

ENVIRONMENTAL IMPACT STATEMENT SPECIAL MODALITY
TRES MESAS WIND FARM

EXECUTIVE SUMMARY

A) STATEMENT OF PROGRESS OF THE PROJECT WHEN PREPARING THE ENVIRONMENTAL IMPACT STUDY

The Project object matter of this Environmental Impact Statement consists of the construction and operation of a wind generation farm, intended to be developed in the region of "Tres Mesas" (Mesa La Paz, Mesa Las Chinas, and Mesa La Sandía), in the municipality of Llera de Canales, and a small portion in the Municipality of Casas, in the State of Tamaulipas.

When presenting the Environmental Impact Statement Special Modality for the Project, no activity has begun at the site, except for the opening of some access roads for installation of meteorological towers for which we have the relevant environmental impact authorization.

B) MAIN WORKS AND ACTIVITIES

The Tres Mesas Wind Farm (PTM) is intended to be developed in five stages, and it is foreseen that once all stages are concluded, 500 to 700 MW of power electricity is generated. In total, it is foreseen that 152 to 436 wind turbines of 1.6 to 3.3 MW of capacity could be installed, distributed in Mesas de La Paz and La Sandía. The petitioner already has a preliminary arrangement of the wind farm, within which, corridors to install the wind turbines are already defined, and only the precise location is to be defined.

The stages will be the following:

- Stage I: 19 to 39 wind turbines
- Stage II: 28 to 58 wind turbines
- Stage III: 22 to 74 wind turbines
- Stage IV 42 to 134 wind turbines
- Stage V: 41 to 131 wind turbines

The Project has the objective of providing clean and renewable electricity to the internal market of the region with the purpose of satisfying the needs of individuals and/or companies. The power generated during the first stage will be destined to the national industry market. It has not been agreed with any entity or company, therefore, the destination of this energy is not completely defined yet.

The PETM is located within a polygon of approximately 30,113 hectares and be composed by the following permanent and provisional elements:

Permanent works:

- From 152 to 436 wind turbines of 1.6 to 3.3 MW of capacity, distributed in Mesas de La Paz and La Sandía. It is important to mention that in Mesa Las Chinas, we have not planned to install any wind turbine.
- Two operation and maintenance buildings, one in Mesa de la Sandía and another in Mesa La Paz.
- Electric Power Collection Air System (SARE).
- Electric Power Conduction Line (LCE) towards the Main Sub-station
- Collection Sub-stations
- Main Sub-stations
- Access Roads
- Permanent meteorological towers (TMP)
- Two helipads, one in Mesa la Sandía and another in Mesa La Paz.

Provisional works

- Two concrete mixture and ice manufacturing plants, one in Mesa la Sandía and another in Mesa La Paz
- Crushers and screens for the material product of the demolition, which are located to the side of the concrete mixture plants.
- Construction offices, warehouses, and temporal parking lots

It is noteworthy that the exact location of each of these elements is not yet defined, however, there are defined potential areas and corridors where the wind turbines would installed. The areas occupying temporary facilities will be used later to build some permanent works such as maintenance and operation buildings.

