



LE DIRECTEUR GÉNÉRAL  
DES ÉLECTIONS DU QUÉBEC

# **Characteristics of a compensatory mixed member voting system:**

## **Report of the Chief Electoral Officer**

### **Summary**

**December 2007**

## **Characteristics of a compensatory mixed member voting system: Report of the Chief Electoral Officer**

On December 21, 2006, the Government of Québec entrusted the Chief Electoral Officer with the mandate of analyzing the characteristics of a possible compensatory mixed member voting system and of submitting his opinion to the government, in order to determine the effects of the possible changes that would result from such a system. This mandate was conferred on the Chief Electoral Officer in accordance with section 485 of the Election Act, which stipulates that he may be consulted by the government about any legislation pertaining to elections.

The characteristics that the Chief Electoral Officer was asked to analyze are as follows:

- The type of compensation;
- The representation territory;
- The numerical criteria related to the delimitation of electoral divisions;
- The establishment of two exceptional electoral divisions;
- The number of votes casted by electors;
- The alternation of women and men on the lists of candidates of the parties;
- Dual candidacies or single candidacies;
- Financial incentive measures seeking to increase the representation of women and ethnocultural minorities.

The Institution notably chose to examine the impacts of these various characteristics on the proportionality of the results, on the representation of the regions, on the representation of third parties, and on the representation of women and ethnocultural minorities.

In addition to the aforementioned characteristics, the Institution deemed it advisable to report on its analyses concerning polling day, fixed-date elections and the number of Members in the National Assembly.

The Chief Electoral Officer carried out his analyses based on the number of members stipulated in the Draft Bill to replace the Election Act, namely 127 members in all, including 77 division members and 50 list members.

### **A theoretical model and a statistical simulation study**

As part of the mandate entrusted to the Chief Electoral Officer, the government requested his opinion on three types of compensation discussed during the work of the Special Committee on the Election Act. In order to analyze the differentiated effects of these three types of compensation, the Institution decided to develop a “theoretical model”. It preferred this approach due to the neutrality and impartiality inherent to the analyses stemming from such a model, in comparison with the analyses that might result from the use of past Québec election results. It is important that the Institution makes sure that the results of its analyses cannot lead to possible partisan interpretations.

Without being actual election data, the various parameters of the theoretical model were established on the basis of the electoral and political reality in Québec over the last few years and are sufficiently realistic to permit the interpretation of the results of statistical simulations. In order to ensure the validity of the parameters and the rigour of the theoretical model that would be used in the simulations, the Chief Electoral Officer asked experts to express an opinion on the Institution’s approach and to validate its choices. Two political scientists, namely Réjean Pelletier of Université Laval and Manon Tremblay of the University of Ottawa, as well as a mathematician, Stéphane Rouillon, served as external consultants for this aspect of the mandate.

The Chief Electoral Officer requested the services of the Institut de la statistique du Québec (ISQ) to carry out a statistical simulation study on the basis of the previously defined theoretical model.

## **Consultations held in Québec and international experience**

The Institution wanted to obtain the greatest possible insight on the work carried out in Québec in recent years on the reform of the voting system. As a result, the Institution reviewed all of the available documentation on the Estates General on the Reform of Democratic Institutions and the work of the Special Committee on the Reform of the Election Act. A literature search also made it possible to bring together the writings of political scientists, university researchers, and other specialists having studied voting systems around the world as well as on the experience of countries or States having a mixed member or proportional voting system.

## **Analysis of the Chief Electoral Officer**

The effects of the various voting systems are not neutral. The characteristics of these systems reflect political choices and result in equally political consequences. Convinced that the choice of a voting system is likely to influence the political life and organization of Québec, the Chief Electoral Officer believes that it is up to citizens and elected representatives to make this choice.

In recent years, the Chief Electoral Officer has stayed out of the debates on the reform of the voting system and has endeavoured to demonstrate the appropriate reserve in this respect. The Institution wanted, and continues to want, to preserve its neutrality and its impartiality, which are essential in order to play its role as administrator of the electoral system and arbiter of democracy.

