

*Agreement on the Siting
of Power Transmission Lines on
Farms and in Woodlands*

December 2000



Table of content

Summary	7
1 Impacts of Hydro-Québec Structures	19
1.1 Introduction.....	19
1.2 Types of impacts	19
1.2.1 Temporary impacts during construction.....	19
1.2.2 Permanent impacts arising from the presence of the structures	20
2 Siting of Hydro-Québec Structures	25
2.1 Introduction.....	25
2.2 General considerations.....	25
2.3 Siting criteria applicable to farmlands.....	26
2.4 Choice of structure	27
2.5 Cooperation.....	27
3 Mitigation Measures and Cultivation of Rights-of-Way	31
3.1 Introduction.....	31
3.2 General principles.....	31
3.3 General clauses.....	33
3.3.1 Noise	33
3.3.2 Farm or access roads.....	34
3.3.3 Fences and gates	34
3.3.4 Surface drainage.....	35
3.3.5 Underground drainage	36
3.3.6 Traffic on the right-of-way	37
3.3.7 Soil compaction	37
3.3.8 Smoke, dust and other pollutants.....	38

3.4	Clauses pertaining to construction	39
3.4.1	Surveying.....	39
3.4.2	Clearing	39
3.4.3	Excavation (structure foundations)	40
3.4.4	Assembly and erection of support structures.....	41
3.4.5	Conductor unwinding	42
3.4.6	Site restoration	42
3.4.7	Cultivation of the right-of-way.....	44
3.5	Conciliation	45
4	Maintenance of the Transmission System	49
4.1	Introduction	49
4.2	Maintenance of transmission lines	49
4.2.1	Maintenance of overhead lines.....	49
4.2.2	Maintenance of rights-of-way	49
4.2.3	Maintenance of vegetation by the owner.....	50
4.3	Mitigation measures respecting maintenance	51
4.3.1	General rules	51
4.3.2	General clauses	51
4.3.2.1	<i>Noise</i>	51
4.3.2.2	<i>Farm and access roads</i>	52
4.3.2.3	<i>Fences and gates</i>	52
4.3.2.4	<i>Surface drainage</i>	53
4.3.2.5	<i>Underground drainage</i>	54
4.3.2.6	<i>Traffic on the right-of-way</i>	55
4.3.2.7	<i>Soil compaction</i>	55
4.3.2.8	<i>Smoke, dust and other pollutants</i>	56
4.3.2.9	<i>Site restoration</i>	56
4.4	Incentives to encourage secondary use of transmission line rights-of-way	58
4.4.1	Tree planting	58
4.4.2	Stump removal.....	58

5	Compensation of Landowners	61
5.1	Introduction	61
5.2	Total financial compensation (C₁)	62
5.2.1	Compensation for access to the right-of-way and signing of the easement option (C ₁).....	62
5.2.1.1	<i>Disturbances and inconvenience</i>	63
5.2.1.2	<i>Technical information on land</i>	63
5.2.1.3	<i>Access to the right-of-way and signing of the easement option</i>	63
5.2.2	Compensation for the easement and right of way (C ₂)	64
5.2.2.1	<i>On farms</i>	64
5.2.2.2	<i>In woodlands</i>	64
5.2.3	Compensation for the presence of support structures (C ₃)	67
5.2.3.1	<i>On farms</i>	67
5.2.3.2	<i>In woodlands</i>	67
5.2.3.3	<i>Addition or replacement of support structures</i>	67
5.2.4	Compensation for temporary work space (C ₄).....	68
5.2.5	Compensation for time spent by the owner on certain jobs and assessing construction damage (C ₅)	68
5.2.6	Compensation for crop losses (C ₆)	69
5.2.7	Compensation for inconvenience caused by construction (C ₇)	70
5.2.8	Compensation for a temporary easement (C ₈)	70
5.2.8.1	<i>Access to the right-of-way and signing of the temporary easement option</i>	71
5.2.8.2	<i>Temporary easement and right of way</i>	71
5.2.8.3	<i>Presence of temporary support structures</i>	71
5.2.8.4	<i>Other compensation related to a temporary line</i>	72
5.3	Other compensation	72
5.3.1	Compensation for professional fees.....	72
5.3.2	Compensation pertaining to a forest management plan.....	72
5.3.3	Interest payments.....	72
5.3.4	Compensation for the purchase of land for substations or permanent access roads	73
5.3.5	Work carried out by the owner	73
5.3.6	Abandonment of the right-of-way	74
5.4	Conciliation	74

Summary

Introduction

Electricity is associated with modernity and new technologies and it occupies a key place in Québec's energy profile. In 1998, Hydro-Québec had nearly 3.6 million customers. The government corporation must satisfy Quebecers' needs, ensure that everyone receives the same improved quality of service and implement a plan to develop sources of electricity. To this end, the utility relies on the energy of rivers and transmits the electricity over considerable distances to major consumption centres in Québec City, Montréal and south of the St. Lawrence River.

Over 90% of Hydro-Québec's installed capacity is generated by hydroelectric power plants that are frequently located more than 500 km from consumers. To reach its clientele, Hydro-Québec has had to construct a unique power transmission system. In 1998, it encompassed 32,144 km of high-voltage lines, mainly from northeastern and northwestern Québec. Most Québec farming is practised in the St. Lawrence Lowlands, running from east to west, which explains why power transmission lines must cross farms.

Since the early 1980s, Hydro-Québec has ensured participation by the public and its representatives in the project study and design process. Principle 5 of the utility's environment policy clearly stipulates that "Hydro-Québec ensures that the individuals, groups and organizations concerned are involved in the planning, design and implementation of its activities."

One of the processes advocated is cooperation between Hydro-Québec and the Union des producteurs agricoles (UPA). In 1986, the two organizations signed an agreement on the siting of transmission and subtransmission lines on farms and in woodlands (*Entente Hydro-Québec—UPA sur le passage des lignes de transport et de répartition en milieu agricole et forestier*). In 1997, the Hydro-Québec—UPA liaison committee asked a working committee made up of representatives of both parties to review certain facets of the agreement in order to make it more functional and better adapted to current needs.

While incorporating this form of participation in transmission line projects, Hydro-Québec continues to submit the projects for government approval.

This summary describes the how and why of collaboration between Hydro-Québec and the UPA. It summarizes the agreements concluded between the two bodies and describes the establishment of a standing committee to interpret the provisions of the agreement.

Overview of cooperation

Hydro-Québec and the UPA have established a consultation committee so that both parties understand and accept the constraints and problems inherent in power infrastructure projects, on the one hand, and farming, on the other hand.

The parties agreed to divide the main topics for discussion into five groups:

- the impact of Hydro-Québec structures on farms and in woodlands;
- the location of Hydro-Québec structures on farms and in woodlands;
- mitigation measures respecting farms and woodlands and the cultivation of rights-of-way;
- maintenance of the transmission system on farms and in woodlands;
- compensation for the installation of Hydro-Québec structures on farms and in woodlands.

The members of the consultation committee met more than 40 times over a period of several months. Their deliberations led to the signing, in 1986, of the *Entente Hydro-Québec—UPA sur le passage des lignes de transport et de répartition en milieu agricole et forestier*.

The agreement was reviewed in the fall of 1988, primarily with a view to renegotiating certain compensation measures.

In 1996, the Hydro-Québec—UPA liaison committee assessed the usefulness of making the agreement more functional and adapting it to the two parties' needs, without altering the principles governing financial compensation. In 1997, after internal consultations, Hydro-Québec and the UPA announced those facets of the agreement that could be modified. Once the liaison committee was apprised of the number and nature of the requested changes, it advocated the establishment of a special committee to review the agreement. This committee, made up of three representatives from either side, began its deliberations in the fall of 1997 and concluded them in the spring of 1998.

The agreement is now called the *Agreement between Hydro-Québec and the UPA respecting the Siting of Electric Power Transmission Lines on Farms and in Woodlands*.

Highlights of the agreement

Impact

In light of the problems and complaints raised by farmers and forest producers, Hydro-Québec and the UPA have agreed on two types of impact arising from Hydro-Québec's practices on farms and in woodlands:

- **temporary impacts** associated with the building of the structures, which can be reduced or eliminated through the implementation of mitigation measures;
- **permanent impacts** arising from the presence of the structures, which can be reduced through better siting or adequately compensated.

Siting

Hydro-Québec and the UPA have established:

- criteria governing the siting of power transmission lines and substations on farms;
- criteria governing the type of support structure used;¹
- procedures concerning the UPA's participation in studies and decisions;
- participation by landowners in the siting of support structures on their land.

The main **siting criteria** are indicated below.

- Favor the siting of substations or power lines on the boundaries of or outside agricultural zones protected under the *Act respecting the preservation of agricultural land and agricultural activities*.
- Favor siting on agricultural land with the lowest potential in the study area, according to maps of potential prepared by the ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ).
- Protect sugar bushes, orchards, plantations, woodlands under development, windbreaks and other high- and average-quality woodlands in the study area,

1. The term "support structure" refers to all structures designed to bear overhead line conductors, i.e., towers, portals and poles.

bearing in mind that a right-of-way in this type of woodland could be developed for other uses.

- Favor siting in poor-quality woodlands rather than on cultivated land.
- Where possible, favor orientation along plot, concession or any other cadastral lines and avoid running power lines diagonally across crops.
- Limit the number of support structures on cultivated land. Instead, endeavor to locate them in residual spaces, groves or strips of woodland.
- Protect lands that have underground drainage or will have it in the short or medium term according to data available from MAPQ.
- Install infrastructure away from farm buildings and fish breeding ponds.
- Follow existing line corridors when they meet the criteria set out above.
- Avoid areas subject to erosion.

The foregoing criteria are not listed in order of importance. Their application shall vary from one region to another depending on the nature of the project and the site (existing and foreseeable).

The shortest line routes with the fewest angles possible must be chosen in cooperation with farmers. To this end:

- Hydro-Québec deems the UPA to be the preferred stakeholder in matters regarding farmland and private woodlands.
- Whenever so requested by the UPA, Hydro-Québec shall study the technical and financial feasibility of installing rigid (tubular) block-foundation towers instead of lattice towers and designing new towers that better meet the siting criteria and constraints pertaining to the occupation of farmland.
- Hydro-Québec shall consult the UPA, through its regional federations, as early as possible in the siting and impact study process, and it shall also consult landowners before deciding on the final siting of support structures.

Mitigation measures

Hydro-Québec and the UPA have reviewed the utility's clearing and construction practices and the means of applying protective, remedial and land restoration measures with a view to emphasizing prevention. Hydro-Québec accepts responsibility for doing this work or having it done by contractors. However, the utility may ask the landowner to perform such work as initial clearing, site restoration, mechanical maintenance of vegetation, and cultivation. The remuneration accorded

the landowner shall be equivalent to the average price that Hydro-Québec pays for such work.

The following factors are considered:

- noise;
- farm or access roads;
- fences and gates;
- surface drainage;
- underground drainage;
- traffic on the right-of-way;
- soil compaction;
- smoke, dust and other pollutants.

Hydro-Québec and the UPA have adopted measures applicable to the various stages of construction:

- surveying;
- clearing;
- excavation for structure foundations;
- assembly and erection of structures;
- conductor unwinding;
- site restoration;
- reclamation of the right-of-way.

In order to effectively monitor the implementation of the methods and measures adopted, Hydro-Québec shall appoint a **construction manager** who is responsible for:

- performing the work in keeping with the methods stipulated;
- acting as the landowners' contact during the work.

Hydro-Québec shall provide the construction manager with qualified personnel trained in agriculture to ensure compliance with mitigation measures, commitments made or imposed under government permit conditions, and commitments made to landowners.