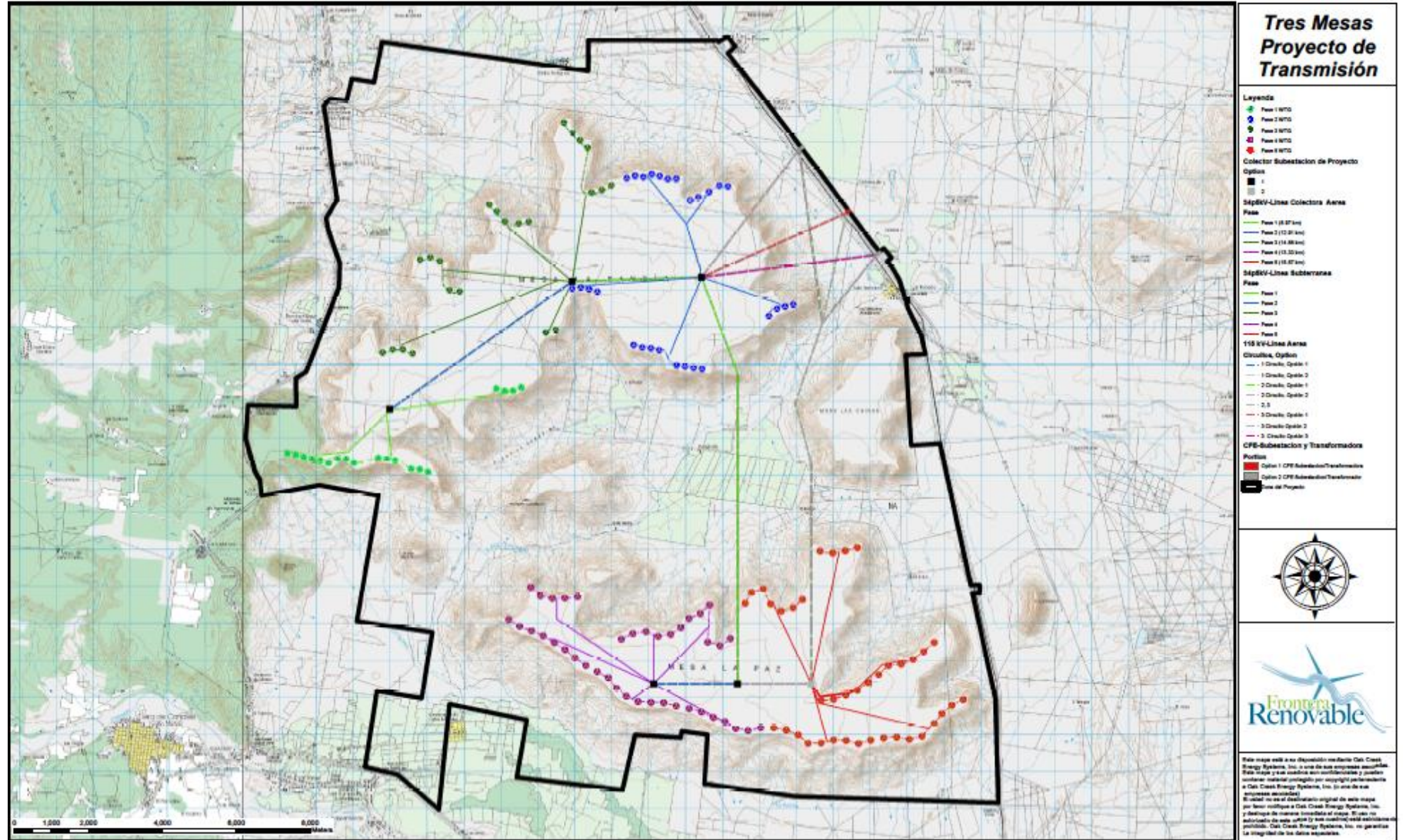


Figure 1. Tres Mesas Wind Farm

Surfaces of permanent and temporary involvement of the project are presented in the following tables, showing that the project will entail 3.01% of the polygon, from which 1.69% are permanent works and 1.32% are temporary works.

Table 1. Disturbance areas

Works	Total permanent disturbance area (Ha)	Temporary disturbance area	Total
Wind turbine (436 wind turbines)	34.88	192.71	227.59
Operations and Maintenance Offices (O&M)	2.18	1.28	3.46
Helipads	0.33		0.33
Meteorological towers (10 towers)	7.80		7.80
Access Roads	352.69		352.69
Collecting lines	48.87	109.81	158.68
Transmission lines	47.71	90.99	138.70
Collecting sub-stations	12.55		12.55
Main Sub-station	1.51		1.51
Concrete plants		3.93	3.93
TOTAL	508.51	398.72	907.23
PERCENTAGE	1.69 %	1.32 %	3.01 %

NOTES: All figures are approximate.

It is noteworthy that for the assessment of impacts of this statement, the surfaces of maximum disturbance were considered, that is, considering the maximum number of wind turbines in each of the stages, the widths of maximum rights of routes and options of longer transmission line routes.