It was in this spirit that the Chief Electoral Officer received and carried out the mandate that the Government of Québec entrusted to him last December. The purpose of this report is not to comment on the choice of the voting system *per se* or to express an opinion on a procedure in particular. Instead, this report analyzes the characteristics of a compensatory member voting system, by presenting their differentiated effects, their advantages and their drawbacks.

# Characteristics of a compensatory mixed member voting system and results of the statistical simulation study

## Type of compensation

The type of compensation represents the first element of a compensatory mixed member voting system analyzed by the Chief Electoral Officer. Three possible types of compensation were discussed during the work of the Special Committee on the Election Act, namely national compensation, regional compensation and national compensation with regional redistribution.

In the case of **national compensation**, the compensatory seats are attributed to each party at the national level. Each party submits a national list of candidates, a certain number of whom can be declared elected and attributed list seats according to precise attribution rules. The total percentage of votes obtained by each party at the national level serves as the basis for the calculation.

As for **regional compensation**, the attribution of compensatory seats takes place at the regional level. Each party submits a regional list of candidates, a certain number of whom can be declared elected and attributed list seats based on the total percentage of votes obtained by each party in each region. List members are members whose territorial affiliation corresponds to a region bringing together a more or less high number of electoral divisions.

**National compensation with regional redistribution** is a hybrid form of the two previous types of compensation. It confers a territorial affiliation on list members, while producing very proportional results. The compensation procedure takes place in two steps:

- First, the percentage of votes obtained by each party at the national level is used to determine the total number of compensatory seats that will be allocated to each party.
- Secondly, for a given party, the percentage of votes obtained in each region is used to distribute among the regions the compensatory seats

allocated during the first step. As in the case of regional compensation, the lists of candidates are regional and the list members have a territorial affiliation corresponding to a region bringing together a certain number of electoral divisions.

The statistical simulation study shows that national compensation and national compensation with regional redistribution provide more proportional results and promote the representation of small political parties. In fact, the statistical simulations reveal that if the territory were delimited in 9 regions, the results would be almost as proportional as if the situation were that of compensation at the national level.

The statistical simulations also reveal that the number of regions or electoral districts has major effects on the representation of small political parties. A small number of regions favours political pluralism and hence a fairer representation of small parties.

### **Calculation methods**

In proportional systems and mixed member voting systems, the way in which list seats are attributed to political parties is based on a very precise calculation method. The choice of a given calculation method over another one can have a tangible impact on the sharing of seats among political parties.

The calculation method has little influence if the compensation takes place at the national level. However, the methods produce very different results when they apply to a regional compensation.

As part of the mandate entrusted to the Chief Electoral Officer, the committee of experts having validated the parameters of the theoretical model chose to examine the D'Hondt, Droop and Hare calculation methods.

In fact, the choice of a calculation method is linked to the results that the architects of an electoral system wish to obtain. If they favour the proportionality of the results and political pluralism, they will decide in favour of the Hare

method. If they are seeking instead to give advantage to the big parties while placing less importance on the proportionality of the results, they will prefer the D'Hondt method. Finally, if architects are looking for a compromise formula, they will opt for the Droop method. This choice takes on an eminently political character in the establishment of an electoral system.

The statistical simulation study showed that the Hare method produces the most proportional results, followed by the Droop method. As for the D'Hondt method, it produces the greatest distortions. The simulations also reveal that the Hare method, in producing the most proportional results, favours the representation of small parties.

### **Number of votes cast by electors**

A compensatory voting system can function in a one-vote or two-vote context. Persons who favour a poll where the elector has two votes maintain that third parties would be disadvantaged by a one-vote poll and that the second vote allows electors to express their preference as to the party of their choice, whereas the first vote allows them to express their preference regarding the candidate.

Advocates of one-vote polls recommend this approach mainly due to its simplicity and the resulting lower number of rejected ballot papers.

The statistical simulation study indicates that the number of votes cast by the elector affects the proportionality of the election results. This finding is basically linked to the representation threshold and to the transfer of votes between big parties and small parties, "split voting", which occurs when the elector has two votes. Due to "split voting", the small parties that appear among the parameters of the statistical simulation study obtain enough support to exceed the 5% representation threshold, which makes the results more proportional and favours their representation.