Moreover, when damage occurs despite preventive measures taken by the construction manager and his crew and despite the application of remedial measures, site employees specialized in this field shall assess the damage and promptly compensate the landowners.

Summary

Should the landowner and Hydro-Québec disagree on mitigation measures, a damage assessment or compensation for easement, the dispute may, at the discretion of either party, be submitted to a **conciliator**. It is the conciliator's role to bring the parties together and help them find a solution that is satisfactory to Hydro-Québec and to the UPA.

Landowners affected by a project shall receive a copy of the general mitigation measures for farms and woodlands, along with the name and contact information of the construction manager or his representative.

Through meetings and written directives, Hydro-Québec shall inform its personnel and the contractor's personnel of special measures to take on farms and in woodlands.

Hydro-Québec shall notify each landowner at least two weeks prior to the beginning of work on his property.

Hydro-Québec must obtain the landowner's permission before using land or infrastructure located outside the right-of-way for any operation or use whatsoever.

When a new right-of-way is located in woodlands and is adjacent to a field where farming or tree-growing operations are carried on, Hydro-Québec shall assess the possibility of cultivating the right-of-way according to criteria such as agricultural potential, stoniness, and soil moisture. In areas that meet these criteria, cultivation must reflect the needs of the crop to be planted.

Duly authorized UPA and MAPAQ representatives may enter the construction site. For safety reasons, they must obtain permission from the construction manager designated by Hydro-Québec and be accompanied by the manager's representative.

Maintenance

During the maintenance of infrastructure, especially power lines, Hydro-Québec shall ensure respect for private property by implementing the appropriate mitigation measures concerning noise, farm or access roads, fences and gates, surface and underground drainage, traffic on the right-of-way, soil compaction, smoke, dust and other pollutants, and site restoration.

However, Hydro-Québec and the UPA agree that all of these measures cannot be adhered to in an emergency, for example, following power failures resulting from storms or major equipment breakdown.

Hydro-Québec encourages requests from landowners interested in planting or cultivating the right-of-way or carrying out vegetation control, insofar as such requests meet the criteria in Section 4.4.

Should property be damaged or crops lost as a result of maintenance work, Hydro-Québec shall compensate the landowner.

Compensation

Hydro-Québec and the UPA have established the compensation that Hydro-Québec will pay the owners of property that it must acquire or subject to an easement for the purpose of building and operating a substation or transmission line within the protected agricultural zone or in private woodlands used for production.

In exchange for the financial compensation offered, any landowner who grants Hydro-Québec an easement or a purchase option must allow Hydro-Québec to enter the right-of-way as soon as it exercises the option, for the purposes and in the manner stipulated in the easement agreement or deed of sale.

Hydro-Québec and the landowner must fulfill all of the obligations stipulated in the option and the easement agreement or deed of sale. In particular, the owner relinquishes the right to erect buildings or structures on the land covered by the right of way.

Notwithstanding these restrictions, the landowner maintains ownership of the land covered by the right of way and may continue to cultivate it.

The easement or purchase option must be the subject of an agreement between the landowner and Hydro-Québec.

The **landowner's compensation** for easements, damages or inconvenience caused on farms and in woodlands shall be based on the following factors:

- compensation for access to the right-of-way and for signing the easement option;
- compensation for the easement and right of way;
- compensation for the presence of support structures;
- compensation for temporary work space;
- compensation for time spent by the owner on certain jobs and assessing construction damage;
- compensation for crop losses;
- compensation for inconvenience caused by construction;

- compensation for temporary easement.

The compensation agreement also covers professional fees, the purchase of land in protected agricultural zones and the payment of interest.

When land is purchased to build a substation or permanent access road within a protected agricultural zone, compensation shall be calculated according to one of the following methods:

- Method 1: This method consists in appraising the land as in the case of a line easement and complying with all of the applicable rules (see 5.2.2).
- Method 2: This method consists in using the direct comparison approach (for industrial land) with all of the necessary adjustments pertaining to area, services, location, and so on, except for the following aspects:
 - No adjustment is made because the land is located in a green zone rather than a white zone, as stipulated in the *Act respecting the preservation of agricultural land and agricultural activities*.
 - Sales of industrial land used for comparison purposes may take place in the same municipality as the land to be appraised or in neighboring municipalities. Sales in municipalities that are not adjacent may also be considered if they are submitted by either party, provided that they have some degree of comparability with the municipality in which the land to be appraised is located.

The compensation proposed shall be based on the higher of the two results.

All landowners affected by a Hydro-Québec project shall receive a copy of the information guide entitled *Un terrain d'entente* and a document explaining the method used to calculate compensation.

In the case of a dispute over compensation, either party may request the services of a **conciliator** to find a mutually satisfactory solution.

Continued cooperation

Hydro-Québec and the UPA agree on the need to introduce an **ongoing procedure to ensure continued cooperation**. Regular exchanges are taking place, first, to ensure compliance with the various agreements and, second, to find acceptable solutions to the new challenges arising from changes in the techniques and practices used by Hydro-Québec and the agricultural industry.

It should be noted that a committee has been established to interpret the Hydro-Québec—UPA agreement. The committee has 30 days to interpret the terms and conditions that have given rise to disputes in which the negotiation process is hampered by divergences in interpretation. The interpretation committee is made up of four representatives: two from the UPA, including a coordinator, and two from Hydro-Québec, including a coordinator. The UPA may also call in a representative of the regional federation concerned in the dispute or disputes. The coordinators are responsible for analyzing the requests submitted to the committee and obtaining any necessary information. If need be, the committee may also call upon specialists from the UPA or Hydro-Québec.

Greater harmony

As attested by the changes to this agreement and the implementation of an ongoing procedure for cooperation, Hydro-Québec and the UPA are constantly striving to harmonize their practices on farmland and in woodlands.

Given the acknowledged need for Hydro-Québec to erect certain structures on farmland and in woodlands, the agreements between the utility and the UPA ensure better environmental protection through compliance with siting criteria and mitigation measures accepted by representatives of the agricultural industry.

The *Agreement between Hydro-Québec and the UPA respecting the Siting of Electric Power Transmission Lines on Farms and in Woodlands* makes provision for an array of effective communications tools. In particular, the adoption of specific compensation rules promotes harmonious contacts between Hydro-Québec and producers, as well as with their representatives.

1 *Impacts*



Impacts of Hydro-Québec Structures

1.1 Introduction

Hydro-Québec and the Union des producteurs agricoles (Québec farmers' association, or UPA) have drawn up a list of the impacts that power lines and substations can have on farmlands. These can be subdivided into two broad categories.

Impacts of the first category are associated with the actual construction of the line or substation. Such impacts vary according to the type of structure and farm operation and, to a certain extent, according to the nature of the soil. They can be reduced considerably or eliminated altogether through the implementation of appropriate preventive or remedial mitigation measures (see Part 3, Mitigation).

Impacts of the second category stem from the presence of the substation or power line in the environment. They too differ according to the type of facility and farm operation. Although these impacts cannot be eliminated, they can be attenuated in some cases by selecting optimal sites and by choosing the type and location of support structures according to the kind of farming involved (see Part 2, Siting).

1.2 Types of impacts

1.2.1 *Temporary impacts during construction*

Following are some of the impacts that can arise during the construction phase:

- impacts associated with the staking of rights-of-way;
- reduced crop yields due to soil compaction;
- disturbance of the topsoil layer (rocks and inert soil mixed in with the topsoil);

1. Impacts

- alteration of underground or surface drainage systems;
- alteration of irrigation systems;
- damage to ditches;
- broken fences, which can hinder livestock control;
- noise produced by construction machinery, which can affect poultry and fur-bearing animals;
- disruption of crop operations;
- loss of time (during negotiations, for example);
- loss of revenue (cash flow) while awaiting compensation;
- impacts on areas or elements located outside the right-of-way, such as:
 - damage to farm roads;
 - debris from tree felling;
 - ruts and soil compaction;
 - damaged trees;
 - waste materials;
- construction debris and other waste materials.

1.2.2 *Permanent impacts arising from the presence of the structures*

Impacts stemming from the presence of the substation or power line in the environment include:

- loss of farmland or woodland;
- loss of revenue, which could compromise the operation's profitability;
- loss of time (time spent in negotiations or driving around the structures, for example);
- risk of farm machinery running into the structures;
- creation of enclaves;
- usage restrictions and other limitations associated with easements;
- alteration of irrigation systems;
- changes to crop operations;
- impossibility or increased danger of using airplanes for agricultural purposes;

- limitations regarding land improvements (leveling, ditching and other mechanical operations, for example);
- proliferation of weeds;
- risk of windthrow and desiccation along rights-of-way in wooded areas;
- induced currents in fences, buildings, machinery, etc.;
- visual impact;
- noise from substation operation.

Studies are being conducted in Québec and in other parts of the world to identify and analyze the biological impacts of electromagnetic fields on human and animal health.

2 *Siting*



Siting of Hydro-Québec Structures

2.1 Introduction

This section of the Hydro-Québec–UPA Agreement summarizes the main criteria which apply to the siting of power lines and substations on farmlands.

In determining the best location for its facilities, Hydro-Québec strives to reduce their impact on the various elements in the host environment to the greatest extent possible. This involves several steps in the draft-design phase, namely: taking an inventory of the area, analyzing line corridors and areas suitable for substation sites, establishing potential line routes and substation locations, choosing the most appropriate types of structures, and deciding on the optimal line routes and substation sites. However, the exact location of support structures for power lines is only determined during project implementation, more specifically during the engineering and construction phases.

In projects involving farmlands, Hydro-Québec consults the UPA during each of the phases outlined above through the association's regional federations, as set forth in the company's environment policy. Other parties can also be consulted during this process.

Hydro-Québec is ultimately responsible for the siting of its facilities. The company must submit its final decision for approval by the competent authorities. These include municipalities, regional county municipalities (RCMs), the Commission de protection du territoire agricole (Québec farmland protection commission, or CPTAQ), the ministère de l'Environnement du Québec (Québec department of the environment), and the ministère des Ressources naturelles du Québec (Québec department of natural resources, or MRN), among others.

2.2 General considerations

The UPA and Hydro-Québec acknowledge that the application of siting criteria can vary from region to region depending on the type of project as well as the existing and foreseeable use of the area in question. Choices must therefore be made in cooperation with stakeholders in the agricultural industry.

2. Siting

As a general rule, siting criteria must be applied in such a way as to cause the least inconvenience to farmers while striving to establish the shortest possible route and to limit the number of angles between the two points to be connected. Longer routes result in higher costs and, in most cases, additional impacts (a greater number of landowners affected, more support structures, more trees cut, etc.).

2.3 Siting criteria applicable to farmlands

The choice of substation locations and line routes on farmlands must comply with the following criteria:

- Favor the siting of substations or power lines on the boundaries of or outside agricultural zones protected under the *Act respecting the preservation of agricultural land and agricultural activities*.
- Favor siting on agricultural land with the lowest potential in the study area, according to maps of potential prepared by the ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (Québec department of agriculture, fisheries and food, or MAPAQ).
- Protect sugar bushes, orchards, plantations, woodlands under development, windbreaks and other high- and average-quality woodlands in the study area, bearing in mind however that a right-of-way in this type of woodland could be developed for uses other than a right-of-way.
- Favor siting in poor-quality woodlands rather than on cultivated land.
- Where possible, favor orientation along lot, concession or any other cadastral lines and avoid running power lines diagonally across crops.
- Limit the number of support structures on cultivated land. Instead, endeavor to locate them in residual spaces, groves or strips of woodland.
- Protect lands that have underground drainage or will have it in the short or medium term according to data available from the MAPAQ.
- Install infrastructure away from farm buildings and fish breeding ponds.
- Follow existing line corridors when they meet the criteria set forth above.
- Avoid areas subject to erosion.