C) REGION WHERE THE PROJECT IS LOCATED

The PETM is located within the premises known as "Tres Mesas" located to the north-east of the head municipality of the municipality of Llera de Canales, in the State of Tamaulipas, at a distance of 24.4 km towards the south of the Airport of Ciudad Victoria. The closest community to the site is the town of Llera Canales (Head Municipality) and the small town of General Pedro José Méndez located to the south of the same. Likewise, there is a small town in the border of the project polygon, called San Francisco and found in the border of Carretera Federal 85, approximately 47 km and 44 km from Ciudad Victoria and Ciudad Mante, respectively.

The farm is located within a polygon of 30,113 hectares, entailing Mesas La Sandía, La Paz and Las Chinas. It is important to mention that within Mesa Las Chinas, no wind turbine will be placed. The premises where the PETM is located are mainly private and ejido properties, which have the corresponding leases.

For the delimitation of the Environmental System, criteria on the sub-basin where the project will be developed was used. Watersheds and their subunits (sub-basin, watershed) are an appropriate geographical context because they constitute functional units, as the area of land that forms the basin is linked by the hydrological dynamics that occurs in it. The impact of a management action will tend to be contained within the watershed and what takes place in the upper part will impact the bottom part.

The SA was delimited based on the boundaries of two sub-basins: Alto Gallinas belonging to Soto La Marina basin which in turn is included in the RH 25 Soto La Marina-San Fernando and the sub-basin called Río del Miembre-La Cañada located within the Tamesis River Basin RH 26 Panuco.

The Area where the project is to be developed is an important step for migratory birds flying from the north of the continent towards tropical areas further south for the winter. It is also known that the main confluence of migratory birds has been recorded along the coastline of the Gulf of Mexico up to the Isthmus of Tehuantepec. This is because it has been found that migratory birds make use of certain features of the landscape or geological formations for orientation during their long migratory journeys such as mountain ranges and coastlines.

The SA is located approximately 81 kilometers from the coast so it is unlikely that the intensity of migration registered in the Veracruz coastal areas be present within the SA and, therefore, it is expected that the project influence does not reach the coast; so technically speaking, it is not feasible to extend the SA to those parts of the Tamaulipas territory.