## **Single or dual candidacies**

In a mixed member voting system, the expression “single candidacy” refers to the fact that candidates running in an election are not able to run for office both in an electoral division and on party lists. As for “dual candidacy”, it refers to the possibility of being a division candidate and a list candidate at the same time. In actual fact, there are three possibilities: mandatory dual candidacy, optional dual candidacy and prohibited dual candidacy, also known as single candidacy.

In the case of mandatory dual candidacy, all candidates experience the same type of election campaign. It is costly for political parties because they must present local candidates to compete for list seats. Mandatory dual candidacy penalizes small parties, which have more limited resources and which may have difficulty recruiting candidates to campaign in a large number of electoral divisions. However, the advantage of mandatory dual candidacy lies in the fact that all candidates, whether they are running for a list seat or a division seat, have the possibility of obtaining field experience in an electoral division.

As for optional dual candidacy, it offers political parties and candidates freedom of choice. This is the most common formula in compensatory mixed member systems. It generates fewer expenses, and list candidates are not penalized when they decide to run for a division seat. However, with optional dual candidacy, some elected members will have no base in an electoral division if they campaigned for the party only.

Finally, some stakeholders in favour of a single candidacy consider that division candidates must not be elected from party lists if they lose their election at the division level. Other stakeholders believe that list candidates should instead focus their efforts on national or regional politics.

## **Representation threshold**

The representation threshold, also known as the eligibility threshold, is the minimum percentage of votes that a party must obtain to have access to compensation seats. This threshold may be set in the legislation or be

determined by the number of available seats in each electoral region (implicit threshold or *de facto* threshold).

Statistical simulations show that the setting of a threshold has a direct impact on the proportionality of the results: the higher the threshold, the less the results will be proportional and the harder it will be for small parties to obtain representation in the legislative assembly.

The following table presents the implicit representation threshold according to the number of compensation regions:

<b>THEORETICAL IMPLICIT THRESHOLD FOR ALL TYPES OF COMPENSATION</b>				
<b>Compensation</b>	<b>Number of compensation regions</b>	<b>Min.</b>	<b>Average</b>	<b>Max.</b>
National	None	-	0.8%	-
Regional	9 regions with equal populations	6.7%	7.1%	7.7%
	9 regions with populations that are not equal	3.3%	9.2%	16.7%
	17 regions	7.1%	15.6%	25.0%
	26 regions	16.7%	20.9%	33.3%

### **Type of lists**

In those States having a proportional system or a mixed member system, citizens elect a portion or all of the members from lists submitted by the political parties. Two types of lists exist: so-called closed or “blocked” lists, and open lists.

A closed or blocked list means that the names of the candidates and the order in which they appear on the list were determined ahead of time by the party. As a result, following the addition of the votes, if a party is entitled to three list seats, the three candidates whose names appear at the top of the list will obtain the seats attributed to the party. Most of the world’s mixed member or proportional systems rely on this type of list.

In contrast, an open list allows electors to vote not only in favour of a party, but also to choose from among the candidates that appear on the list of this party. The possibility of voting for several candidates on the lists of different parties is known as panachage.

In the eyes of several observers, closed lists offer the advantage of allowing an alternation between female and male candidates and of placing candidates from minorities or the regions in a favourable position. However, open lists give electors greater freedom of choice. The following table presents a summary of the effects observed during the statistical simulation study.

<b>STATISTICAL SIMULATION STUDY - SUMMARY OF THE EFFECTS OBSERVED</b>				
<b>Factors</b>	<b>Proportionality of the results</b>	<b>Representation of small parties</b>	<b>Representation of the regions</b>	<b>Representation of women</b>
Type of compensation	Yes	Yes	N/A*	N/A*
Number of compensation regions	Yes	Yes	N/A*	N/A*
Calculation method	Yes	Yes	No	N/A*
Representation threshold	Yes	Yes	No	N/A*
Number of votes cast	Yes	Yes	No	N/A*
Alternation of men and women on the lists	No	No	No	Yes

\*The simulations did not make it possible to check the effects of the type of compensation and the type of delimitation on the representation of the regions. Similarly, they did not show the effects of the type of compensation, the number of compensation regions, the calculation methods, the representation threshold and the number of votes cast by the elector on the representation of women.