The foregoing criteria are not listed in order of importance. Their application shall vary from one region to another depending on the nature of the project and the site (existing and foreseeable).

The shortest line routes with the fewest angles possible must be chosen in cooperation with agricultural stakeholders.

2.4 Choice of structure

The type of structure can sometimes have a bearing on the magnitude of the impact. For example, rigid (self-supporting) block-foundation towers¹ such as tubular poles reduce the impact of power lines on farmlands.

However, given the technical constraints associated with these towers, Hydro-Québec cannot commit to using them systematically on farmlands.

Cost is another factor which Hydro-Québec must take into account.

In each power-line project, Hydro-Québec's studies therefore include an assessment of the most appropriate type of structure. When towers are being considered, Hydro-Québec evaluates the use of both rigid block-foundation towers, such as tubular poles, and conventional lattice towers.

In addition, Hydro-Québec is conducting studies to determine the most cost-effective yet technically feasible way of reducing the dimensions of towers on farmlands as well as the need to circumvent them. These studies should lead to the design of towers which better meet the criteria governing the siting of structures on farms and provide for optimal use of arable land.

2.5 Cooperation

Hydro-Québec deems the UPA and its regional federations to be the preferred stakeholders in matters regarding farmland.

As regards the siting of power facilities, Hydro-Québec and the UPA have agreed to cooperate in accordance with the guidelines set forth below.

1. Rigid block-foundation tower: a generic term encompassing all towers which comprise solid concrete foundations and are not held up by guy wires.

2. Siting

Cooperation shall take place during each of the four stages normally included in siting studies, with a view to progressively restricting the study area:

1. Establish line corridors and identify areas suitable for substation sites.
2. Establish potential line routes and substation sites.
3. Choose definitive line routes and substation sites.
4. Determine where to install support structures for power lines.

Accordingly, the people in charge of carrying out the studies shall meet with the regional federations as follows:

1. During the first stage, to discuss draft maps, proposed line corridors and substation siting areas as well as the elements which will form the basis for comparison.
2. During the second stage, to review draft maps, proposed line routes and substation sites as well as the preliminary results of the comparative analysis.
3. During the third stage, to review draft maps of the adopted routes and sites in order to optimize them, to have them approved and to identify ways of mitigating the structures' impacts.
4. During the fourth stage, to discuss the spacing of support structures once the route has been approved.

In determining the spacing of support structures, Hydro-Québec shall consult landowners individually so as to take into account constraints associated with their particular land and crops, within the guidelines set forth in the applicable agreements.

In cases where requested changes would have an impact on a number of landowners, Hydro-Québec shall organize meetings on a segment-by-segment basis and invite all landowners concerned.

All drawings and specifications produced as a result of meetings with landowners must comply with agreements between Hydro-Québec and the UPA. If required, these are appended to the requests seeking government approval of the project.

During the consultation process, and at least at the end of the third stage, the UPA shall advise Hydro-Québec in writing of its approval of line routes and substation sites.

Mitigation



Mitigation Measures and Cultivation of Rights-of-Way

3.1 Introduction

This section of the agreement deals with mitigation measures intended to reduce the impact of the construction of power lines or substations on farmland and in woodlands.

These measures also apply, with the necessary adaptations, to major rehabilitation, renovation and reconstruction projects requiring power line replacement, as well as to the permanent dismantling of a power line or substation subject to an easement.

Obviously, Hydro-Québec cannot completely eliminate disturbances on farms and in woodlands because of the very nature of the work and the type of equipment used. However, by applying the protective, remedial and restoration measures set out in this part of the agreement, it can prevent various problems and limit the impacts of its projects.

Hydro-Québec is committed to ensuring that these directives are followed by its employees and included in its contracts with contractors. It assumes responsibility for having the measures and the land restoration carried out according to the provisions of this agreement.

3.2 General principles

The mitigation and remedial measures must enable Hydro-Québec to restore the right-of-way to its original state, insofar as is physically possible, once construction has been completed.

In particular, mitigation measures are intended to restore the original fertility of cultivated land. Altered or disturbed areas of the right-of-way are leveled as quickly as

3. Mitigation

is reasonably possible, unless agreement to the contrary is reached with the landowners. All construction debris is also removed from the site.

The measures outlined below focus on damage prevention and describe the methods used to rectify whatever damage may occur.

On site, the construction manager appointed by Hydro-Québec shall be responsible for ensuring compliance with this agreement. He oversees the implementation of all environmental protection measures and any special agreements reached with the landowners when the right of way was obtained and the draft-design studies were conducted. The construction manager also deals with the landowners during clearing, construction and site restoration.

Hydro-Québec shall assign qualified advisory staff to each construction manager, specifically, a person with formal training in agriculture, recognized by a university degree or acquired through continuing education programs. Each construction manager shall also be assigned a person who is qualified to assess construction damage and make settlements with owners.

The construction manager shall be responsible for:

- ensuring compliance with mitigation measures, obligations assumed or imposed under government permits, and agreements with landowners;
- promptly rectifying problems that may arise on farms and in woodlands during construction;
- ensuring that support structures are located as stipulated in the drawings and specifications;
- ensuring that all authorizations have been obtained before work begins on private property;
- recommending preventive measures to limit the impact of construction, for example, with respect to topsoil compaction and thickness;
- taking the necessary measures to ensure that the right-of-way and access roads are restored to their original state or better, within a reasonable time;
- maintaining contact with owners in order to inform them of the progress of work.

Hydro-Québec shall notify each landowner at least two weeks prior to the start of work on his property. Subsequently, the construction manager shall maintain contact with the owners and coordinate the work in such a way that it interferes as little as possible with farming operations.

Hydro-Québec must obtain permission from landowners before using property or infrastructure outside the right-of-way for any operation or purpose.

Hydro-Québec and the owner must draw up a list of installations and structures inside and outside the right-of-way that may be affected by construction work and apply the appropriate preventive measures.

Duly authorized UPA and MAPAQ representatives may enter the construction site. For safety reasons, they must obtain permission from the construction manager designated by Hydro-Québec and be accompanied by the manager's representative.

Landowners affected by a project shall be given a copy of the general mitigation measures governing farms and woodlands.

Through meetings and written directives, Hydro-Québec shall inform its personnel and the contractor's personnel of special measures to take on farms and in woodlands.

When damage occurs despite preventive measures taken by the construction manager and his crew and despite the application of remedial measures, site personnel specialized in this field shall assess the damage and promptly compensate the landowners.

3.3 General clauses

3.3.1 Noise

During construction, Hydro-Québec shall bear in mind the inconvenience caused by noise and make efforts to reduce it. The utility shall observe any noise regulations in effect.

Prior to beginning the work, Hydro-Québec shall identify zones where special noise restrictions apply and indicate them in the drawings and specifications. Preventive measures shall be included in the special contract clauses and the zones clearly marked off.

Near livestock operations that are potentially sensitive to noise, e.g. raising of poultry, rabbits or fur-bearing animals, precautions shall be taken to limit strident or sudden noise from dynamiting, aircraft, machinery and motor vehicles.

Should noise problems arise during construction, measures shall be adopted to attenuate their impacts.

3.3.2 Farm or access roads

Hydro-Québec must obtain permission from the landowner before using or building an access road outside the right-of-way. The agreement with the landowner shall include conditions governing the use of the access road.

Access roads shall be clearly indicated on the site. Hydro-Québec shall install the infrastructure for such roads and maintain it for the duration of the project.

When the use of an access road produces dust that is harmful to individuals or the environment, dust-control measures shall be taken.

When construction has been completed, the roads shall be restored to their original state or better. Under normal use, one year (one freeze-thaw cycle) must elapse before Hydro-Québec's responsibility for restoring the roads lapses.

Paved roads shall be protected from damage and kept clean at all times.

Where material is required to fill ruts, it must be of the same size and type as the material used in the road. Hydro-Québec shall bring in the material or take it from a site that the landowner has approved.

3.3.3 Fences and gates

After reaching an agreement with the owner, Hydro-Québec shall install gates or temporary fences inside the right-of-way where necessary to protect crops, livestock and property outside the right-of-way.

Fences inside the right-of-way and running along public access roads must have rigid gates to prohibit unauthorized individuals from entering the right-of-way outside of working hours.

As for electric fences, Hydro-Québec may use one of the following procedures:

- install an arch;
- modify the power supply so as to supply the fence from both sides of the gate.

It may employ any other method that satisfies the owner.

To install gates, the utility shall:

- shore up the posts on either side of the opening to maintain mechanical tension in the adjacent spans;

- manually cut the wire and, if it is suitable, use it to build the gate; otherwise, the wire will be gathered up and replaced with material of equivalent or higher quality to build the gate.

Hydro-Québec shall ensure that the contractor properly maintains the gates and keeps them closed at all times.

Any fence or gate that is cut, removed, damaged or destroyed shall be immediately repaired or replaced with material of equivalent or higher quality.

When construction has been completed, the temporary gates shall be removed, unless an agreement to the contrary is reached with the owner. Gates shall be rebuilt with material of equivalent or higher quality ; props shall be left in place.

If stone or pole fences have to be dismantled, the material shall be stored and re-used when the fence is restored once the work has been completed.

Hydro-Québec shall maintain adequate protection systems for livestock. Any fence needed to keep out particular kinds of animals must be described in specific mitigation measures, e.g. fences running along the right-of-way or fences that allow animals to cross the right-of-way.

3.3.4 Surface drainage

Hydro-Québec shall take stock of drainage in the right-of-way and shall install any bridges, culverts, fords or drainage diversions needed to ensure normal, continuous drainage in ditches, trenches or other channels affected by construction.

Hydro-Québec shall obtain the landowner's permission before using an existing bridge or culvert and shall properly maintain it and carry out the necessary repairs.

An agricultural engineer or Hydro-Québec's agricultural representative on the site must approve any change in surface drainage anticipated for the duration of construction.

Throughout construction, Hydro-Québec must ensure that surface drainage systems remain in working order and that ditches are kept free from obstructions.

Culverts installed by Hydro-Québec must be at least 3.5 m long, installed 10 cm below the bottom of ditches and covered with at least 30 cm of earth. Moreover, they must be wide enough to allow water to flow freely.

If a bridge deck is installed, it must cover the banks sufficiently to ensure their stability.

3. Mitigation

Once construction is completed, unless an agreement to the contrary is reached with the owner, Hydro-Québec shall remove bridges and culverts, clean ditches and restore banks to their original state.

Before construction begins, Hydro-Québec shall identify wells and sources of drinking water that may be affected by construction work and, if need be, establish specific mitigation measures to protect them. Water samples shall be taken prior to, during and after construction to ensure that the quality and quantity of water are unaltered. Should this not be the case, Hydro-Québec shall take the necessary steps to eliminate the cause of contamination or reduced water flow.

Hydro-Québec must remove sedimentation in a ditch or waterway resulting from construction and affecting the normal flow of drainage systems.

3.3.5 *Underground drainage*

Before construction commences, Hydro-Québec shall locate underground drainage systems in the work zone, based on indications supplied by the owner.

During construction, Hydro-Québec shall ensure that the road within the right-of-way is located between two drains when the latter are parallel to the right-of-way.

On land with low bearing capacity, areas where drains are crossed by roads shall be protected.

