and recording activities, and review of calculations on emission reductions.
- Responsible for communications with VCS parties (DOE, etc.), associates, and miscellaneous procedures related to CDM project activities.

Commercial Department:

- Responsible for running and updating the model to calculate the emission factor of the electricity system, gathering information on electricity generation by the project activity, and the calculation of emission reductions.
- Reports to the CDM Project Coordinator.

Monitoring Department

- In charge of printing/retrieving data on electricity generation and reporting to the commercial department.
- Responsible for addressing and reporting any condition that could prevent the correct monitoring or data acquisition.

- Responsible for gathering data on electricity displaced by the project activity every hour and reporting on any condition that could prevent the monitoring or data acquisition by the control system.

Managers of the project must maintain credible, transparent, and adequate data estimation, measurement, collection, and tracking systems to successfully develop and maintain the proper set of information to undergo an audit for a greenhouse gas (GHG) emission reduction investment. These records and monitoring systems are needed to subsequently allow a Designated Operational Entity to verify project performance as part of the verification and certification process. This process reinforces the fact that GHG reductions are real and credible to the buyers of the Certified Emission Reductions (CERs).

#### **Policies for over sighting and accountability of monitoring activities**

The measurement systems have backup systems (main meter + backup meter + emergency meter). Monthly when downloading the SMC data, the Coordinating Body makes a cross-reference of the meters, in the case of any anomaly or difference, makes observations, investigations and corrections on place. In fact, the OC automatically makes the daily download of the SMC, therefore, survey and monitoring is constant.

#### **Quality Assurance and Quality Control**

The quality assurance and quality control procedures for recording, processing and archiving data follow rules and requirements that ensure accurate and consistent in the data collected and allow the proper verification of the emission reductions on an annual basis.

As said before, calibration of electricity meters was implemented according to the standards and procedures adopted by the Regulatory Office for the SENI grid. Electricity meters receive a periodic calibration at least every 2 years according to article 342 of the Regulation for the application of the General Electricity Law 125-01. Calibration of electricity meters was performed as detailed in articles 342, 343, 344 and 345 of the Regulation for the application of the General Electricity Law 125-01. Electricity transformers will be verified every 10 years. Electricity meters were evaluated every 2 years. These evaluations were carried out by the OC-SENI. Calibration records are being kept by the project owner for verification purposes (See Table 10).

**Table 10. Calibration meter records**

| ID Meters               | Meter habilitation date | Meter Calibration Date   | Next Calibration Date |
|-------------------------|-------------------------|--------------------------|-----------------------|
| SMC1<br>3276-PELAK-G10  | 8/02/2018 <sup>30</sup> | 25/02/2020 <sup>31</sup> | 25/02/2022            |
| SMC 2<br>3276-PELAK-G20 | 8/02/2018 <sup>32</sup> | 25/02/2020 <sup>33</sup> | 25/02/2022            |

For this monitoring period a calibration was performed for both installed meters every 2 years. Considering these facts, the project generation was penalized during the monitoring period from 08/02/2020 to 25/02/2020 with the maximum permissible error of the meter 0.2 S. The system measurement elements have a valid calibration certificate, issued by the OC-SEN, this calibration tasks follow national standards for electricity metering devices.

All electronic data have a monthly back up, and two electronic copies of each document is kept in different locations (the wind farm and its respective head offices). As a backup procedure, excel files containing the monitoring data are sent to the head offices at Santo Domingo every week, in order to ensure that data is also stored in a different location.

### Training and Monitoring Personnel

All the people who participate in the wind farm monitoring process receive adequate training on the collection, synthesis and analysis mechanisms of the wind farm generation data, in order to guarantee the correct application of the Project's monitoring plan.

### Verification and Monitoring Results

This monitoring report has been prepared by the monitoring personnel. It contains the data report, and the results of the emissions reductions of the project for the present verification period.

The verification of the monitoring report is a mandatory process required for all emission reduction projects. The main objective of the verification is to independently verify that the project has achieved the emission reductions as effectively generated and projected in the PD.

<sup>30</sup>See file B\_ACM-0018-2018 PARQUE EOLICO LARIMAR G10.pdf

<sup>31</sup>See file ACM-0028-2020 PARQUE EOLICO LARIMAR G10.pdf

<sup>32</sup>See file C\_ACM-0019-2018 PARQUE EOLICO LARIMAR G20.pdf

<sup>33</sup>See file ACM-0029-2020 PARQUE EOLICO LARIMAR G20.pdf

# 5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

## 5.1 Baseline Emissions

The baseline scenario and the emission rate calculation are based on the electricity that otherwise would have been generated by the plants connected to the grid and by addition of future plants. According to the methodology, no leakage emissions are considered.

The methodology ACM0002 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. Thus, baseline emissions include only CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.

Baseline emissions are calculated by multiplying the combined margin emission factor ( $EF_{grid,CM,y}$ , in tCO<sub>2</sub>e/MWh) by the electricity generated by the proposed project activity during the year  $y$  ( $EG_{PJ,y}$ , in MWh).

