

# Direction

## du transport routier

## des marchandises

### The revaluation of the load restrictions in thaw period

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  - Study of impact of load restrictions in thaw period on the economy of the trucking industry
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# THE THAW PERIOD IN QUEBEC

- Load restrictions are imposed on all the public roads.
- Transport Minister by order published to the Gazette establishes zones and dates when the traffic of vehicles is restricted.
- These dates and zones are beforehand determined from the readings of about 90 frost tubes scattered on the Quebec territory.

# THE THAW PERIOD IN 2002



**Zone 1: in March  
11th on May 11th**

**Zone 2: in March  
18th on May 18th**

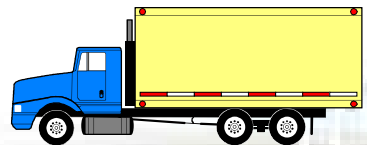
**Zone 3: in March  
25th on May 25th**

**These dates can be anticipated or delayed.**

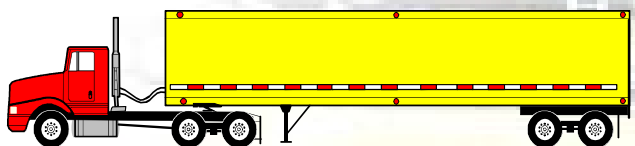
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# THE LOAD RESTRICTIONS

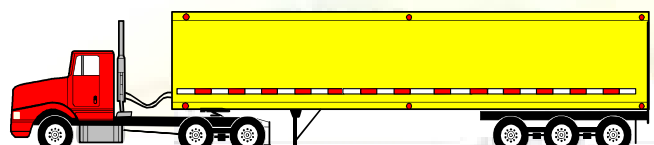
**normal      thaw      %**



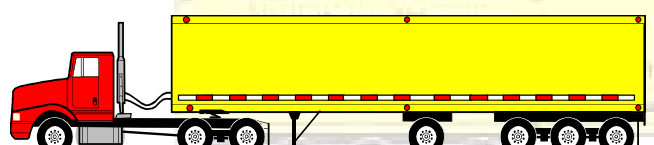
25,25      22,75      10



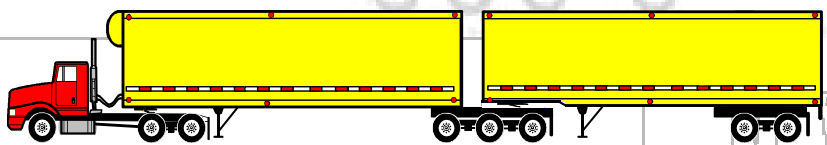
41,5      36,5      12



49,5      43,0      12



55,5      48,5      13



62,5      57,5      8

[ X 1000 kg ]



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# CONTEXT

- Quebec undertook, with the industry and the other Canadian administrations, the revaluation of load restrictions on its territory to take into account one of the recommendations of the Task Force on Vehicle Weights and Dimensions Policy.
- This recommendation said:

“ The major interprovincial routes within the designated highway system of the national agreement should not be subject to scheduled weight limit reductions in the spring thaw period.”

# EVALUATIONS

- Realizations of two studies:
  - Evaluation of the costs for the economy of the trucking industry related to load restrictions in thaw period (external study : Camtech / Génivar)
  - Estimation of extra costs for road maintenance if we remove load restrictions (internal study: Roads Service department)
- Comparison of the results of both studies according to various scenarios (time frame, severity of the limitations, etc.).



