Canadian Radio-television and Telecommunications Commission
Conseil de la radiodiffusion et des télécommunications canadiennes

Telecom Decision CRTC 2025-224

PDF version

Gatineau, 2 September 2025

Public record: 8621-C12-01/08

CISC Canadian Steering Committee on Numbering – Consensus report CNRE138B – Methods to address the high assignment rate of non-geographic (6YY) CO codes

Summary

Telephone numbers are a finite resource and critical to our modern communications system. New, non-voice services like machine-to-machine communications and Internet of Things applications are increasing the demand for telephone numbers not linked to a specific geographic region. Without action, the supply of non-geographic telephone numbers could run out.

The Commission relies on the Canadian Steering Committee on Numbering (CSCN) to provide expert advice on numbering matters within the Commission's jurisdiction. The CSCN filed a report to provide the Commission with recommendations on measures to better conserve non-geographic telephone numbers.

In this decision, the Commission approves two measures suggested by the CSCN. These measures will supply enough non-geographic telephone numbers to meet demand in the short-term. In addition, the Commission approves a measure to prepare for an eventual transition to the use of longer telephone numbers for non-voice services. This new measure will provide enough numbering resources to meet forecasted demand and ensure a sufficient supply for many years to come. The Commission also directs the CSCN to update relevant guidelines on the management of Canadian numbering resources.

In taking these actions, the Commission is helping to ensure that Canada's inventory of telephone numbers is managed responsibly to the benefit of all Canadians.

Background

1. The Commission administers telephone numbers and other numbering resources pursuant to section 46.1 of the *Telecommunications Act*. It works with various partners, including the Canadian Numbering Administrator (CNA) and the North American Numbering Plan Administrator (NANPA), to organize and manage phone

numbers for Canada and other countries within the North American Numbering Plan (NANP).[1]

2. Telephone numbers within the NANP currently use a “1+10” format. The “1” is the country code for all NANP countries. The next 10 digits include a three-digit area code (also called a numbering plan area or NPA code), a three-digit central office (CO) code, and a four-digit individual line number (the unique number for the individual phone line).

3. In recent years, many new services that use telephone numbers have emerged. These include non-voice services such as Internet of things (IoT) applications and machine-to-machine communications. These technologies are used for devices that share data on their own, such as connected vehicles, smart appliances, or home security systems. These devices often need telephone numbers to work with carrier networks and their support and billing systems.

4. Because of the increasing use of these new devices and services, the demand for Canadian telephone numbers is growing quickly. Measures to conserve telephone numbers are necessary to help ensure that Canada continues to have enough telephone numbers.

Geographic and non-geographic area codes

5. Under the NANP, Canada has been assigned a set number of area codes. Area codes are considered geographic when they are linked to a specific area. They are considered non-geographic when they can be used anywhere in Canada.

6. Canada’s non-geographic area codes are known as 6YY codes. They currently include area codes 622, 633, 644, 655, 667, and 668. They are mainly used for IoT applications.

7. Canada also has a separate non-geographic area code, 600, which is mainly used for voice services such as satellite communications.

N11 codes and CO code 555

8. N11 codes are special three-digit telephone numbers ending with “11” (from 211 to 911). They are used to access special services such as directory assistance, municipal services, and emergency services. As with other countries in the NANP, these codes currently cannot be used as CO codes in Canadian telephone numbers.

9. The CO code 555 was originally set aside for regional or national public information services. Today, 555-1212 is used for long-distance directory assistance. Some

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[1] The NANP is a telephone numbering system that assigns unique 10-digit numbers, including a three-digit area code and a seven-digit local number, to facilitate call routing across participating countries like the United States, Canada, and several Caribbean nations.

555 numbers have also been reserved by the film industry. The remaining numbers with the 555 code have been returned to the NANPA.

The NANP expansion plan

10. The NANP expansion plan was created to increase the pool of available telephone numbers by adding extra digits in the telephone number format. The most recent plan, developed in 2002, proposes switching from the current 1+10 format to a 1+12 format. This change will likely be required by the NANPA before NANP telephone numbers run out, which is expected to occur by around 2051. However, countries in the NANP may choose to switch to the 1+12 format earlier if needed.

Numbering guidelines

11. The Canadian Steering Committee on Numbering (CSCN) of the CRTC Interconnection Steering Committee (CISC) manages several Canadian numbering guidelines, which provide instructions to the CNA and Canadian carriers on how to manage and use Canadian numbering resources. Canada's CO codes, 6YY codes, and area code 600 are managed in accordance with the following Canadian numbering guidelines: Central Office Code (NXX) Assignment Guideline, the Canadian Non-Geographic Code Assignment Guideline, and the Canadian NPA 600 NXX Code Assignment Guideline, respectively. The CSCN recommends updates to the numbering guidelines for the Commission's approval.

The report

12. On 2 April 2024, the Commission received CSCN consensus report CNRE138B – *Methods to address the high assignment rate of non-geographic (6YY) CO codes* (the report).

13. The report highlights that the global IoT market is projected to grow fivefold between 2022 and 2027, with the demand for 6YY codes expected to increase accordingly. In Canada, demand is projected to reach critical levels in the near future, with the last 6YY code likely to be assigned by 2029. The report states that if no action is taken, Canada may run out of 6YY codes by 2030.