The detailed calculations and data of the baseline emissions are presented in the Excel file “ER\_LARIMAR\_MR2\_v2.1\_Rev MGM.xls”. In the following, the relevant methodological approaches and formulas are presented. Baseline emissions are calculated as follows:

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y} \quad (1)$$

Where:

- $BE_y$  = Baseline emissions in year  $y$  (tCO<sub>2</sub>)
- $EG_{PJ,y}$  = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year  $y$  (MWh)
- $EF_{grid,CM,y}$  = Combined margin CO<sub>2</sub> emission factor for grid connected power generation in year  $y$  (tCO<sub>2</sub>/MWh)

According to the methodology, if the project activity is the installation of a Greenfield power plant, the quantity of net electricity generation is determined as follows:

$$EG_{PJ,y} = EG_{facility,y} \quad (2)$$

Where:

- $EG_{facility,y}$  = Quantity of net electricity generation supplied by the project plant/unit to the grid in year  $y$  (MWh)

The Calculation of  $EG_{PJ,y}$  was made for each year according to quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in each year

for each period of this monitoring report that the project activity has been in operation as seen in Table 11. It is important to remark that as stated in section 3.2 parameter  $EG_{\text{facility},y} = EG_{P,J,y}$ , for this monitoring period from 01/01/2020 to 31/12/2021 a calibration for the meters was required for 08/02/2020 – SMC1 and SMC2 (see Table 10), this calibration was made in 25/02/2020 so the generation hourly data was penalized from 08/02/2020 to 25/02/2020 with the maximum error.

**Table 11.  $EG_{P,J,y}$  Project net generation**

| Year         | $EG_{P,J,y}$ Larimar I (MWh) | $EG_{P,J,y}$ Larimar II (MWh) | $EG_{P,J,y}$ Total (MWh) |
|--------------|------------------------------|-------------------------------|--------------------------|
| 2020         | 178,173.96                   | 124,922.80                    | 303,096.76               |
| 2021         | 194,244.76                   | 139,025.68                    | 333,270.45               |
| <b>Total</b> | <b>372,418.73</b>            | <b>263,948.48</b>             | <b>636,367.22</b>        |

**Table 12. Project penalized generation**

| Year         | $EG_{P,J,y}$ Larimar I (MWh) | $EG_{P,J,y}$ Larimar II (MWh) | $EG_{P,J,y}$ Total (MWh) |
|--------------|------------------------------|-------------------------------|--------------------------|
| 2020         | 178,148.32                   | 124,901.08                    | 303,049.41               |
| 2021         | 194,244.76                   | 139,025.68                    | 333,270.45               |
| <b>Total</b> | <b>372,393.09</b>            | <b>263,926.77</b>             | <b>636,319.86</b>        |

Calculation of the **Combined Margin CO<sub>2</sub> Emission Factor** for grid connected power generation  $EF_{\text{grid,CM},y}$

As for Operating Margin Emission Factor  $EF_{\text{grid,OM},y}$ , the Simple OM ex-ante option was chosen:

*Ex ante option: if the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. For grid power plants, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PDD for validation. For off-grid power plants, use a single calendar year within the five most recent calendar years prior to the time of submission of the PDD for validation.*

The Operating Margin Emission Factor - Simple OM is **0.7208 (tCO<sub>2</sub>/MWh)**

As for the Build Margin Emission Factor  $EF_{grid,BM,y}$  in terms of vintage of data the ex-ante approach was chosen, and this is the first crediting period:

*Option 1: For the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.*

The resulting BM Emission Factor is **0.7068 tCO<sub>2</sub>/MWh**.

According to the Tool, the calculation of the Combines Margin - CM emission is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} * w_{OM} + EF_{grid,BM,y} * w_{BM} \quad (3)$$

Where:

$EF_{grid,CM,y}$  = Combined Margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)

$EF_{grid,OM,y}$  = Operating Margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)

$EF_{grid,BM,y}$  = Build Margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)

$w_{OM}$  = Weighting of OM emissions factor

$w_{BM}$  = Weighting of BM emissions factor

According to the Tool, for wind power generation projects, the weights to be applied are:

$w_{OM} = 0.75$  and  $w_{BM} = 0.25$ .

The combined margin emission factor is calculated as  $EF_{grid, CM, y} = 0.7173 \text{ tCO}_2/\text{MWh}$

The ex-ante estimation of the annual emission reductions gives

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

**Table 13. Baseline Emission Larimar Wind Farm Project**

| Year | BE, y – Baseline emissions – Larimar I - tCO <sub>2</sub> e | BE, y – Baseline emissions – Larimar II - tCO <sub>2</sub> e | BE, y – Baseline emissions – Total Wind Project - tCO <sub>2</sub> e |
|------|-------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------|
| 2020 | 127,785.79                                                  | 89,591.55                                                    | 217,377.34                                                           |
| 2021 | 139,331.77                                                  | 99,723.12                                                    | 239,054.90                                                           |

| Year  | BE, y – Baseline emissions – Larimar I - tCO <sub>2</sub> e | BE, y – Baseline emissions – Larimar II - tCO <sub>2</sub> e | BE, y – Baseline emissions – Total Wind Project - tCO <sub>2</sub> e |
|-------|-------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------|
| Total | 267,117.57                                                  | 189,314.67                                                   | 456,432.24                                                           |

$$BE_y = EG_{PJ, y} \times EF_{grid, CM, y} = 636,319.86 \text{ MWh} \times 0.7173 \text{ tCO}_2/\text{MWh}$$

$$BE_y = 456,432 \text{ tCO}_2.$$

## 5.2 Project Emissions

As per the methodology, project emissions in year y ( $PE_y$ ) for wind power projects are null. Thus,  $PE_y = 0$ . See explanation below.