# STUDY OF IMPACT OF LOAD RESTRICTIONS IN THAW PERIOD ON THE ECONOMY OF THE TRUCKING INDUSTRY



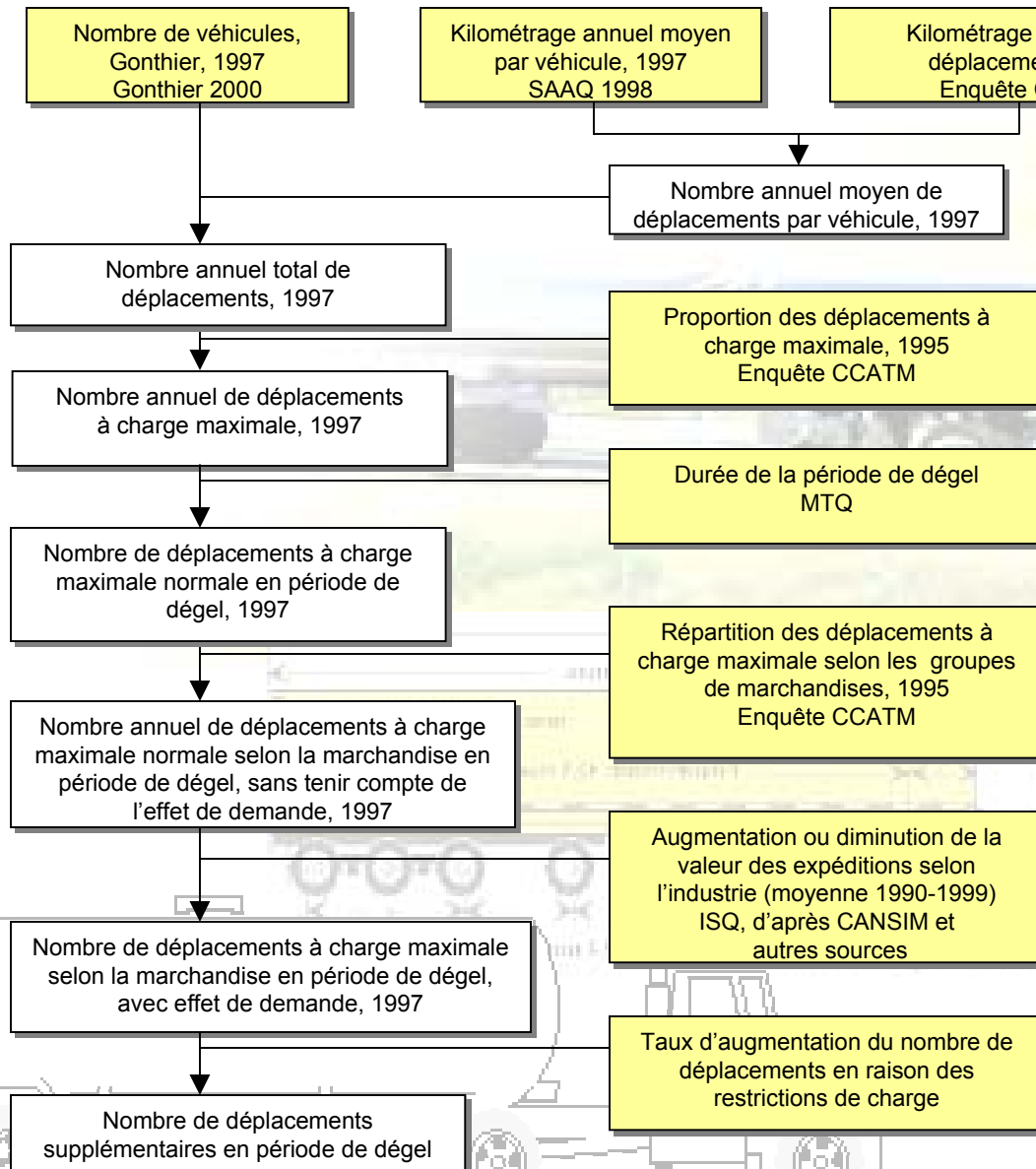
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# MANDATE AND OBJECTIVES