## **Delimitation of the territory**

In a representative democracy, the division of the territory for electoral purposes takes on great importance. In conjunction with the voting system, this division makes it possible to ensure the effective representation of the population and to translate the will of the electors into seats in the legislative assembly.

Starting from the premisses set out in the Draft Bill to replace the Election Act, the Chief Electoral Officer believes that the process for delimiting the 75 single-member seats of the mixed member system would be similar to the process currently in effect, except that instead of delimiting 125 electoral divisions, the Commission de la représentation électorale should delimit 75 divisions, to which two exceptional divisions would be added. Like the federal electoral map, which contains 75 Québec ridings, the area of the electoral divisions would increase considerably.

While at first glance the use of the Québec portion of the federal electoral map may seem advantageous, it would entail certain major drawbacks. Indeed, as the federal map has 75 ridings and not 77, as stipulated in the Draft Bill to replace the Election Act, the boundaries of the divisions adjacent to the exceptional electoral divisions would necessarily be different from those of the federal map. As a result, a delimitation operation would have to be carried out all the same.

Moreover, from the perspective of having the boundaries of compensation regions respect as much as possible those of the administrative regions, a delimitation should be made for this purpose. Indeed, neither the federal map nor the current provincial map respects the boundaries of the administrative regions.

### **Total population or registered electors?**

Based on the analyses made by the Chief Electoral Officer, the use of the number of registered electors as a calculation basis for making the delimitation offers advantages from the standpoint of maintaining the current political weight of the regions. Simply changing the database used for the delimitation of the

electoral map could result in a different distribution of the electoral divisions on Québec's territory.

Currently, the delimitation of Québec's electoral map is done on the basis of the number of electors registered on the permanent list of electors. The Geographical Information System of Élections Québec (Système d'information géographique d'Élections Québec) set up by the Chief Electoral Officer is highly sophisticated. This system makes it possible to pinpoint on a daily basis each elector by domicile address segment.

The Geographical Information System of Élections Québec provides an accurate image of the electoral population every day of the year. It contains the most accurate, the most exhaustive, the most geographically precise and most up-to-date data.

### **Boundaries of the administrative regions of Québec and boundaries of the compensation regions**

During the work of the Special Committee on the Election Act, several stakeholders suggested that the compensation regions of a possible compensatory mixed member voting system should respect the boundaries of the administrative regions of Québec. The Chief Electoral Officer analyzed this possibility. However, there are major differences in the administrative regions at the demographic level. Indeed, some administrative regions would have fewer seats than certain electoral districts proposed in the Draft Bill to replace the Election Act. Consequently, the Chief Electoral Officer made three other possible delimitations of the compensation regions.

The first delimitation, which comprises 15 compensation regions, was established with a view to respecting as much as possible the administrative regions of Québec. Two groupings of administrative regions were made, namely the Abitibi-Témiscamingue region with that of the Nord-du-Québec and the Saguenay-Lac-Saint-Jean region with that of the Côte-Nord.

The second delimitation, which includes 17 compensation regions, proposes splitting up the Montérégie and dividing Montréal into three separate regions, in addition to grouping the Gaspésie–Îles-de-la-Madeleine region and that of the Bas-Saint-Laurent. Without this grouping, these latter two regions would have obtained only one compensation seat.

Finally, the third delimitation presents 9 major regional units respecting as much as possible the boundaries of the administrative regions. The objective of this delimitation is to create bigger compensation regions, offering a greater number of compensation seats and hence likely to favour the proportionality of results and political pluralism, while ensuring a territorial base for list members. This delimitation represents an interesting compromise between compensation at the national level and regional compensation.

Maps showing these three delimitations are included in the Chief Electoral Officer's report.

