

## **ANNEXE 1**

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Études télécommunications

**MATANE WINDFARM EXPANSION**  
**in**  
**SAINT-ULRIC-DE-MATANE, QUÉBEC**

**IMPACT STUDY**  
**ON TELECOMMUNICATIONS SYSTEMS**  
**PHASE 1**

Prepared for

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## **1 Introduction**

Yves R. Hamel et Associés Inc, broadcast and telecommunications consultants have been mandated by the SNC-Lavalin's Division Ingénierie Générale Environnement Québec (IGE) in 2004, to verify the impact of the deployment of a large scale windfarm on the telecommunications systems operating in the region of Matane, Québec. The windfarm has been increased from 100 wind turbines to 150 wind turbines, most of the new turbines have been added in the northern part of the windfarm area, in Saint-Damase and mainly in Saint-Ulric-de-Matane. Additional expansion or displacement of some wind turbines further north in the Saint-Ulric-de-Matane municipality require the impact study to be revised and the impact on the environment to be reasserted. The appendix A presents the windfarm area considered in the initial study as well as the actual windfarm area and the proposed expansion zone.

This short report identifies the systems studied in the previous analysis for which the expansion of the windfarm could modify significantly the results of the initial study. A research has also been conducted to identify any new telecommunications systems that could have been introduced in the meantime and the exclusion zones for the point-to-point communication systems have been updated according to the findings and the newly defined windfarm perimeter. A second phase of the study will be required to evaluate the impact of the new wind turbines configuration on some telecommunication systems, mainly the impact on the quality of the TV signals reception in the vicinity of the windfarm area.

## 2 Systems identification

### 2.1 Television broadcast stations

In the initial study, the theoretical grade B service contour of eight TV stations were identified as overlapping completely or partially with the original windfarm perimeter. In the northern Saint-Ulric-de-Matane expansion area, only 6 TV stations' grade B theoretical service contour are overlapping that portion of the new windfarm perimeter and a seventh (CBGAT-1) is just touching the southern limit of the windfarm expansion zone. Only 3 of these stations have their grade A contour completely or partially overlapping the windfarm area. The six TV stations having theoretical coverage in the expansion zone are listed in the following table.

STATION	NETWORK	TRANSMITTER LOCATION
CIVF-TV	Télé-Québec	Baie-Trinité
CHAU-TV-1	TVA	Ste-Marguerite-Marie
CBGAT	Radio-Canada	Matane
CFER-TV	TVA	Mont Comi
CIVB-TV	Télé-Québec	Mont Comi
CJBR-TV	Radio-Canada	Pic Champlain

Figure 1 – List of the TV stations covering the windfarm area and the expansion zone

Only five of these stations, namely CIVF-TV, CBGAT, CFER-TV, CIVB-TV and CJBR-TV, have their realistic grade B contour overlapping the expansion zone as well as the northern area of the actual windfarm zone, where most of the additional wind turbines have been located.

The cumulative impact of the deployment of the wind turbines in this windfarm expansion zone and the impact of the additional 50 wind turbines added mainly in the eastern part of Saint-Damase and the southern part of Saint-Ulric-de-Matane could be important. The quality of the TV signals reception needs to be reevaluated in more details. Since the impact on TV signals reception is cumulative with the number of turbines to a certain extent and with their position, any significant modification to the wind turbines configuration or any significant variation of the number of wind turbines require a review of the impact on the TV signal reception quality.

## **2.2 Point to Point systems**

A search has been conducted to review the status of the microwave links previously identified in the initial study and no significant changes have been identified. Information received from some operators indicated that Hydro-Quebec is planning to decommission their microwave link between the Nemtaye radio station and the Matane sub-station sometimes in 2006. This link was not part of the initial study, as it was falling out of the windfarm perimeter provided at that time, however it is crossing the southern limit of the actually considered windfarm area. The Direction Générale des Technologies de l'Information et des Communications (DGTIC), an agency of the Quebec government has been recently deploying protected mobile and microwave radio networks in this part of the province. A verification with their service indicated that none of their point-to-point links are crossing any portion of the proposed expansion zone of the windfarm area, neither the actual windfarm area.

The microwave links identified in the initial study as originating or terminating at the Telus Quebec's Rivière Blanche site are still in operation and need to be protected. The point-to-point exclusion zones presented in the previous study have been adapted to the new windfarm area perimeter and are presented in the appendix B.

## **2.3 Point to Multipoint systems**

A MMDS point-to-multipoint system had been identified in the initial study has authorized by the CRTC. This MMDS station has been authorized by the CRTC in 2001 and its authorization has been renewed in 2005 with some modifications, however the licensee did not, to our knowledge, proceed yet with the implementation of the station.

It is not known if the licensee has any short term plan to implement this MMDS station and he has been postponing it, year after year since 2001. Further investigation will be required to determine the current status of this station and in the case where the station would be implemented before the windfarm, some protection measures might be required.