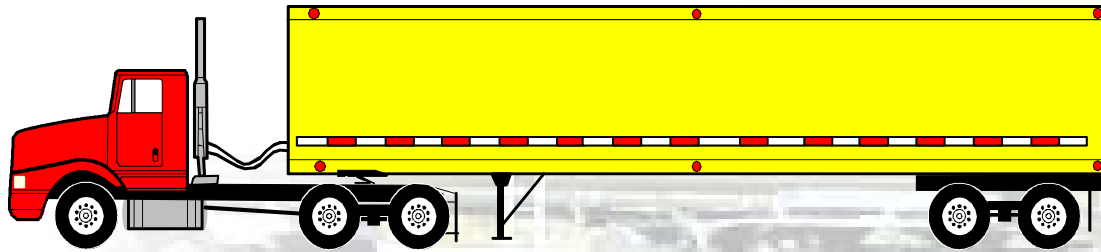
- Collect the point of view of carriers and shippers;
- Quantify the costs of trucking associated to load restrictions;
- Identify the main sectors of economic activity affected;
- Estimate the tonnage of the goods and the configurations of corresponding vehicles affected by the limitations;
- Develop a model for several scenarios.

# DEVELOPED MODEL



Calculation of the number of supplementary movements

# BASIC CONCEPT OF THE MODEL



X 1000 kg

**Period**

	GVW	payload	GVW	payload
normal	5,5	18	18	41,5
thaw	5,5	15,5	15,5	36,5
reduction	0	14 %	14 %	12 %

**period**

**load**

**payload**

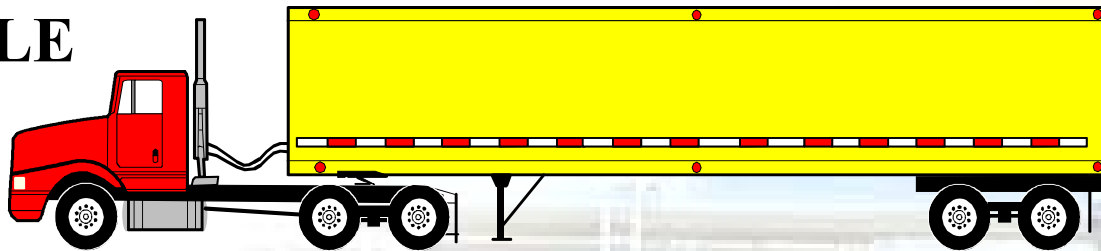
**# vehicles**

normal	106	26,4	4
thaw	106	21,4	5

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# COST OF A MOVEMENT

## EXAMPLE



Average movement  
of 613 km

## Variable costs

Vehicles	= 146,53 \$
Maintenance	= 152,63 \$
Driver	= 166,06 \$
Fuel	= 145,67 \$
	<u>610,88 \$</u>

## Fixed costs

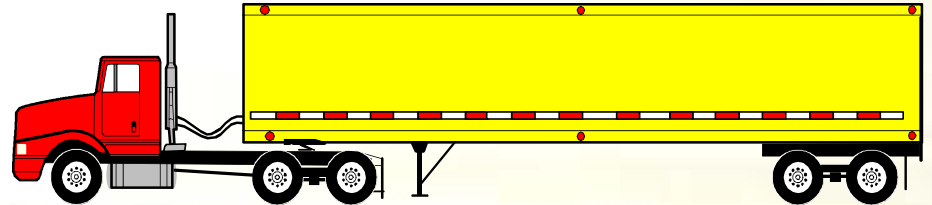
Driver	= 29,12 \$
Preventive maint.	= 13,40 \$
Immatriculation	= 13,34 \$
Administration	= 61,18 \$
	<u>117,05 \$</u>