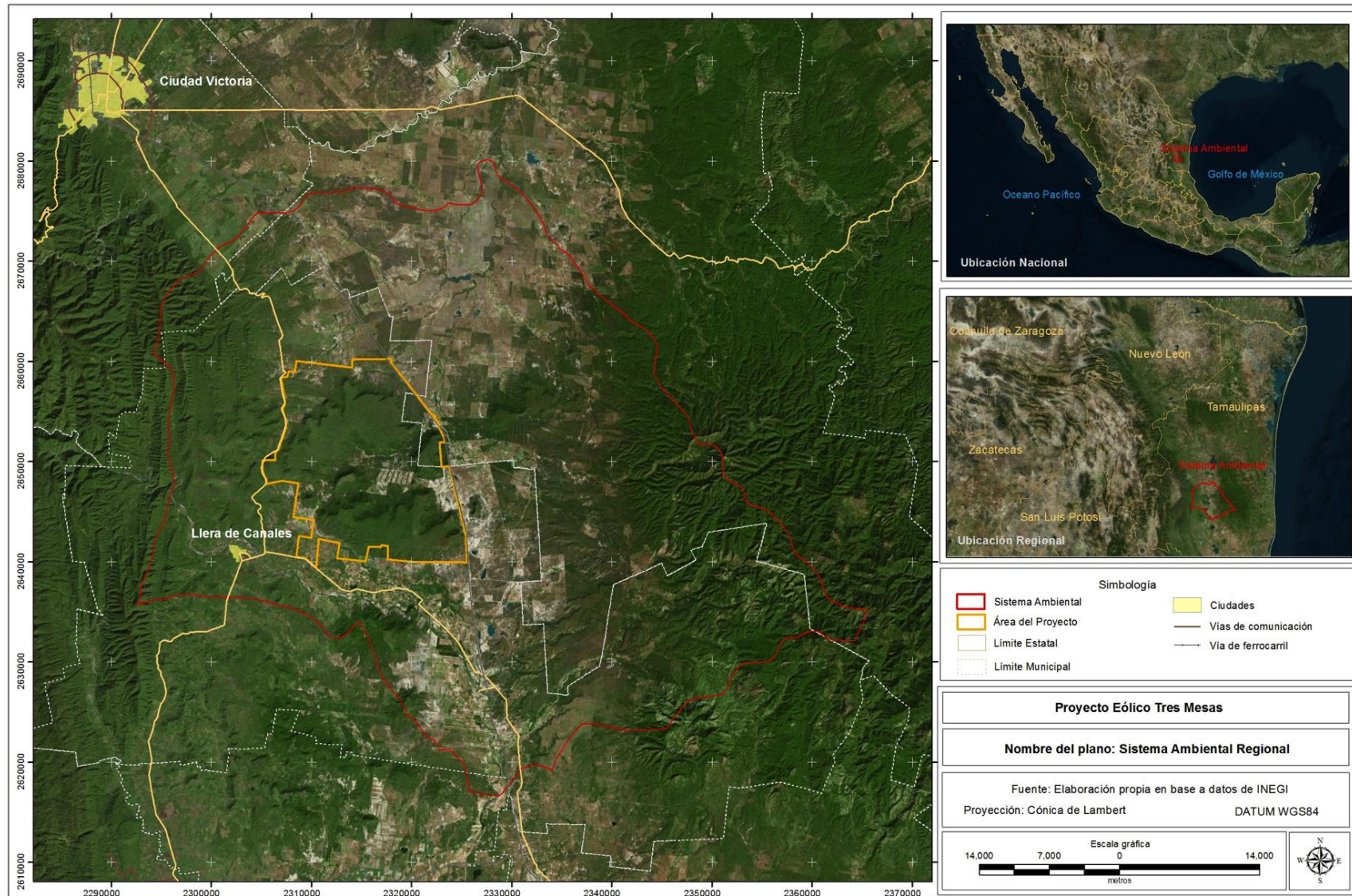


Figure 2. Environmental System and Project Area Location

- **Vegetation**

In the SA, eleven land uses and vegetation were identified according to the charter of land uses and vegetation of INEGI series IV, which shows that the submontane scrub predominates, followed by rainfed agriculture; the same situation is repeated for the Project Area.

In the Project Area three types of vegetation were found. The submontane scrub which is predominant, and deciduous lowland forest and low thorny deciduous forest.

Table 2. Main characteristics of the types of vegetation found in the Project Area

Vegetation Type	Predominant species	Diversity
Submontane scrub	At Mesa La Sandía 20 tree species were found, and the predominant were <i>Cordia boissieri</i> and <i>Phithecellobium flexicaule</i> and <i>Neopringlea integrifolia</i> . At Mesa La Pas a total of 39 species was registered and predominant species are <i>Pithecellobium pallens</i> , <i>Diospyros texana</i> and <i>Esenbeckia berlandieri</i> .	The mesas La Paz and La Sandía show similar diversities and are very homogenous in terms of species abundance.
Deciduous lowland forest	This vegetable community is preferably set on the slopes that are exposed to winds from the northeast, on stony soils and steep terrain. A total of 10 species were recorded, from which <i>Neopringlea integrifolia</i> , <i>Phithecellobium flexicaule</i> and <i>Prosopis glandulosa</i> are predominant.	The diversity index calculated indicates that this community shows moderate diversity.
Low thorny deciduous forest	A total of eleven predominant species were registered, including <i>Heilietta parvifolia</i> , <i>Phithecellobium flexicaule</i> and <i>Prosopis glandulosa</i>	In general, diversity calculated for the low thorny deciduous forest regarding submontane scrub and deciduous lowland forest was lower due to the high frequency and abundance of <i>H. parvifolia</i> and <i>P. glandulosa</i> .

- ***Species of vegetation in conservation status***

In the 50 sampling sites, no plant species were recorded in conservation status according to NOM-059-SEMARNAT-2010. However, it is important to note that during the field visits, the presence of the species *Beucarnea recurvada* (*Elephant's Foot*) was detected, which is in the endangered category. This species was observed on the slopes of the plateaus, in the deciduous lowland forest and the low thorny deciduous forest in the northeastern and southeastern parts of the polygon, so the probability of finding it in the areas affected by the project is very low.

- ***Fauna***

As a result of the field work and literature reviews, a potential list of 565 species was obtained. The greatest richness is presented by the birds group, including 62% of the species followed by terrestrial mammals with more than 13%.