## 2.4 Other systems

No other new systems, AM or FM broadcast stations, navigational aids or others, which could potentially suffer from the proposed expansion of the windfarm have been identified in the region. The Environment Canada's meteorological radar located in Val d'Irène will suffer additional clutter degradation, however the windfarm expansion zone being located mainly on a northern slope and partly invisible from the radar platform, the clutter contribution of the wind turbines located in the expansion zone should be neglectable compared to the existing clutter.

## 3 CONCLUSION

Even if the actual windfarm zone is quite larger than the area considered in the initial study, the position of the wind turbine is the main aspect to consider in determining the impact of the windfarm on the telecommunication systems. The actually proposed wind turbine configuration includes 50% more wind turbines than the configuration considered in the initial study. This magnitude of changes in the windfarm configuration necessitate an in depth review of the impact of the windfarm on the TV signal reception.

As the impact on the TV signal reception is subject to a cumulative aspect and depending on the wind turbine position, the analysis of the impact on the TV signal reception of the entire windfarm will need to be considered, at least for these five stations covering the northern area of the windfarm.

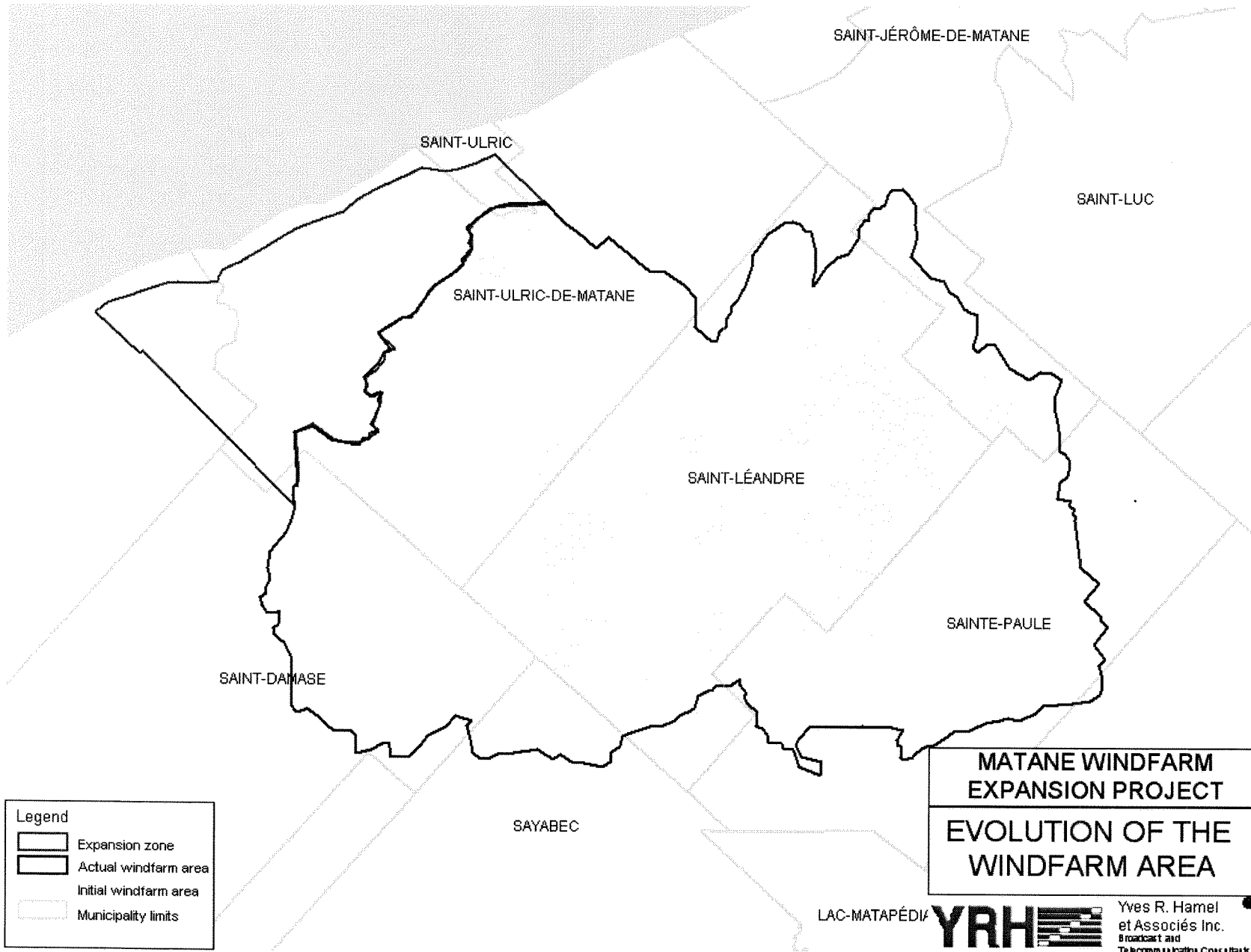
The point-to-point exclusion zones have been updated and are presented in appendix B.

The status of the MMDS station and the plans of the licensee will need to be investigated in order to determine the action to be taken regarding this point-to-multipoint system.

## Appendix A

### Evolution of the windfarm area





## Appendix B

### Updated exclusion zones for the point-to-point Microwave links