**TOTAL : 727,93 \$**

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# SUPPLEMENTARY COSTS

## EXAMPLE



- A: Annual average mileage by vehicle = 99 366 km
- B: Average mileage by movement = 613 km
- C: Total number of vehicle = 14 730 vehicles
- D: Proportion of movement with maximum load = 26 %
- E: Proportion of the year in thaw = 17,3 % (63/365)
- F: Payload in normal period = 26 400 kg
- G: Payload in thaw period = 21 400 kg
- H: Part of the mode of increase of the number of movements = 82 %
- I: Cost of the reference movement = 727,93 \$
- J: Factor of seasonal and adaptation = 0,914



$$\text{COST} = \frac{\text{Number of movement}}{\text{increase of the number of vehicles}} \times \text{A} \times \text{C} \times \text{D} \times \text{E} \times \left( \frac{\text{F}-\text{G}}{\text{G}} \right) \times \text{H} \times \text{I} \times \text{J}$$
$$\text{COST} = 13\,710\,612 \$$$

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# TOTAL COST OF THE LIMITATIONS (model)

Coût estimé par le modèle, restrictions de charge en période de dégel, selon la configuration et le groupe de marchandises, 1997

	Camions	5 essieux	6 essieux B.32	6 essieux autres	7 essieux B.44-B.45	Trains B	Total	%
Bois en longueur, chemins publics	11 127 \$	369 237 \$	26 575 \$	212 662 \$	251 348 \$	35 294 \$	906 243 \$	2,7%
Produits du bois et papier	92 626 \$	3 073 663 \$	221 218 \$	1 770 273 \$	2 092 308 \$	293 803 \$	7 543 891 \$	22,3%
Aliments et boissons	381 577 \$	2 915 283 \$	431 286 \$	4 070 484 \$	659 461 \$	278 998 \$	8 737 089 \$	25,9%
Minéraux, pierres et combustibles	1 054 962 \$	0 \$	21 780 \$	350 824 \$	0 \$	0 \$	1 427 566 \$	4,2%
Métaux	95 987 \$	1 414 221 \$	101 576 \$	796 562 \$	1 081 562 \$	593 760 \$	4 083 668 \$	12,1%
Produits chimiques	0 \$	1 238 216 \$	0 \$	677 247 \$	0 \$	150 478 \$	2 065 941 \$	6,1%
Produits pétroliers	0 \$	856 165 \$	0 \$	428 456 \$	591 635 \$	275 586 \$	2 151 843 \$	6,4%
Pièces d'automobiles	0 \$	842 946 \$	0 \$	0 \$	0 \$	0 \$	842 946 \$	2,5%
Marchandises générales	0 \$	765 906 \$	0 \$	0 \$	0 \$	0 \$	765 906 \$	2,3%
Autres	277 393 \$	2 234 975 \$	169 402 \$	1 705 318 \$	634 699 \$	207 153 \$	5 228 939 \$	15,5%
<b>Coût global</b>	<b>1 913 672 \$</b>	<b>13 710 612 \$</b>	<b>971 837 \$</b>	<b>10 011 827 \$</b>	<b>5 311 012 \$</b>	<b>1 835 072 \$</b>	<b>33 754 033 \$</b>	<b>100,0%</b>
%	5,7%	40,6%	2,9%	29,7%	15,7%	5,4%	100,0%	

Notes : 1. Les camions comprennent les bennes à 3 essieux et les citernes à lait mais ne comprennent pas les autres camions porteurs ni les bennes à 2 ou 4 essieux.

2. Les valeurs comprennent l'industrie du lait.

Source : Calculs du modèle de Camtech / Génivar, référence au tableau F.1.

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# IMPACT GLOBAL OF THE LOAD RESTRICTIONS

	Modèle	Hors modèle
Augmentation du nombre de déplacements, configurations les plus touchées <sup>(1)</sup>	43,1 M\$	
Effet saisonnier de la demande et correction		-9,2 M\$
Augmentation du nombre de déplacements		3,7 M\$
Autres configurations		
Transport hors normes		2,7 M\$
<b>Estimations combinées</b>		<b>40,3 M\$</b>

(1) Estimé par le modèle, sans effet saisonnier de demande et avant ajustements.

Source : Tableau F.1, annexe F.

This cost represents 0,7 % of the Quebec market of the trucking.

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