Table 3. Number of fauna species with potential distribution in the SAR

Vertebrate Group	Species with potential distribution in the SAR	
	Number	(%)
Amphibians	28	5.0
Reptiles	65	11.5
Birds	350	61.9
Terrestrial mammals	76	13.48
Chiroptera	45	8.0

- ***Species of terrestrial fauna in conservation status***

101 species of fauna were detected in total in the environmental system under conservation status as per the NOM-059-SEMARNAT-2010, of which 9 are endangered species, 29 are threatened and 63 under special protection. The group with the highest number of species is birds, followed by reptiles, terrestrial mammals, amphibians and bats (chiroptera). It is noteworthy that these species are species with potential distribution within the area, but this does not mean that there are records of said species within the polygon of study. During the staff's trips, only traces were detected for some of them.

Table 4. Number of fauna species with potential distribution in the SA under conservation status according to NOM-059-SEMARNAT-2010

Group	Total species	Endangered	Threatened	Special protection
Amphibians	12	1	2	9
Reptiles	26	--	10	16
Birds	45	2	8	35
Terrestrial mammals	13	6	5	1
Chiroptera	5	--	3	2

The most relevant are endangered terrestrial mammal species for they include four felines, such as the jaguar which has been registered both in the SA and the Project Area.

- ***Monarch butterfly***

Considering that the Project is located in the state of Tamaulipas, two potential distribution models were applied to determine if the Project Area is located in the migratory route of monarch butterflies, for there are currently no sufficient data available to determine so.

According to the results obtained from the models applied, it would be expected that the incidence of monarch butterflies during both migrations (spring and autumn) in the Project Area be minimum due to low levels of climatic affinity. Although precipitations agree with the general pattern of the species, this is not the case for the dominant condition of warm temperatures. However, it should be mentioned that the areas adjacent to the SA presenting a certain degree of affinity and adaptation were the Sierra Madre Oriental and Sierra de Tamaulipas representing a series of climatic conditions favorable for potential distribution during migrations of *D. Plexippus*.

- ***Birds and bats***

In particular, the richness and abundance of species registered at point counts were higher for resident birds of terrestrial habits, finding low percentages of birds that fly above the canopy.

For this case, the highest proportion of individuals was found flying outside the Mesas areas. Very few species flying over the Mesas showed collision risks and these include three predatory bird species: *Cathartes aura*, *Buteo Swainsoni* and *Buteo brachyurus* which were also the most abundant.

So far, 70 potential species have been described for the site. The diversity and most abundant species include resident and terrestrial species not flying above the canopy and migratory species that fly off the mesas or at heights higher than 125 meters. The effect of the wind farm

construction on the resident birds is likely to be related to habitat fragmentation caused by the opening of roads.

D) CONSISTENCY WITH MAIN ENVIRONMENTAL REGULATORY INSTRUMENT APPLICABLE FOR THE REGION.

Next we present the main regulatory instruments applicable for the region, which are consistent with the project and it must be clarified that the State of Tamaulipas does not have Urban Development Programs which may be linked to the project.

- National Development Plan

The project proposed by FR will diversify the energy matrix, decreasing the weight of fossil fuels and contributing to a more efficient use of energy.

Consistent with the PND, FR seeks to realize a project of sustainable use of energy aware that the task of development and growth is for all actors of society. In this way it seeks to cooperate with the State for the growth and development arising from the bottom up. FR seeks to make a contribution to the sustainable development of the country, which as discussed in this section, is fully consistent with the objectives, strategies and action plans of the PND.

- General Land Ecological Zoning Program (POEGT)

Tres Mesas Wind Farm (PETM) is located within the 36th UAB called Plains and Mountain Ranges of Nuevo Leon and Tamaulipas. The policies governing the area of influence are Restoration and Sustainable Use, which are clearly driving the development of projects such as Renewable Energy Generation Wind Farm in this act under evaluation.

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- Tamaulipas State Development Plan 2011-2016

The Plan sets a specific target for the sector called "*Modernizing energy consumption patterns with ecological impact on schemes to generate clean energy for industrial and domestic consumption*" by detailing strategies and lines of action with which the project is linked

- Municipal Development Plan 2011-2013 of the Municipality of Llera

This Plan sets the vision of having " a dynamic, healthy, safe, clean and tidy town with better life quality through consistent and sustained improvement in housing, education, culture and employment for all its inhabitants. " The Project and associated works, which consist of electricity transmission and roads lines, stick to that vision since its main objectives include: developing a bond with the community, being a driving source of employment and supporting educational projects.