$$PE_y = PE_{FF, y} + PE_{GP, y} + PE_{HP, y}$$

Were

$PE_y$  = Project emissions in year y (tCO<sub>2</sub>e)

$PE_{FF, y}$  = Project emissions from fossil fuel consumption in year y (tCO<sub>2</sub>e)

$PE_{GP, y}$  = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO<sub>2</sub>e)

$PE_{HP, y}$  = Project emissions from reservoirs of hydro power plants in year y (tCO<sub>2</sub>e)

In Larimar Wind Farm Project:

$PE_{FF, y}$  = Project emissions from fossil fuel consumption in year y (tCO<sub>2</sub>)

Due to the absence of a back-up generator, fossil fuel combustion that does not occur.

Therefore,  $PE_{FF, y} = 0$

$PE_{GP, y}$  = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO<sub>2</sub>e).

Operation of geothermal power plants due to the release of non-condensable gases are not considered, because there are not geothermal power plants connected in the Dominican Republic grid.

Therefore,  $PE_{GP, y} = 0$

$PE_{HP, y}$  = Project emissions from reservoirs of hydro power plants in year y (tCO<sub>2</sub>e)

The proposed project is a wind farm, then emission from reservoirs are not considered.

Therefore,  $PE_{HP, y} = 0$

### 5.3 Leakage

As per the methodology, leakage emissions in year  $y$  ( $LE_y$ ) are null. Thus,  $LE_y = 0$ .

### 5.4 Net GHG Emission Reductions and Removals

In accordance with the Methodology ACM0002 (version 17.0.0) for the proposed project activity, the calculation of the project emission reductions only considers the baseline emissions.

Since project emissions and leakage emissions are zero, emission reductions are directly given as the baseline emissions as follows:

$$ER_y = BE_y - PE_y - LE_y = BE_y$$

Where:

$ER_y$  = Emission reductions in year  $y$  (tCO<sub>2</sub>e/yr)

$BE_y$  = Baseline emissions in year  $y$  (tCO<sub>2</sub>e/yr)

$PE_y$  = Project emissions in year  $y$  (tCO<sub>2</sub>e/yr)

$LE_y$  = Leakage emissions in year  $y$  (tCO<sub>2</sub>e/yr)

Thus:  $ER_y = 456,432$  tCO<sub>2</sub>e

See more details in the attached spreadsheet named “ER\_LARIMAR\_MR2\_v2.1\_Rev MGM.xls”.

**Table 14. Net GHG Reduction or removals for Larimar I**

| Year  | Baseline emissions or removals (tCO <sub>2</sub> e) | Project emissions or removals (tCO <sub>2</sub> e) | Leakage emissions (tCO <sub>2</sub> e) | Net GHG emission reductions or removals (tCO <sub>2</sub> e) |
|-------|-----------------------------------------------------|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------|
| 2020  | 127,785.8                                           | 0                                                  | 0                                      | 127,785.8                                                    |
| 2021  | 139,331.8                                           | 0                                                  | 0                                      | 139,331.8                                                    |
| Total | 267,117.6                                           | 0                                                  | 0                                      | 267,117.6                                                    |

**Table 15. Net GHG Reduction or removals for Larimar II**

| Year  | Baseline emissions or removals (tCO <sub>2</sub> e) | Project emissions or removals (tCO <sub>2</sub> e) | Leakage emissions (tCO <sub>2</sub> e) | Net GHG emission reductions or removals (tCO <sub>2</sub> e) |
|-------|-----------------------------------------------------|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------|
| 2020  | 89,591.5                                            | 0                                                  | 0                                      | 89,591.5                                                     |
| 2021  | 99,723.1                                            | 0                                                  | 0                                      | 99,723.1                                                     |
| Total | 189,314.6                                           | 0                                                  | 0                                      | 189,314.6                                                    |

**Table 16. Net GHG Reduction or removals for the total Larimar Wind Farm Project**

| Year  | Baseline emissions or removals (tCO <sub>2</sub> e) | Project emissions or removals (tCO <sub>2</sub> e) | Leakage emissions (tCO <sub>2</sub> e) | Net GHG emission reductions or removals (tCO <sub>2</sub> e) |
|-------|-----------------------------------------------------|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------|
| 2020  | 217,377.3                                           | 0                                                  | 0                                      | 217,377.3                                                    |
| 2021  | 239,054.9                                           | 0                                                  | 0                                      | 239,054.9                                                    |
| Total | 456,432                                             | 0                                                  | 0                                      | 456,432                                                      |