Should drains be punctured during excavation, uninterrupted flow must be assured in upstream drains and a plug installed in the downstream drain to prevent permanent or temporary obstructions. A marker must be left in place until the drain is repaired.

When the excavation is filled, Hydro-Québec shall repair damaged drains and ensure normal flow in the drainage system, according to MAPAQ standards governing drains. If ruts are created and there is a risk of the drains collapsing, the landowner may demand that they be verified by excavation.

If a damaged drain must be repaired, Hydro-Québec shall notify the owner so that he can be present during the repair. For extensive repairs, Hydro-Québec or the owner may request that they be done by a specialized contractor. Both parties must approve all work before filling.

In the case of a farm with an underground drainage plan yet to be developed that must be altered because of the construction work, Hydro-Québec shall have the designer modify the drainage plan at its expense.

The following year, in the spring and fall, Hydro-Québec shall return to the site with the owner to verify the proper operation of the drainage system affected by the construction.

3.3.6 Traffic on the right-of-way

This measure applies solely to cultivated land and areas that Hydro-Québec turns over to cultivation upon the completion of construction.

Traffic in the right-of-way shall be restricted to one lane 8 m wide. Any change must be submitted to Hydro-Québec for approval.

To reduce the traffic area as much as possible, the road must normally run along the support structures.

Hydro-Québec shall ensure that the road does not prevent the owner or occupant from entering neighboring fields. Ruts shall be leveled if they hinder farm operations.

The road to be used by the contractor within the right-of-way must be established in advance by Hydro-Québec. It shall be described in the call for tenders and, in the case of sensitive areas or special arrangements with the owner, clearly marked out on the site.

Depending on the season and the nature of the soil, Hydro-Québec shall restrict access by vehicles and machinery that are too heavy to travel on the land without disturbing it.

When construction has been completed, Hydro-Québec shall remove the temporary structures and restore the land to its original state, according to the requirements stipulated in Section 3.3.2 on farm or access roads.

3.3.7 Soil compaction

This measure applies solely to cultivated land and areas that Hydro-Québec turns over to cultivation upon the completion of construction.

Under certain unfavorable conditions, such as soaked soil, winter thaws and other critical conditions, construction work may compact the soil to a greater or lesser degree, depending upon stoniness, vegetation and soil type. To minimize damage, the following measures are advocated:

- Schedule the work during the seasons when the bearing capacity of the soil is best.

3. Mitigation

- Restrict access by certain vehicles or machinery if the soil has insufficient bearing capacity.
- Use only vehicles or machinery with caterpillar tracks or extra-wide tires.
- Limit traffic to one lane and keep the number of vehicle trips to a minimum.
- Use a bearing mat or mattress.
- Suspend certain phases of the work when conditions are unsatisfactory.
- Implement any other relevant method recommended by the agricultural specialist.

When construction has been completed, Hydro-Québec shall apply the measures in Section 3.4.6 on site restoration as needed.

Should soil compaction occur despite the foregoing measures, Hydro-Québec shall decompact the soil once the work has been completed, according to the measures in Section 3.4.6 on site restoration.

3.3.8 *Smoke, dust and other pollutants*

Hydro-Québec shall ensure that the contractor's equipment operates according to the manufacturer's specifications. Should problems arise during construction, Hydro-Québec shall take remedial action such as the application of dust-control products, the installation of filters or the withdrawal of certain equipment.

Equipment must be free of leaking oil, gasoline or other pollutants. Dumping and burying of these products are prohibited. When work commences, Hydro-Québec shall give the contractor a used oil recovery log and shall check it throughout the project.

In the event that a pollutant is accidentally spilled as a result of a defect or mechanical breakdown, the area affected must be quickly cordoned off and the product flow stopped with an absorbent material. If need be, the affected topsoil shall be removed and replaced with topsoil from an authorized site.

Clean-up, especially at each support structure site, shall be an integral part of each phase of construction. Machinery must be equipped with waste containers.

On farms, no burning or burying of waste from the site shall be permitted. Such refuse must be transported to an authorized dump. In woodlands, waste burning and stump burying may be authorized.

3.4 Clauses pertaining to construction

3.4.1 *Surveying*

On cultivated land, stakes indicating structure locations shall normally be driven into the ground near fences or ditches close by.

When no such landmarks are available, Hydro-Québec shall drive 30-cm wooden stakes all the way into the ground so that farm equipment does not catch on them.

Stakes driven into cultivated land must be clearly visible so that farmers can remove them, if need be, for tilling and harvesting.

3.4.2 *Clearing*

Hydro-Québec shall ensure that clearing causes the least possible disturbance and allows for the orderly disposal of unusable waste wood.

Clearing methods A, B and C shall be clearly indicated on the site and must be complied with:

METHOD A All trees, bushes and brush higher than 1 m are cut manually or mechanically.

METHOD B All bushes up to a height of 3 m, except the stems of species that grow too quickly, are preserved, as well as the stumps and root systems of cut trees. Stacking is not permitted in these areas. Where mechanized equipment is required, it must exert little pressure on the ground and always travel on the same path.

METHOD C Only manual, selective cutting is done, and the maximum height of trees to be preserved is indicated for each area. Trees exceeding this height must be cut down, trimmed, cut into sections and left in the undergrowth with cutting residues. A strip 5 m wide must be cleared in the centre of the right-of-way to allow for conductor unwinding.

Clearing methods B and C are recommended for sensitive areas such as peat bogs, riverbanks, erosion areas and so on, and for sites with sufficient space to leave the trees or in areas where screens are required for esthetic reasons.

Trees shall be felled along the axis of the right-of-way to avoid damaging trees outside the right-of-way.

3. Mitigation

The contractor must burn, chip or remove from the right-of-way all waste, stumps, crowns, brush, branches and other wood debris.¹ Burying them on site or stacking them on the edge of the woodland is prohibited unless the express consent of Hydro-Québec and the owner has been obtained.

Main branches that are broken must be cut clean near the trunk to promote rapid scarring. Damaged trunks must also be properly treated.

Wood must be cut to commercial length for pulp or saw timber, i.e. 4 feet, 6 feet, 8 feet, 10 feet, or 12 feet or more, depending on the requirements of the local market and the owner's wishes. The wood must be stacked either along the construction road in the right-of-way or in a place agreed upon in advance by the owner and Hydro-Québec and located within 100 m of the cutting site. In all instances, the cut wood must not be moved more than 100 m.

It is understood that the landowner may recover all or part of the wood, at his expense and risk, as it is cut, provided that the wood is not to be used for some other purpose by Hydro-Québec or its representatives.

Hydro-Québec shall ensure that areas in which clearing methods B and C were used are properly restored.

Hydro-Québec may have the landowner undertake the initial clearing, for remuneration equivalent to the average price paid by Hydro-Québec for such work.

3.4.3 Excavation (structure foundations)

This measure applies on cultivated land and in areas that Hydro-Québec turns over to cultivation.

On the excavation site, the topsoil must be separated from the inert soil and dumped in a place where it can be recovered. The thickness of the layer of topsoil to be removed shall be established on the basis of agricultural practice but must not exceed 30 cm.

Should excavated material not be used as fill, it must be dumped in an authorized place or a place agreed upon with the owner, in accordance with environmental standards. However, if the material is to be used as fill, it must be stored temporarily. It must not be mixed with topsoil. To this end, the surface topsoil should first be removed at the storage site and placed on a membrane.

1. This directive does not apply to stumps in forests.

Should backfilling require granular material, the latter shall be deposited as needed in the excavation. If it is necessary to store granular material on the construction site, the surface topsoil must first be removed.

Traffic around the structures shall be kept to a minimum. Work shall be planned so as to avoid mixing inert soil and topsoil. Piles of topsoil dumped at the foot of support structures must not exceed 15 cm in height in relation to the surrounding soil, which is sufficient to compensate for differential settling. Should inert soil and topsoil be mixed despite efforts to prevent it, the first 30 cm shall be replaced by topsoil from an area approved by Hydro-Québec and measures shall be taken to restore fertility. The same applies should gravel be spread accidentally.

Precautions must be taken to ensure that sediment pumped out of excavations does not spread into waterways or neighboring ditches. Hydro-Québec shall use ponds with filtering membranes; sediment shall be disposed of as it is removed, by truck or any other authorized means such as a separating pump.

Fences shall be built around unsupervised excavations. They must be safe and adapted to surrounding conditions.

Fill material shall be compacted in accordance with specifications and the layer of topsoil shall be restored to its original thickness.

If rocks come to the surface as a result of excavation, they shall be removed from the site either mechanically or manually, until the condition of the site is similar to the surrounding area. The material gathered up shall be disposed of at an authorized site or a place accepted by the two parties, in compliance with environmental standards.

If leveling is required, the contractor must first remove the topsoil and put it aside, then return it to the original site once the work has been completed.

When excavation is performed during the winter, snow must first be removed from the work area and the storage sites before excavation begins. Before backfilling, snow shall first be removed from the excavation and the fill material.

3.4.4 *Assembly and erection of support structures*

Support structures must be assembled in such a way as to cause as little disturbance as possible to crops and farming operations. The work area must be kept to a minimum and clearly marked.

3. Mitigation

All metallic debris must be removed from the site. Hydro-Québec shall ensure that no debris remains on the property and shall, use a metal detector for this purpose if need be.

3.4.5 Conductor unwinding

Special precautions shall be taken to protect persons, animals, crops and vegetation during conductor unwinding.

Where possible, Hydro-Québec shall choose areas with the least agricultural value as unwinding areas. The space required must be minimal and it must be clearly marked.

Wires and other metallic debris shall be picked up immediately.

Excavations for conductor anchors must be allowed to dry. Moreover, fill material must be packed and surface topsoil must be restored to a depth of 30 cm at all anchor points.

3.4.6 Site restoration

As soon as possible after construction, Hydro-Québec shall take measures to restore disturbed property to its original state.

The land shall first be levelled and ruts filled in to obtain a uniform working surface.

Soil samples shall be taken in various places on farms prior to and after construction to ascertain the level of fertility. Depending on the results, Hydro-Québec shall implement one or more of the following measures to promote the quick restoration of crops:

- Work the land using a mould board plow or a chisel plow to the depth desired by the owner (maximum of 25 cm).
- Loosen the soil to the depth desired by the owner (maximum of 15 cm), using techniques appropriate to the soil, e.g. a disc harrow, a roto spader or a spike-tooth harrow.
- Run a chisel plow over the land to the depth desired by the owner (maximum of 40 cm).

- Run a subsoiler² over the land to the desired depth, soil and underground drainage conditions permitting. After two growing seasons, the land must be analyzed to ascertain whether its original productivity has been restored.
- Bury organic matter, manure or chemical fertilizer in order to restore the land's fertility, bearing in mind the recommendations of the Conseil des productions végétales du Québec (CPVQ) and the owner's crop-rotation practices.
- Remove rocks up to 8 cm in diameter or until conditions are similar to the surrounding land.

All of these operations must be effected when the ground is in the best possible condition and they may be repeated.

Depending on the time of year when restoration work is carried out, the land may be re-seeded according to criteria established by Hydro-Québec and the landowner.

Hydro-Québec must remove temporary structures and installations, such as fences, bridges and ditches, and restore the land and existing installations to their original state.

On sites where the disturbance of soil due to construction may cause erosion, measures shall be adopted to stabilize the affected areas. Such measures shall rely on one or more of the following methods:

- retaining embankments;
- diffusers;
- furrows or diversion ditches perpendicular to the slope designed to channel runoff into areas covered with vegetation;
- levelling and banking;
- gabions, sand bags, grids or mesh;
- any other measure deemed acceptable by the agricultural specialist (typical explanatory plans with technical specifications shall be provided in the most common cases);
- re-seeding;
- mulch.