- Municipal Land Ecological Zoning and Urban Development Plan, Llera (PMOTDULL)

The PETM is entirely feasible with all policies, strategies and guidelines applicable from the PMOTDULL, particularly considering the possibility of undertaking activities aimed at exploiting natural resources (use wind for energy generation) under a scheme of less government intervention environment.

- Municipal Land Ecological Zoning and Urban Development Plan, Casas (PMOTDUC)

The installation of associated works of the PETM agrees with the planning instruments and legal regulations of the PMOTDUC.

- Natural Protected Areas

The Project promoted by Frontera Renovable (FR) is not within the polygon of any natural protected area (NPA) of federal, state and / or local character, according to data obtained from the official site of the National Commission of Natural Protected Areas.

E) DESCRIPTION OF MAIN IMPACTS AND MITIGATION MEASURES

Based on the impacts quantification and classification matrix, information is extracted on the classification of impacts for each of the project stages summarized in the following tables.

Table 5. Adverse impacts classification summary

STAGE	ADVERSE IMPACT				TOTAL
	LOW	MODERATE	HIGH	IMPORTANT	
Preparation	18	2	-	-	20
Construction	13	-	-	-	13
Operation	6	1	-	-	7
Abandonment	8	-	-	-	8
TOTAL	45	3	-	-	48

Table 6. Beneficial impacts classification summary

STAGE	BENEFICIAL IMPACT				TOTAL
	LOW	MODERATE	HIGH	IMPORTANT	
Preparation	3	1	-	-	4
Construction	3	-	-	-	3
Operation	2	2	-	-	4
Abandonment	7	-	-	-	7
TOTAL	15	3	-	-	18

Most adverse impacts identified, although classified as low-impact, occur mainly during the preparation and construction stages. Upon conclusion of said stages the impacts may be assimilated by the environment in a natural manner or through activities focused on restoration, recovery and/or rehabilitation of main environmental factors such as land, flora, fauna and landscape.

The following table presents impacts considered residual impacts.

Table 7. Description of residual impacts detected in the Project stages

IMPACT	DESCRIPTION
Site Preparation Stage	
IP 4: Land erosion due to loss of vegetable coverage	Clearing and grubbing activities imply that in the worst case scenario (installing maximum 433 wind turbines), vegetation will be removed in a surface of 508.51 hectares and temporarily removed in 398.72 hectares. During the site preparation stage these areas are exposed to erosion processes, but it is necessary to take into account that different erosion control procedures will be considered until the land is covered with permanent vegetation. After the construction of the wind farm and only after beginning the operation of the farm, a Land Restoration and Conservation Program and a Program for Comprehensive Management of Flora and Fauna will be implemented for all surfaces cleared and grubbed, which contemplate activities such as restoration of the site with the purpose of regenerating the land and allowing growth of natural vegetation and reforestation, thus preventing the land from continue being exposed to erosive processes.
IP 6: Modification of geological formations	In general, specific areas where wind turbines will be located are flat zones; however, during rehabilitation and extension of roads, it will be necessary to make some cuts and leveling in the area where the topography is slightly irregular. The impact generated will be of very low magnitude and it is necessary to consider that the design of the road network to be rehabilitated and/or extended intends to minimize the alteration of geological formations at the site and the material removed during rehabilitation and extension of roads will be used for filling in and leveling, always trying to preserve to the extent possible the original topographic conditions of the site.
IP 10: Loss of vegetable coverage	Clearing and grubbing activities involve permanent removal of vegetation in 508.51 hectares and temporary removal in 398.72 hectares, if we consider the worst case scenario (433 wind turbines maximum). Approximately 68.93% of the polygon where the project will be located is covered by submontane scrub, 7.81% by deciduous lowland forest, 4.51% by tropical mezquital and 3.35% by low thorny deciduous forest. It is worth mentioning that after the construction stage, a Land Restoration and Conservation Program and a Program for Comprehensive Management of Flora and Fauna will be implemented for all surface cleared and grubbed (except for the surface occupied by permanent works), which contemplate activities such as restoration of the site with the purpose of regenerating the land and allowing growth of natural vegetation and reforestation of disturbed areas.
Operation Stage	