### **Numerical criteria**

The Draft Bill to replace the Election Act proposed setting at  $\pm 15\%$  the numerical divergence permitted for the delimitation of the 75 electoral divisions of a possible mixed member system.

The Chief Electoral Officer applied the  $\pm 15\%$  criterion to the administrative regions and was able to ascertain that certain exceptional cases may arise. The Gaspésie region would already find itself in an exceptional situation. Moreover, three other regions would also be in an automatic exceptional situation within 5 to 15 years.

A similar analysis was made on the basis of the  $\pm 25\%$  criterion. It offers greater latitude for delimitation purposes and would produce fewer exceptions.

The Chief Electoral Officer also considered another approach for the delimitation of divisions and compensation regions. Under this approach, the delimitation of the divisions included in a compensation region would be made on the basis of a

regional population average and not that of the national average. The effect of establishing a regional average would be to ensure each compensation region the same leeway for the delimitation of its single-member seats. This approach would make it possible to respect natural communities more and to ensure the effective representation of electors.

### **Number of MNAs**

An analysis of the evolution of the number of Members in the National Assembly in relation to Québec's population growth since the early 1950s reveals that the ratio of constituents represented by a Québec MNA has risen considerably over the years.

While Québec MNAs must represent a greater number of constituents, an analysis of their fields of intervention shows that the workload of MNAs has continued to grow, whether they represent an urban, a rural, a metropolitan or a remote division.

The Chief Electoral Officer has also compared Québec's situation with that of other Canadian provinces and certain sub-national States abroad. The research reveals that the average number of constituents per elected representative in the 13 Canadian provinces and territories, the 50 American States, the 16 German Länder and the 8 Australian States and territories, namely in 87 sub-national entities in all, stands at 47,724, i.e. approximately 13,500 fewer constituents per elected representative than the Québec ratio. In addition, in these 87 entities, an elected representative covers on average 5,481 km<sup>2</sup>, whereas an MNA covers on average an area 2.25 times greater with his 12,227 km<sup>2</sup> per MNA. Finally, the Chief Electoral Officer examined various methods used around the world to delimit electoral divisions.

## Representation of women and ethnocultural minorities

### Financial incentive measures

The Draft Bill to replace the Election Act made provision for an increase of the annual allowance on the basis of the female candidates who ran and the candidates from ethnocultural minorities who ran, as well as an increase in the reimbursement of election expenses on the basis of the female candidates who ran and were elected and the candidates from ethnocultural minorities who ran and were elected. Following the work of the Special Committee, the Minister responsible for the Reform of Democratic Institutions raised the idea of incentive measures dealing solely with the increase of the annual allowance based on the candidates who were elected.

In order to evaluate the financial impacts of the two financial incentive measure formulas, namely the one stipulated in the Draft Bill to replace the Election Act and the one mentioned by the Minister in his letter of December 21, 2006, the Chief Electoral Officer carried out financial simulations by applying the data of the theoretical model to parties and candidates. He also identified the advantages and drawbacks of the various financial incentive measures considered. The following table presents the results of the financial simulations made for the measures concerning the representation of women.

<b>FINANCIAL IMPACTS OF THE INCENTIVE MEASURES ON A FOUR-YEAR ELECTION CYCLE (REPRESENTATION OF WOMEN ONLY)</b>			
<b>Maximum potential of the formula of the Draft Bill to replace the Election Act</b>		<b>Maximum potential of the formula entailing the increase of the annual allowance on the basis of elected candidates only</b>	
\$3,011,284		\$1,689,172	
<b>Application of the two formulas to the data of the theoretical model</b>			
<b>1<sup>st</sup> formula</b>		<b>2<sup>nd</sup> formula</b>	
First election scenario	Second election scenario	First election scenario	Second election scenario
\$1,491,966	\$1,508,492	\$810,800	\$689,172

The increase of the annual allowance on the basis of the female candidates who ran entails several advantages, including that of being a recurrent incentive measure and rewarding the effort and not only electoral success. This measure is likely to encourage parties to recruit women and representatives of minorities and would potentially benefit all political parties, even small parties. Moreover, an incentive based on the annual allowance would allow political parties to adopt action plans seeking to increase the representation of women and ethnocultural minorities. This flexible and easy-to-apply method would facilitate reporting on the actions taken by parties to recruit and train more women and representatives of minorities. However, this increase could be granted without necessarily achieving the objective of increasing the number of women in the National Assembly.