Hydro-Québec shall have plans drawn up for specific cases.

2. A caterpillar tractor should be used for this operation. The subsoiler must be equipped with variable-spacing colters adaptable to different types of soil. The colters must be equipped with duck-foot shanks.

3. Mitigation

When the work has been completed, Hydro-Québec's representative and the landowner shall visit the right-of-way and access roads to ensure that all debris has been removed and that the land has been restored to the owner's satisfaction.

3.4.7 *Cultivation of the right-of-way*

When a new right-of-way located in a woodland borders a field used for farming or tree growing, Hydro-Québec shall assess the possibility of cultivating the right of way.

The assessment shall be based on the following criteria:

- The crop planted must be likely to establish and maintain itself.
- The rockiness of the terrain is not a limiting factor. However, the size of the rocks or the presence of rock outcroppings can sometimes hamper the preparation of the soil for planting.
- The moisture level may be a limiting factor. When the moisture level is appropriate for cultivation, additional drainage is necessary and water must flow into a natural or artificial drainage system that crosses or runs along the right-of-way.
- The land must not be located in a zone that is cleared according to method B or C.
- The landowner must agree to perform the farming or silvicultural operations needed to maintain the crop.

In areas that meet these criteria, the nature and scope of rock removal and surface drainage work can only be assessed once clearing has been completed. Surface drainage work must allow the normal flow of water and shall include, where necessary, the creation of plant beds, levelling, flushing lines, trenches and ditches.

Initially, Hydro-Québec shall remove stumps using a bulldozer equipped with a rake to avoid scraping off the soil. Stumps shall be piled along the right-of-way then burned or buried, according to the standards and regulations in effect.

The extent of rock removal and drainage work allowing the normal flow of water, including the creation of plant beds, flushing lines, trenches and ditches, depends on the crop to be planted and can only be ascertained once clearing has been completed.

Hydro-Québec shall carry out rock removal, i.e. of rocks up to 8 cm in diameter, drainage and soil preparation work, i.e. levelling, plowing and harrowing, to ensure that cultivation resumes promptly. It may propose that the landowners carry out the

work in return for remuneration equivalent to the average price paid by the Hydro-Québec for such work.

Once the foregoing work has been completed, soil samples shall be taken at different places to measure the soil's fertility. If necessary, Hydro-Québec promises to enrich and fertilize the soil, based on the recommendations of the CPVQ regarding the planting of clover for one year.

3.5 Conciliation

Should the landowner and Hydro-Québec disagree on mitigation measures, the dispute may, at the discretion of either party, be submitted to a conciliator.

Once the draft-design studies have been completed, both parties shall agree upon a list of persons qualified to act as conciliator. Should a disagreement arise, either party may call upon one of the conciliators named in the list, according to procedures to be agreed upon.

The conciliator is responsible for attempting to find an amicable solution to the dispute submitted to him. His recommendations are not binding on either party.

Depending on the conciliator's decision, one of the parties shall assume the cost of the conciliation.

4 *Maintenance*



Maintenance of the Transmission System

4.1 Introduction

Hydro-Québec effects visits, inspections and repairs to ensure the reliability of overhead power transmission lines. Proper control of vegetation keeps rights-of-way free of obstacles hindering various operations and protects the utility's installations.

This section describes the methods Hydro-Québec uses to ensure respect for private property when overhead-line maintenance and vegetation control are carried out along rights-of-way. Moreover, it proposes incentives to encourage secondary uses of power-line rights-of-way.

4.2 Maintenance of transmission lines

4.2.1 *Maintenance of overhead lines*

Overhead-line maintenance encompasses work on towers, poles, insulators, conductors and accessories. The main activities fall into the following categories:

- visits and inspections;
- repairs;
- major maintenance, such as restoration, renovation and rebuilding.

4.2.2 *Maintenance of rights-of-way*

Right-of-way maintenance includes an array of activities related to use of the right of way, soil stability and vegetation control in order to maintain electrical clearances, facilitate maintenance of line components and prevent damage to conductors in the event of forest fires.

4. Maintenance

Hydro-Québec uses different means of intervention to control vegetation. Its choices are based on criteria pertaining to the environment, efficiency, safety, health and costs. In all instances, the utility takes into account the natural environment and the use to which the right-of-way is put. All in all, Hydro-Québec emphasizes the right means of intervention at the right place at the right time.

Hydro-Québec relies on three methods of controlling vegetation in rights-of-way, which are used singly or in combination:

- selective cutting carried out with chain saws or scrub slashers or by means of cutting or mowing;
- herbicides, i.e. chemicals that kill certain plant species;
- land improvement practices or cultivation.

Failing the conclusion of an agreement with the owner (see Section 4.2.3), Hydro-Québec shall ensure that maintenance crews include specialized, qualified forestry workers who have technical training and environmental knowledge. Hydro-Québec shall monitor the work and subsequently ensure follow-up to ascertain the success of the intervention.

Before it undertakes vegetation control work, Hydro-Québec conducts an environmental assessment to pinpoint sensitive zones in the environment. A sensitive zone is an entity that must be protected when control work takes place nearby, e.g. a dwelling, a stream, a drinking water intake, a garden, a lake, a fish farm, an orchard or a wildlife habitat. Hydro-Québec shall attribute a protective boundary to all sensitive zones, i.e. a zone in which special measures are taken.

The use of herbicides is always preceded by an environmental study. The study's findings are submitted to the ministère de l'Environnement du Québec, which, following an analysis, issues a certificate of authorization to Hydro-Québec.

Hydro-Québec complies with all measures pertaining to work in forests. When herbicides are applied, in accordance with the *Pest Control Products Act*, the utility uses only chemicals approved by the Pest Management Regulatory Agency (PMRA).

4.2.3 Maintenance of vegetation by the owner

Hydro-Québec may leave it to the landowner to perform mechanical vegetation control and the work required to cultivate or restore the land. The landowner's remuneration shall be equivalent to the average price paid by Hydro-Québec for such work.

4.3 Mitigation measures respecting maintenance

4.3.1 General rules

The following general rules make it possible to mitigate the impact of line maintenance on farms and in woodlands.

- Hydro-Québec must obtain the landowner's permission before using his property outside the right-of-way for the purpose of line maintenance.
- Hydro-Québec must obtain from each owner a list of vulnerable elements on the farm or in the woodland and agree with the landowner on procedures to protect them or at least to attenuate the effects of maintenance measures on them.
- Hydro-Québec shall designate resource persons in its regional offices to provide farmers and forestry producers with technical information on line maintenance.
- Hydro-Québec alone shall be responsible for the implementation of mitigation measures respecting line maintenance on farms and in woodlands.

During maintenance, Hydro-Québec shall apply mitigation measures concerning noise, farm or access roads, fences and gates, surface and underground drainage, traffic on the right-of-way, soil compaction, smoke, dust and other pollutants, and site restoration.

However, it is acknowledged that all of the foregoing measures cannot be complied with in an emergency, for example, in the event of outages caused by a storm or a major equipment failure.

Should property be damaged or crops lost as a result of maintenance work, Hydro-Québec shall compensate the landowner.

4.3.2 General clauses

4.3.2.1 Noise

During maintenance work, Hydro-Québec shall bear in mind the inconvenience caused by noise and make efforts to reduce it. Where noise regulations are in effect, the utility shall comply with them and, to this end, keep the appropriate files up to date.

In areas where animals that are potentially sensitive to noise are raised, e.g. poultry, rabbits and fur-bearing animals, precautions shall be taken to limit strident or sudden noise from dynamiting, aircraft, machinery and maintenance vehicles.

4. Maintenance

Should problems related to noise arise during maintenance work, measures shall be adopted to attenuate its effects.

4.3.2.2 *Farm and access roads*

Hydro-Québec must obtain permission from the owner before using or building an access road outside the right-of-way located on the property in question. The agreement concluded with the landowner shall indicate conditions governing the use of the access road.

When the use of an access road produces dust that is harmful to individuals or the environment, measures shall be adopted to reduce it.

When the maintenance work has been completed, the roads must be restored to their original state or better, using materials of the same nature and size as the materials making up the roads. Under normal use, one year (one freeze-thaw cycle) must elapse before Hydro-Québec's responsibility for restoring the roads lapses.

Paved roads shall be protected from damage and shall be kept clean at all times.

4.3.2.3 *Fences and gates*

After reaching an agreement with the landowner, Hydro-Québec shall install gates or temporary fences inside the right-of-way where necessary to protect crops, livestock and property outside the right-of-way.

Fences inside the right-of-way and running along public access roads must have rigid gates to prohibit unauthorized individuals from entering the right-of-way outside of working hours.

As for electric fences, Hydro-Québec may use one of the following procedures:

- install an arch;
- modify the power supply in order to supply the fence from both sides of the gate.

To install gates, the utility shall:

- shore up posts on either side of the opening to maintain mechanical tension in adjacent spans;
- manually cut the wire and, if it is suitable, use it to build the gate; otherwise, the wire shall be gathered up and replaced with material of equivalent or higher quality to build the gate.

Hydro-Québec shall ensure that the contractor responsible for maintenance properly maintains the gates and keeps them closed at all times, in accordance with directives from the Hydro-Québec official.

Any fence or gate that is cut, removed, damaged or destroyed shall be immediately repaired or replaced with material of equivalent or higher quality.

When the maintenance work has been completed, temporary gates shall be removed, unless an agreement to the contrary is reached with the owner.

If stone or pole fences have to be dismantled, materials shall be stored and re-used when the fence is restored once the work has been completed.

Hydro-Québec shall maintain adequate protection systems for livestock. Any fence needed to keep out particular kinds of animals shall be described in specific mitigation measures, e.g. fences running along the right-of-way or fences that allow animals to cross the right-of-way.

4.3.2.4 *Surface drainage*

Hydro-Québec shall take stock of drainage in the right-of-way install any bridges, culverts, fords or drainage diversions needed to ensure normal, continuous drainage in ditches, trenches or other channels affected by construction.

Hydro-Québec must obtain the landowner's permission before using an existing bridge or culvert and shall properly maintain it and carry out the necessary repairs.

An agricultural engineer or Hydro-Québec's maintenance supervisor must approve any change in surface drainage anticipated for the duration of maintenance work.

Throughout the maintenance work, Hydro-Québec must ensure that surface drainage systems are kept in working order and that ditches are kept free from obstructions.

The culverts that Hydro-Québec installs must be at least 3.5 m long, installed 10 cm below the bottom of ditches and covered with at least 30 cm of earth. Moreover, they must be wide enough to allow water to flow freely.

When a bridge deck is installed, it must cover the banks sufficiently to ensure their stability.

Once the maintenance work is completed, unless an agreement to the contrary is reached with the landowner, Hydro-Québec shall remove bridges and culverts, clean ditches and restore banks to their original state.

4. Maintenance

Before the maintenance work begins, Hydro-Québec shall identify wells and sources of drinking water that may be affected and, if need be, establish specific measures to protect them. Water samples shall be taken prior to, during and after major maintenance work to ensure that the quality of water is unaltered. Should this not be the case, Hydro-Québec shall take the necessary steps to eliminate the cause of contamination.

Hydro-Québec must remove sedimentation in a ditch or waterway resulting from major maintenance work and affecting the normal flow of drainage systems.

4.3.2.5 *Underground drainage*

Before the maintenance work commences, Hydro-Québec shall locate underground drainage systems in the work zone, based on indications supplied by the owner.