IMPACT	DESCRIPTION
IO 6: Mortality of birds and bats due to collision with turbines	One of the main risks during operation of the wind farm is mortality of birds and bats because of collision with turbines, thus disturbing the dynamic population, as well as their migratory patterns. We will take into account some measures such as painting the turbines blades to increase to the maximum level their visibility by birds, but with the purpose of measuring the actual intensity of the migratory phenomenon present in the area affected by the project and analyzing its possible interaction with wind turbines installed, we will develop a Birds and Bats Monitoring Plan that will use the necessary tools to accurately determine nesting zones, trajectories, heights, seasons and flight peak hours. The results of such Plan will be the basis to design appropriate measures to decrease this risk to minimum.
IO 9: Landscape modification	The most notorious visual impact will be the presence of wind turbines, which will be between approximately 120 and 180 meters high and an approximate extension of 4 to 10 meters of base, depending on the technology available during the project development. In order to harness the wind maximum potential, wind turbines will be located at the highest areas of the plateaus, and will be visible from considerable distances.

F) ASSESSMENT OF ALTERNATIVES

For the location of the PETM no other alternatives were assessed, for the site presents optimal wind potential. It is worth mentioning that alternatives currently being evaluated are oriented mainly to accurate location of each wind turbine as well as the rest of the elements composing the project.

G) CONCLUSIONS

This project consists in the construction and operation of a wind farm in the State of Tamaulipas, with which it intended to generate between 500 and 700 MW total of electric energy. In all, it is foreseen that from 152 to 436 wind turbines of 1.3 to 3.3 MW of capacity could be installed, distributed in Mesas de La Paz and La Sandía. For that purpose, activities involving permanent removal of vegetation will be carried out in 508.51 hectares and temporary removal in 398.72 hectares, if considering the maximum occupation scenario (433 wind turbines maximum). Approximately 68.93% of the polygon where the project will be located is covered by submontane scrub, 7.81% by deciduous lowland forest, 4.51% by tropical mezquital and 3.35% by low thorny deciduous forest.

With the development of this project, we intend to generate clean and renewable energy for the internal market of the region in order to meet the needs of individuals and corporations. In addition to this benefit for different sectors, having this type of projects in Mexico means an incentive for investors interested in implementing projects for the use of non-polluting alternative energy. Likewise, with the development of this type of projects we aim to avoid generating emissions equivalent to the fuel needed to generate the same amount of electricity with conventional power stations. We believe that with this project we boost the Guidelines of the Kyoto Protocol, decreasing the contribution of greenhouse gas and support the Agreement for Cooperation on Research and Development of Wind Energy Generation Systems.

It is noteworthy that for the assessment of impacts of this statement, the surfaces of maximum involvement were considered, considering the maximum number of wind turbines in each of the stages, the widths of maximum rights of routes and options of longer transmission line routes.

Based on the environmental studies to integrate this Environmental Impact Statement, we believe that the project development **will not put the structure and features of ecosystems described in the environmental system** at risk.

This conclusion arises from demonstrating that we took into account several elements composing the ecosystems and that within the context of relevant impact established in the Regulations in this matter, we prove that although the Project development may generate impacts, the application of preventive and corrective measures will enable not to cause any impact which due to its attributes and nature may cause alterations in ecosystems thus disturbing the continuity of natural processes currently happening in the project area.

Likewise, considering that most adverse impacts identified, in addition to having been classified as low impacts, occur mainly during site preparation and construction stages. Once said stages are concluded, impacts may be naturally assimilated by the environment or through activities focused on restoration, recovery and/or rehabilitation of main environmental factors such as land, flora, fauna and landscape.

In conclusion, it is estimated that the installation of the wind farm will not cause relevant negative environmental impacts on the SA. Besides, we will develop and implement an Environmental

Quality Follow-up Plan which main objective is the application of mitigation and compensation measures necessary, as well as compliance with the terms and conditions set forth by the Authority in environmental impact matters.