The increase of the annual allowance on the basis of the elected female candidates and the elected candidates coming from minorities rewards electoral success and not necessarily the effort made by parties to recruit such candidates. Only those parties that succeed in having women and representatives of minorities elected could benefit from this increase, hence mainly the big parties.

The increase of the reimbursement of election expenses is an incentive for the local authorities of parties. It is likely to encourage them to solicit the candidacies of and support the campaigns run by women and by representatives coming from ethnocultural minorities. The increase of the reimbursement of election expenses can also favour small parties. However, it can create two categories of female candidates, namely those whose local authority benefits from an increased reimbursement following the effort made by their party, and those whose party will not have presented a sufficient percentage of women. In addition, by making it possible to anticipate a higher percentage of reimbursement of election expenses, this measure may encourage candidates to go into debt.

It is also important to mention that the additional sums paid in the form of an increase of the reimbursement of election expenses would first be used to pay off the loans contracted for election expenses, and not to invest in an action plan

seeking to increase the representation of women and minorities. Finally, the increase of the reimbursement of election expenses would make more difficult reporting on the actions taken to promote the representation of women and ethnocultural minorities.

### **Alternation of women and men on the lists**

Based on the statistical simulation study, the criterion of the alternation of female and male candidacies, together with the obligation to put a female candidacy at the top of 50% of the lists of political parties, has a direct effect on the representation of women. The imposing of this twofold criterion makes it possible to increase the percentage of women elected from lists. This finding corroborates the foreign experience on this subject.

## **Polling day and fixed-date elections**

### **Polling day**

In his report, the Chief Electoral Officer reiterates the proposal that he made in 2004, namely to hold elections on a Sunday rather than on a Monday.

Holding elections on a Monday leads to difficulties in recruiting election officers and volunteers for political parties. Far from diminishing, these difficulties have only grown as the years have passed. The holding of the poll on a Monday also poses major organizational and logistical problems, insofar as the choice of schools as polling places requires that school authorities give children the day off. Even though students have the day off on polling day, a growing number of schools offer daycare services. Moreover, holding the poll on a Sunday would attenuate the difficulty that some businesses face owing to the obligation to grant their employees four consecutive hours to vote.

Similarly, surveys conducted in 2004 and 2007 with electors reveal that generally, the choice of Sunday instead of Monday as polling day would not have a significant impact on voter turnout. Certain categories of electors, in particular

young people from 18 to 24 years of age, show a marked preference for voting on Sunday. Recent studies have concluded that young people are among those people who vote the least. Elections on Sunday could thus promote voting by young people.

According to a consultation held by the Chief Electoral Officer in 2004, groups representing handicapped persons and the elderly, among others, mentioned that holding the poll on a Sunday rather than on a Monday would facilitate the exercise of the right to vote for these clientele. Finally, at the end of its work, the Special Committee on the Election Act emphasized that a majority of stakeholders supported the idea of holding elections on a Sunday rather than on a Monday.

The Chief Electoral Officer is of the opinion that if general elections were held on a Sunday, the election period should be extended by a few days. This would notably allow the electoral administration to have greater latitude to ensure in-home voting services and voting services in public and private residential facilities.

### **Fixed-date elections**

The Chief Electoral Officer finds that a consensus exists in Québec in favour of fixed-date general elections. This consensus was voiced during the work of the Special Committee and during the surveys conducted among citizens in recent years.

Fixed-date general elections would notably make it possible to reduce the costs associated with the holding of general elections by facilitating, among other things, the planning of the organization of polls. Similarly, all of the preparatory activities that the Institution usually carries out during the third year of the electoral cycle could be done at a better cost if the exact date of the poll were known ahead of time.