During major maintenance work, Hydro-Québec shall ensure that the road in the right-of-way is built between two drains when the latter are parallel to the right-of-way.

On land with low bearing capacity, areas where drains are crossed by roads shall be protected.

Should drains be punctured during excavation, Hydro-Québec must ensure uninterrupted flow in upstream drains and install a plug in the downstream drain to prevent permanent or temporary obstructions. A marker must be left in place until the drain is repaired.

When the excavation is filled, Hydro-Québec shall repair damaged drains and ensure that normal flow resumes in the drainage system repaired, according to MAPAQ standards governing drains. If ruts are created and there is a risk of the drains collapsing, the landowner may demand that they be verified by excavation.

If a damaged drain must be repaired, Hydro-Québec shall notify the landowner so that he can be present during the repair. For extensive repairs, Hydro-Québec or the landowner may request that they be done by a specialized contractor. Both parties must approve all work before backfilling.

In the case of a farm with an underground drainage plan yet to be developed that must be altered because of maintenance work, Hydro-Québec shall have the designer modify the drainage plan at its expense.

The following year, in the spring and fall, Hydro-Québec shall return to the site with the landowner to verify the proper operation of the drainage system affected by the maintenance work.

4.3.2.6 *Traffic on the right-of-way*

This measure applies solely to cultivated land.

Traffic in the right-of-way shall be restricted to one lane 8 m wide. Any change must be submitted to Hydro-Québec for approval.

To reduce the traffic area as much as possible, the road must normally run along the support structures.

Hydro-Québec shall ensure that the road in the right-of-way does not prevent the landowner or occupant from entering neighboring fields. Ruts shall be levelled if they hinder farm operations.

Depending on the season and the nature of the soil, Hydro-Québec shall restrict access by vehicles and machinery that are too heavy to travel on the land without disturbing it.

When the maintenance work has been completed, Hydro-Québec shall remove temporary structures and restore the land to its original state, according to the requirements in Section 4.3.2.2 on farm or access roads.

4.3.2.7 *Soil compaction*

This measure applies solely to cultivated land.

Under certain unfavorable conditions, such as soaked soil, winter thaws and other critical conditions, major maintenance work may compact the soil to a greater or lesser degree, depending upon stoniness, vegetation and soil type. To minimize damage, the following measures are advocated:

- Schedule the maintenance work during seasons when the bearing capacity of the soil is best.
- Restrict access (except in emergencies) to by certain vehicles or machinery when the bearing capacity of the soil is insufficient.
- Use only vehicles or machinery with caterpillar tracks or extra-wide tires.
- Limit traffic to one lane and keep the number of trips to a minimum.
- Use a bearing mat or mattress.
- Suspend certain phases of the work when conditions are unsatisfactory.
- Implement any other relevant method recommended by the agricultural specialist.

When the maintenance work has been completed, Hydro-Québec shall apply the measures in Section 4.3.2.9 on site restoration as needed.

4. Maintenance

4.3.2.8 *Smoke, dust and other pollutants*

Hydro-Québec shall ensure that the maintenance contractor's equipment operates according to the manufacturer's specifications. Should problems arise during maintenance work, Hydro-Québec shall take remedial action such as the application of dust-control products, the installation of filters or the withdrawal of certain equipment.

Equipment must be free of leaking oil, gasoline or other pollutants. Dumping and burying of these products are prohibited. When major maintenance work commences, Hydro-Québec shall give the contractor a used oil recovery log and check it throughout the maintenance project.

In the event that a pollutant is accidentally spilled as a result of a defect or mechanical breakdown, the zone affected must be quickly cordoned off and the product flow stopped using an absorbent material. If need be, the contaminated topsoil shall be removed and replaced with topsoil from an authorized site.

Clean-up, especially at the site of each support structure, shall be an integral part of each major maintenance project. Machinery must be equipped with waste containers.

On farms, no burning or burying of waste or debris from the site shall be permitted. Such refuse must be transported to an authorized dump. In woodlands, waste burning and stump burying may be authorized.

4.3.2.9 *Site restoration*

As soon as possible after major maintenance work, Hydro-Québec shall take measures to restore disturbed property to its original state.

The land shall first be levelled and ruts filled in to obtain a uniform working surface.

Soil samples shall be taken in various places on farms prior to and after maintenance work to ascertain the level of fertility. Depending on the results, Hydro-Québec shall implement one or more of the following measures to promote the quick restoration of crops:

- Work the land using a mould board plow or a chisel plow to the depth desired by the owner (maximum of 25 cm).
- Loosen the soil to the depth desired by the owner (maximum of 15 cm), using techniques appropriate to the soil, e.g. a disc harrow, a roto spader or a spike-tooth harrow.

- Run a chisel plow over the land to the depth desired by the owner (maximum of 40 cm).
- Run a subsoiler¹ over the land to the desired depth, soil and underground drainage conditions permitting. After two growing seasons, the land must be analyzed to ascertain whether its original productivity has been restored.
- Bury organic matter, manure or chemical fertilizer in order to restore the land's fertility, according to the recommendations of the Conseil des productions végétales du Québec (CPVQ) and the owner's crop-rotation practices.
- Remove rocks up to 8 cm in diameter or until conditions are similar to the surrounding land.

All of these operations must be performed when the ground is in the best possible condition and they may be repeated.

Depending on the time of year when restoration work is carried out, the land may be re-seeded according to criteria established by Hydro-Québec and the landowner.

Hydro-Québec must remove temporary structures and installations, such as fences, bridges and ditches, and restore the land and existing installations to their original state.

On sites where the disturbance of soil due to construction may cause erosion, measures shall be adopted to stabilize the affected areas. Such measures shall rely on one or more of the following methods:

- retaining embankments;
- diffusers;
- furrows or diversion ditches perpendicular to the slope designed to channel runoff into areas covered with vegetation;
- levelling and banking;
- gabions, sand bags, grids or mesh;
- any other measure deemed acceptable by the agricultural specialists (typical explanatory plans with technical specifications shall be provided in the most common cases);
- re-seeding;
- mulch.

1. A caterpillar tractor should be used for this operation. The subsoiler must be equipped with variable-spacing colters adaptable to different types of soil. The colters must be equipped with duck-foot shanks.

Hydro-Québec shall have plans drawn up for specific cases.

When maintenance work has been completed, Hydro-Québec's representative and the landowner shall visit the right-of-way and access roads to ensure that all debris has been removed and that the land has been restored to the landowner's satisfaction.

4.4 Incentives to encourage secondary use of transmission line rights-of-way

Under certain conditions, Hydro-Québec shall authorize the secondary use of power transmission line rights-of-way in agreement with the owner. Numerous uses may prove to be compatible with the presence of the lines. Hydro-Québec shall also consider requests from landowners for the uses described below.

4.4.1 *Tree planting*

The landowner may use the power line right-of-way to grow certain kinds of trees, e.g. Christmas trees, in accordance with clearance and maintenance criteria for Hydro-Québec installations.

Hydro-Québec shall provide signs free of charge to be installed and maintained by the landowner to mark off the portion of the right-of-way used for tree planting.

Hydro-Québec undertakes not to intervene for vegetation control, provided that the landowner fulfills his obligations.

4.4.2 *Stump removal*

Hydro-Québec encourages the use of rights-of-way for growing crops. The utility shall contribute to stump removal and the removal of waste wood under the following conditions:

- the right-of-way must border on a cultivated field;
- it must have adequate potential to sustain a crop;
- the landowner must agree to carry out the necessary operations to maintain the crop.

5 Compensation



Compensation of Landowners

5.1 Introduction

This section deals with the financial compensation Hydro-Québec shall pay the owners of property needed for the construction of transmission lines with a rated voltage of 49 kV or more or substations. It covers various facets of overall financial compensation (5.2) and other compensation (5.3), such as professional fees incurred by the landowner, the purchase of land in protected agricultural zones, and interest payments on amounts owed to the landowner.

Such compensation also applies, with the necessary adaptations, to major rehabilitation, renovation and reconstruction projects requiring the replacement of one line with another line, as well as to the permanent dismantling of a power line or a substation subject to an easement.

The rules governing compensation in respect of farms apply to the territory covered by the *Act respecting the preservation of agricultural land and agricultural activities* and defined as an agricultural zone by Québec government order-in-council.

The rules governing compensation in respect of woodlands apply to the territory covered by the *Act respecting the preservation of agricultural land and agricultural activities* and defined as an agricultural zone by Québec government order-in-council and all private Québec forests used for production.

In exchange for the compensation offered in the option, any landowner who grants Hydro-Québec an easement or purchase option must allow Hydro-Québec, as soon as it exercises the option, to enter the right-of-way in question, install its equipment there and begin the construction and installation of power lines, substations or other power system facility, for the purposes and in the manner stipulated in the easement option or deed of sale. Hydro-Québec and the landowner must comply with all of the obligations set forth in the option and the easement agreement or deed of sale.

5.2 Total financial compensation (C_t)

The following formula summarizes the elements to be included when compensation is calculated for easement, damages and inconvenience related to power line construction projects on farms or in woodlands (some of the elements also pertain to the construction of a substation):

$$C_t = C_1 + C_2 + C_3 + C_4 + C_5 + C_6 + C_7 + C_8$$

where:

- C_t is the total financial compensation to be paid to the owner;
- C₁ is the compensation for access to the right-of-way and signing of the easement option;
- C₂ is the compensation for the easement and right of way;
- C₃ is the compensation for the presence of support structures;
- C₄ is the compensation for temporary work space;¹
- C₅ is the compensation for time spent by the owner on certain jobs and assessing construction damage;¹
- C₆ is the compensation for crop losses;¹
- C₇ is the compensation for inconvenience caused by construction;¹
- C₈ is the compensation for a temporary easement.

5.2.1 Compensation for access to the right-of-way and signing of the easement option (C₁)

The easement option is a privately signed legal document through which the landowner cedes to another party (Hydro-Québec) the irrevocable option to acquire a real, unencumbered, perpetual easement for the construction and operation of a power transmission line on a strip of land called the "right-of-way." In exchange, Hydro-Québec, upon exercising the option for a certain price, agrees to acquire the easement for which it pays at the time of signing of the "easement agreement."

1. Elements C4, C5, C6 and C7 apply to rehabilitation, renovation and reconstruction projects.

5.2.1.1 Disturbances and inconvenience

The Hydro-Québec easement officer shall pay each owner \$300 for disturbances and inconvenience when he first visits the owner's premises. During the visit, the Hydro-Québec officer shall obtain the essential information needed to calculate the compensation.

5.2.1.2 Technical information on land

When, prior to the construction of a power line or substation, Hydro-Québec asks for written permission from the owner to carry out technical and geotechnical work other than surveying that requires the use of machinery, vehicles or equipment on the owner's land, the utility shall pay the owner \$300 in compensation.

5.2.1.3 Access to the right-of-way and signing of the easement option

For access to the right-of-way and signing of the easement option on farms and in woodlands, Hydro-Québec pays each landowner compensation based on the market value of the land covered by the easement. Such compensation is paid when the easement option is signed.

Such compensation shall not be less than \$500 and shall be established according to the following formula:

$$P = E_a \left(s_a + \frac{2n_a}{5} \right) + E_f \left(s_f + \frac{n_f}{5} \right)$$

where:

- P is the amount of compensation;
- E_a is the value of the farmland per hectare (minimum value of \$1,235 per hectare);
- E_f is the value of woodland per hectare (minimum value of \$620 per hectare);
- s_a is the area in hectares of the farmland to be brought under easement;
- s_f is the area in hectares of the woodland to be brought under easement;
- n_a is the number of support structures on cultivated land;
- n_f is the number of support structures in a woodland.

5. Compensation

It should be noted that if the area is given in acres, the formula becomes:

$$P = E_a (s_a + n_a) + E_r (s_r + \frac{n_r}{2})$$

5.2.2 Compensation for the easement and right of way (C₂)

5.2.2.1 On farms

The compensation paid for all land subject to an easement shall be equivalent to 100% of the market value of the area required.

An increment of 50% of the market value of land subject to an easement shall be granted in consideration of the small surface area used.

5.2.2.2 In woodlands

Compensation for the easement and right of way in a private forest used for production is based on the value of the woodlands affected, according to generally accepted methods and principles in forestry assessment.

The main criteria for assessing a forest are:

- the specific composition, distribution, development and volume of wood in the forest;
- the local and regional value of forest products in relation to requirements respecting dimension and quality and the use to which the products are put. Tables or lists of the prices used for each region of Québec are published annually (in early July) in the joint plans approved by the Régie des marchés agricoles;
- for the purpose of this agreement, the value of standing timber is estimated at 50% of the roadside price.

The compensation paid to the owner of any woodland subject to an easement is made up of four components.

Forest inventory

Compensation in respect of the forest inventory subject to an easement is equivalent to 100% of the market value of the forest inventory (cleared) of the area in question. An increment of 50% shall be granted in consideration of the small surface area used.

Standing timber

Compensation in respect of standing timber is based on the volume inventoried during the forest inventory.

To this end, timber stands are first identified, then the volume of merchantable timber is assessed, based on the “continuous strip” method or any other recognized method.

In the case of tree plantings, compensation is established using the Bolghari and Bertrand yield tables.

Future harvests

Compensation granted for future harvests that are compromised by the presence of Hydro-Québec structures is equivalent to the current value of future periodic harvests, i.e. a harvest every 40 years, in perpetuity. This value is based on the yield tables in development plans that are discounted at 3.5% on the assumption that the harvest starts at zero following construction of the line. Such volumes shall remain in force until the establishment of new private-forest yield tables officially recognized by the ministère des Ressources naturelles du Québec, the Fédération des producteurs de bois du Québec, and the parties to this agreement.

As for tree plantings, compensation for future harvests shall be established using the Bolghari and Bertrand yield tables.

The value of operational sugar bushes is established according to recognized techniques, based on a minimal tapping diameter of 20 cm. The income approach shall be used to establish the value at the tap by calculating the discounted net income based on a perpetual annual loss and a discount rate of 3.5%. Net income is established according to the following values:

- the average annual maple syrup harvest over the past five years;
- the average adjusted price over the past five years;
- gross income;
- the variable operating expenses recognized by the Comité de références économiques en agriculture du Québec (CREAQ) and specific to sugar bushes. Fixed expenses such as overhead and amortization are not used to calculate net income.

In the case of sugar bushes that are not harvested, compensation is established using the income approach and data recognized by CREAQ. Sugar bushes that are designated as not harvested must offer a tapping potential of at least 150 taps per acre at the time of the assessment. The calculation of net income relies on the same

5. Compensation

procedures as in the case of operational sugar bushes, with the exception of fixed expenses, which are included in the net income of sugar bushes that are not harvested.

Compensation for potential sugar bushes is established using the income approach and data recognized by CREAQ. To be designated "potential sugar bushes", they must be undergoing regeneration and have a density of 150 maple trees per hectare. Net income in perpetuity is considered, which is discounted to take into account the number of years that remain until a diameter of 20 cm is achieved. The calculation of net income relies on the same values as in the case of sugar bushes that are not harvested.

For all types of sugar bush, the value at the tap is based on the status of the sugar bush as a whole.

Damage along the right-of-way

Hydro-Québec shall pay compensation equivalent to 100% of the value of the timber, based on a 5-m strip on either side of the right-of-way, for damage along the right-of-way. In the case of a sugar bush, the compensation shall be equivalent to 100% of the value of the output derived from a 12.5-m strip on either side of the right-of-way. Such compensation entitles Hydro-Québec to cut all trees within the strip that may hinder the operation of the line, without additional compensation.

If, because of the construction of the line, the landowner sustains damage along the right-of-way that exceeds the value of the compensation stipulated in the preceding paragraph, Hydro-Québec shall assess such damage and grant compensation for the excess damage.

In the case of land adjacent to the right-of-way but that is not subject to an easement, Hydro-Québec shall pay the landowner compensation for damage along the right-of-way provided that it obtains the right to cut all trees within the strip that may hinder the operation of the power line. The right to cut timber is covered by an agreement signed by Hydro-Québec and the landowners concerned and is binding on the landowners and their assigns.

5.2.3 Compensation for the presence of support structures (C₃)

5.2.3.1 On farms

On cultivated land, encumbrance resulting from support structures is compensated by taking into account the arable land surface lost, the additional cost of driving around them and the cost of maintaining the uncultivated space. Documents submitted to the UPA¹ indicate the method of calculating such compensation.

The compensation can be paid in two ways:

- in the form of a single payment calculated by using a capitalization rate of 3.5%;
- in the form of an annual payment.

If the parties agree on an annual payment, the amount of the payment is subject to review every five years, bearing in mind the choice of crops. The annuity is calculated by multiplying the amount of the single payment by a rate equal to the interest rate on a 12-month term deposit at the National Bank of Canada. This rate is revised once a year and reflects the interest rate in effect on the last Friday in January. The annuity is transferable to another buyer of the land in question. The annual-payment option may be converted into a single payment at the end of any five-year period or when the ownership of the property is transferred.

5.2.3.2 In woodlands

The owner of a woodland shall receive, as compensation for the presence of support structures, \$100 per support point and anchor point, up to a maximum of \$500 per support structure.

When the initial negotiations take place, Hydro-Québec shall provide the landowner with details of the compensation pertaining to elements C₁, C₂ and C₃.

5.2.3.3 Addition or replacement of support structures

When a support structure is added, the compensation shall be calculated according to the same procedures as in 5.2.3.1 (on farms) and 5.2.3.2 (in woodlands).

If the number of support structures remains the same but their location or dimensions are changed, in the case of a permanent easement on a farm the compensation shall be calculated according to the differential between the old and

1. Hydro-Québec, *Méthode d'indemnisation pour les supports en milieu agricole*, November 21, 1985, 4 pages.
Hydro-Québec, *Compensation pour pertes de récoltes et inconvénients durant la construction*, November 21, 1985, 7 pages.

new situation. The compensation may not be less than \$200 in the case of lines with a voltage of 230 kV or less, nor less than \$500 in the case of lines with a voltage of 315 kV or more.

5.2.4 Compensation for temporary work space (C₄)

This compensation is for the temporary use of a portion of land located outside the right-of-way, excluding access roads, for the purpose of storing material or carrying out work related to power line construction.

During the first year of use, the compensation paid is equivalent to 50% of the market value of the land used, with no minimum on the time of use. In woodlands, the market value is that of the forest inventory (cleared). After one year, the compensation is equivalent to 5% per month. Total compensation may not be less than \$500. Moreover, the woodland owner shall receive the value of the standing timber actually cut.

This compensation is also paid to the owner of any land used for any purpose whatsoever during the stages or studies preceding construction of the line, even if the land is not affected by actual construction work.

Compensation for time spent by the owner of a farm or woodland and for direct damage is paid in addition to the compensation for temporary work space, in accordance with sections 5.2.5 to 5.2.7 (elements C₅, C₆ and C₇).

5.2.5 Compensation for time spent by the owner on certain jobs and assessing construction damage (C₅)

Hydro-Québec shall pay the owner of a farm or a woodland compensation for time spent on certain jobs and on assessing construction damage, according to a scale of fees recognized by the UPA and established by MAPAQ for a professional farm producer. The scale of fees is adjusted annually at the rate in effect on the last Friday of January. The following grid is used to calculate the compensation:

Activity	Time allocated
1. Inspection of construction:	
a) per structure (on farms)	2 h
b) scraping of soil per structure (on farms)	2 h
c) per drain (on farms and in woodlands)	2 h
d) per ditch (on farms and in woodlands)	1 h
e) per fence (on farms and in woodlands)	1 h
f) for special cases: construction in a sugar bush or on a tobacco farm, erosion problems, presence of waterways, and so on	To be evaluated by the construction manager or his representative
2. Settlement of damages	3 h
3. Post-construction visit	4 h

All site visits by the landowner must be made with the permission of the construction manager or his representative. The visitor must comply with safety rules in effect on the construction site.

5.2.6 Compensation for crop losses (C_c)

Compensation for crop losses is calculated by multiplying the quantity lost by the local or regional market price for each crop. In the absence of a local or regional market, the prices and rates of yield established by the MAPAQ – UPA technical committee and recognized by the Régie des assurances agricoles du Québec (RAAQ) shall prevail. A minimum of \$50 in compensation shall be paid.

Where crop losses caused by construction work occur in years subsequent to the one in which the line or substation was commissioned, a Hydro-Québec representative shall assess losses and pay compensation calculated on the same general basis. Should crop losses persist despite reasonable attempts by the landowner to rectify the situation, Hydro-Québec shall identify the cause in collaboration with the landowner and endeavor to find a permanent solution and restore the land's original productivity as quickly as possible.

In the case of crop losses pertaining to biological products, the compensation must also take into account the anticipated delay before cultivation resumes, in accordance with provisions in the applicable certification program.

5.2.7 Compensation for inconvenience caused by construction (C₁)

This compensation covers losses and accidental or other damage sustained by the landowner inside or outside the right-of-way as a result of work carried out by Hydro-Québec or contractors for purposes of line construction.

It covers, for example, the need to run livestock across the right-of-way during construction, problems caused in pastures adjacent to the site, the loss of shade trees, and damage caused to fences, logging roads, buildings and other installations.

Compensation in respect of woodlands is calculated in the same manner as stipulated in 5.2.2.2 (element C₂).

5.2.8 Compensation for a temporary easement (C₃)

A temporary easement is an easement of less than five years in duration that is exercised outside an existing easement. If, during the project planning stage, Hydro-Québec plans to use an easement for five years or more, it must compensate the owner or owners affected according to the procedures for the acquisition of a permanent easement.

The temporary easement agreement, whether or not it is registered, must include a reassignment clause at the conclusion of the stipulated period and at Hydro-Québec's expense. If the removal of temporary structures occurs after the date stipulated in the easement agreement, Hydro-Québec shall pay compensation equivalent to 5% of the market value of the area affected per month of delay.

If a temporary easement must be converted into a permanent easement, the landowner shall receive full compensation for the permanent easement above and beyond the amounts already paid for the temporary easement.

The methods of calculating compensation for a temporary easement are indicated below.

5.2.8.1 Access to the right-of-way and signing of the temporary easement option

Compensation for access to the right-of-way and signing of the temporary easement option shall not be less than \$500. The amount of such compensation is equivalent to 20% of the value of P according to the following formula:

$$P = E_a (s_a) + E_f (s_f)$$

where:

- P is the amount of the compensation;
- E_a is the value of the farmland per hectare (minimum value of \$1,235 per hectare);
- E_f is the value of the woodland per hectare (minimum value of \$620 per hectare);
- s_a is the area in hectares of the farmland to be brought under easement;
- s_f is the area in hectares of the woodland to be brought under easement.

5.2.8.2 Temporary easement and right of way

Compensation for a temporary easement and right of way on farmland is equivalent to 30% of the market value of the area affected per year.

In woodlands, compensation is equivalent to 30% of the market value of the area affected per year. Moreover, the woodland owner shall receive 100% of the value of standing timber cut.

5.2.8.3 Presence of temporary support structures

On farmland, the compensation is equivalent to 20% per year of the amount obtained using the calculation method for permanent support structures (see 5.2.3.1).

In woodlands, the compensation is equivalent to 20% per year of the \$100 per support point and anchor point granted. This amount may not, however, exceed \$100 per year per support structure.

5. Compensation

5.2.8.4 *Other compensation related to a temporary line*

The provisions respecting payments of \$300 for disturbances and inconvenience (see 5.2.1.1) and for technical information on land (see 5.2.1.2) apply to owners affected by a temporary line, except when the owner's land is also affected by the construction of a permanent line in the same project.

If need be, compensation elements C_4 , C_5 , C_6 and C_7 must also be applied (see 5.2.4 to 5.2.7).

5.3 Other compensation

5.3.1 *Compensation for professional fees*

Such fees are reimbursed according to established rates, under an agreement between Hydro-Québec and the landowner.

5.3.2 *Compensation pertaining to a forest management plan*

If woodland subject to an easement is included in a simple or joint forest management plan, Hydro-Québec shall take into account any steps taken by the landowner, investments made in connection with the forest management plan, the work completed, additional yield potential, possible financing penalties, and progress made in the implementation of the management plan.

5.3.3 *Interest payments*

Hydro-Québec shall pay interest on any amount owed to a landowner at the National Bank of Canada prime lending rate (revised annually), plus 1%, at the rate in effect on the last Friday of January.

Interest payable shall be calculated in the following manner:

- Interest on compensation for acquisition of the easement shall accrue beginning 90 days after the date of signing of the easement option.
- With respect to damage covered by element C_7 (see 5.2.7), interest shall accrue beginning 60 days after the date on which Hydro-Québec receives notice to this effect.

- Interest on compensation for crop losses covered by element C_6 (see 5.2.6) shall accrue beginning 30 days after the date on which the crop is normally shipped to market for sale.

5.3.4 Compensation for the purchase of land for substations or permanent access roads

Compensation for the purchase of land for substations or permanent access roads located in protected agricultural zones is established according to one of the following methods:

- Method 1: This method consists in appraising the land as in the case of a line easement and complying with all of the applicable rules (see 5.2.2).
- Method 2: This method consists in using the direct comparison approach (industrial land) with all of the necessary adjustments pertaining to area, services, location, and so on, except for the following aspects:
 - No adjustment is made because the land is located in a green zone rather than a white zone, as stipulated in the *Act respecting the preservation of agricultural land and agricultural activities*.
 - Sales of industrial land used for comparison purposes may take place in the same municipality as the land to be appraised or in neighboring municipalities. Sales that take place in municipalities that are not adjacent may also be considered if they are submitted by either party, provided that they have some degree of comparability with the municipality in which the land to be appraised is located.

The compensation proposed is based on the higher of the two results.

5.3.5 Work carried out by the owner

Hydro-Québec may ask the landowner to perform such work as initial clearing, mechanical vegetation control, preparation for cultivation, and site restoration. The remuneration accorded the owner is equivalent to the average price that Hydro-Québec pays for such work.

5.3.6 *Abandonment of the right-of-way*

If Hydro-Québec ceases to use a right-of-way, it shall relinquish the easements attached thereto. The utility shall take the necessary steps to terminate the easements and assume the fees due, such as those related to quit claims and the publication of notices.

5.4 Conciliation

Should the landowner and Hydro-Québec disagree on compensation in respect of farms and in woodlands, including the assessment of construction damage, the dispute may, at the discretion of either party, be submitted to a conciliator.

Once the draft-design study for a power line or substation has been completed, both parties shall agree upon a list of persons qualified to act as conciliator. Should a disagreement arise, either party may call upon one of the conciliators named in the list, according to procedures to be agreed upon.

The conciliator is responsible for attempting to find an amicable solution to the dispute submitted to him. His recommendations are not binding on either party.

Depending on the conciliator's decision, one of the parties shall assume the cost of the conciliation.

Regional federations of the UPA

Fédération de l'UPA de l'Abitibi-Témiscamingue

970, avenue La Rivière
C.P. 610
Rouyn-Noranda (Québec)
J9X 5C6
Telephone: (819) 762-0833
Fax: (819) 762-0575

Fédération de l'UPA du Bas-Saint-Laurent

284, rue Potvin
Rimouski (Québec)
G5L 7P5
Telephone: (418) 723-2424
Fax: (418) 723-6045

Fédération de l'UPA de la Beauce

2550, 127^e Rue
Saint-Georges-Est (Québec)
G5Y 5L1
Telephone: (418) 228-5588
Fax: (418) 228-3943

Fédération de l'UPA de la Côte-Sud

1120, 6^e Avenue
C.P. 100
La Pocatière (Québec)
G0R 1Z0
Telephone: (418) 856-3044
Fax: (418) 856-5199

Fédération de l'UPA de l'Estrie

4300, boul. Bourque
Rock Forest (Québec)
J1N 2A6
Telephone: (819) 346-8905
Fax: (819) 346-2533

Fédération de l'UPA de la Gaspésie

172, boul. Perron Est
C.P. 9
Caps-Noirs (Québec)
G0C 1C0
Telephone: (418) 392-4466
Fax: (418) 392-4862

Fédération de l'UPA de Lanaudière

110, rue Beaudry Nord
Joliette (Québec)
J6E 6A5
Telephone: (450) 753-7486
1 800 363-1726
Fax: (450) 759-7610

Fédération de l'UPA de l'Outaouais-Laurentides

55, rue Grignon
Saint-Eustache (Québec)
J7P 4X1
Telephone: (450) 472-0440
Fax: (450) 472-8386

**Fédération de l'UPA
de Lévis-Bellechasse**

5185, rue Rideau
C.P. 4000
L'Ancienne-Lorette (Québec)
G2E 5S2
Telephone: (418) 872-0770
Fax: (418) 872-3386

**Fédération de l'UPA
de Lotbinière-Mégantic**

5185, rue Rideau
C.P. 4000
L'Ancienne-Lorette (Québec)
G2E 5S2
Telephone: (418) 872-0770
Fax: (418) 872-3386

Fédération de l'UPA de la Mauricie

230, rue Vachon
Cap-de-la-Madeleine (Québec)
G8T 8Y2
Telephone: (819) 378-4033
Fax: (819) 371-2712

**Fédération de l'UPA
du Centre-du-Québec**

1940, rue des Pins
Nicolet (Québec)
J3T 1Z9
Telephone: (819) 293-5838
Fax: (819) 289-2488

Fédération de l'UPA de la Rive-Nord

5185, rue Rideau
C.P. 4000
L'Ancienne-Lorette (Québec)
G2E 5S2
Telephone: (418) 872-0770
Fax: (418) 872-3386

**Fédération de l'UPA
du Saguenay — Lac-Saint-Jean**

422, rue Racine Est
Chicoutimi (Québec)
G7H 1T3
Telephone: (418) 549-7353
Fax: (418) 543-4873

**Fédération de l'UPA
de Saint-Hyacinthe**

850, boul. Casavant Ouest
Saint-Hyacinthe (Québec)
J2S 7S3
Telephone: (450) 774-9154
Fax: (450) 778-3797

**Fédération de l'UPA
de Saint-Jean — Valleyfield**

6, rue du Moulin
C.P. 1140
Saint-Rémi-de-Napierville (Québec)
J0L 2L0
Telephone: (450) 454-5115
Fax: (450) 454-6918

Hydro-Québec Units

Real estate appraisals

Expertise immobilière

800, boul. De Maisonneuve Est
20^e étage
Montréal (Québec)
H2L 4M8
Telephone: (514) 840-3000, ext. 4912
1 800 257-0753
Fax: (514) 840-4018

TransÉnergie

Transport Ouest

Complexe Desjardins
9^e étage
C.P. 10000
1251, rue Jeanne-Mance
Montréal (Québec)
H5B 1H7
Telephone: (514) 289-5493
Fax: (514) 289-5496

Transport Est

430, rue Ardouin
Beauport (Québec)
G1C 5Y9
Telephone: (418) 664-2400, ext. 4400
Fax: (418) 831-4412

Transport Nord

1400, rue de la Manic
C.P. 5020
Chicoutimi (Québec)
G7H 5H9
Telephone: (418) 696-3700
Fax: (418) 696-3961

Transport Sud

5250, rue Armand-Frappier
Saint-Hubert (Québec)
J3Z 1G3
Telephone: (450) 443-5000, ext. 5011
Fax: (450) 443-5040

Schedule

Future harvest yields from private forests

Future harvest yields from private forests
(volume after 40 years, in net apparent cubic metres)*

Region of Québec	Type of private forest**										
	FS	FF	CS	SHI	SM	MS	HIS	M	MHT	MHI	HI
La Pocatière	189.7	172.2	203.2	186.0	234.0	192.0	186.0	175.5	222.9	216.7	187.8
Nicolet	181.9	193.5	191.6	184.0	218.0	190.0	176.0	152.8	231.2	171.3	111.5
Eastern Townships	183.8	191.6	195.5	184.0	224.0	176.0	188.0	187.8	222.9	161.0	144.5
Beauce	180.0	187.7	193.5	178.0	242.0	190.0	176.0	198.2	225.0	177.5	150.7
Lower St. Lawrence — Gaspésie	172.2	183.8	187.7	178.0	226.0	184.0	164.0	169.3	198.2	189.9	179.6
Saguenay	120.0	178.0	118.0	140.0	128.0	128.0	138.0	109.4	231.2	216.7	165.1
Mauricie	152.9	209.0	168.4	186.0	240.0	242.0	156.0	183.7	264.2	258.0	140.4
Québec City	137.4	178.0	135.5	168.0	218.0	196.0	148.0	227.1	245.6	272.5	167.2
Montréal	178.0	150.9	150.9	166.0	254.0	198.0	184.0	185.8	216.7	243.6	140.4
Abitibi	110.3	104.5	127.7	152.0	0.0	0.0	116.0	113.5	99.1	0.0	130.0
Laurentians	220.6	218.7	240.0	234.0	276.0	276.0	222.0	258.0	256.0	208.5	194.0
Pontiac	183.8	174.2	224.5	226.0	270.0	284.0	204.0	286.9	235.3	210.6	227.1
Labelle	209.0	222.5	234.2	216.0	258.0	266.0	204.0	270.4	256.0	185.8	200.2
Gatineau	201.3	187.7	269.0	242.0	268.0	274.0	208.0	241.5	247.7	237.4	216.7

* To calculate volume after 30 years:

Annual growth rate: 3%

Conversion factors: 1 solid cubic metre of softwood = 1.5 apparent cubic metres

1 solid cubic metre of hardwood = 1.6 apparent cubic metres

Rate of reduction from volume of gross merchantable timber to volume of net merchantable timber: 4%

** FS: Fir-Spruce
 CS: Cedar-Softwood
 SM: Softwood-Maple
 MS: Maple-Softwood
 M: (Sugar) Maple
 MHT: Maple-Tolerant hardwood
 HI: Intolerant hardwood
 FF: (balsam) Fir
 SHI: Softwood-Intolerant hardwood
 HIS: Intolerant hardwood-Softwood
 MHI: Maple-Intolerant hardwood

Source : Fédération des producteurs de bois du Québec and ministère des Ressources naturelles du Québec.

Produced by the Vice-présidence
Affaires corporatives et Secrétariat général
Hydro-Québec

First edition 1986
Second edition 1989
Third edition 1999

Legal deposit- 4th quarter 1999
Bibliothèque nationale du Québec
National Library of Canada
ISBN 2-550-35377-3

2000G543