Options to defer exhaustion of numbering resources

14. The CSCN analyzed the following seven options (which are not mutually exclusive) to defer the exhaustion of numbering resources:

- obtain additional 6YY codes;
- use area code 010;
- use alternative addressing formats;
- partition area code 600;

- remove restrictions on the use of N11 codes and CO code 555;
- use new IoT standards; and/or
- add digits to numbers with 6YY codes.

Obtain additional 6YY codes

15. The Commission could request more 6YY codes from the NANPA under existing processes. However, other NANP countries also require these types of telephone numbers. Therefore, it is unclear how many codes would be made available to Canada or how long it would take to receive them. Furthermore, the benefits may be limited, since each new 6YY code would only add 791 CO codes to Canada's pool of 6YY telephone numbers.

Use area code 010

16. Area code 010 is currently available to carriers for intra-network data services. Each carrier could activate area code 010 within its own network, providing approximately 10 million numbers to use for IoT devices. However, activating 010 as an area code requires technical expertise that not all carriers may have. Also, 010 is meant to be used for routing within a carrier's network, so numbers that use area code 010 cannot be used for communication between the networks of different carriers.

Use alternative addressing formats

17. The option of using alternative addressing formats is already available. It involves carriers developing their own numbering scheme for IoT use outside the public switched telephone network. However, as with area code 010, this option could only be applied to devices operating on the same network; it cannot be used for communication between the networks of different carriers.

Partition area code 600

18. Within area code 600, only 16 out of a possible 798 CO codes have been assigned thus far, all of them for non-geographic voice services. The last CO code within area code 600 was assigned in 2016. The CSCN suggested setting aside an additional 14 CO codes for non-geographic voice services and assigning the remaining 768 codes to the pool of resources available for IoT services.

Remove restrictions on the use of N11 codes and CO code 555

19. Removing current restrictions on the use of N11 codes as CO codes and on the use of CO code 555 would make eight additional CO codes available within each of the six 6YY area codes. Though the Commission rendered these codes unassignable in Telecom Decision 2018-51 to align with other NANP countries, the United States has recently allowed their use for IoT applications, and the applicable databases have been modified accordingly.

Use new IoT standards

20. Various standards bodies are developing new standards for IoT resources. However, these may take another two to five years to finalize, with implementation in network infrastructure and information systems to follow several years beyond that.

Add digits to numbers with 6YY codes

21. The CSCN stated that adding digits to 6YY numbers is the only approach that will meet Canada's IoT needs until the NANP expansion plan is officially implemented.

22. By adding digits to 6YY numbers, significantly more numbers could be made available. For example, expanding the current 1+10 format to a 1+12 format would provide up to 800 million numbers for each 6YY area code. Expanding to a 1+14 format would provide 100 billion numbers.

23. The CSCN indicated that switching to either the 1+12 format or the 1+14 format for 6YY numbers would require a similar level of investment to adapt network infrastructure, support systems, and number administration. Either solution would take two to three years to implement. However, the 1+14 format is currently incompatible with the NANP expansion plan and could present additional challenges for some carriers. Further, it may be an excessive response to the forecasted demand. The CSCN plans to study both options and report its findings to the Commission.

24. Until the 1+12 format or the 1+14 format is implemented for all 6YY numbers, the CSCN suggested reserving area codes 677 and 688 for that use. Adding digits to numbers with those area codes, using either format, would extend the life of non-geographic numbering resources to beyond the year 2050 and offer a substantial margin of safety without any additional costs or resources.

CSCN recommendations

25. Having considered all of the options outlined above, the CSCN recommended that the Commission direct the CNA to:

    - designate 768 CO codes in area code 600 as assignable non-geographic resources, within six months of the Commission's decision;

    - eliminate the restriction on the assignment of 555 and N11 codes 211, 311, 411, 511, 611, 711, and 811 within area code 6YY, within six months of the Commission's decision; and

    - reserve area codes 677 and 688 for future implementation of an expanded numbering format.

26. In addition, the report recommended that the Commission direct the CSCN to amend, within six months of the Commission's decision**,** the following guidelines to reflect (i) the designation of 768 codes in area code 600 as non-geographic and (ii) the

elimination of restrictions on the assignment of CO codes 211, 311, 411, 511, 555, 611, 711, and 811 in all non-geographic area codes:

- *Central Office Code (NXX) Assignment Guideline*;
- *Canadian Non-Geographic Code Assignment Guideline*; and
- *Canadian NPA 600 NXX Code Assignment Guideline*.

Commission's analysis

27. The CSCN includes Canadian telecommunications service providers and experts in Canadian numbering. The Commission is of the view that the report's recommendations, which were approved by consensus, accurately reflect the views of the telecommunications industry.

28. The Commission notes that, since the report was filed, the CNA has updated the projected exhaust date for 6YY codes from 2030 to 2029.

29. The Commission notes that increasing the number of digits in the numbering format for non-geographic telephone numbers would provide a long-term solution to the shortage of those resources. Moving to a 1+12 format would add up to 800 million new numbers for each 6YY area code; moving to a 1+14 format would add up to 100 billion new numbers. However, the transition to the 1+12 format and the transition to the 1+14 format are two separate projects; each requires the same level of effort and investment as the other. Therefore, it would be prudent to further assess which format is best for the industry to adopt.

30. While the 1+14 format would provide more numbers than the 1+12 format, the 1+14 format would not be compatible with the NANP expansion plan, making it more difficult for some carriers to implement. The CSCN estimated that, if the Commission decides to expand the numbering format for non-geographic numbers in 2025, it could be implemented by 2028, before the projected exhaust date in 2029.

31. The Commission notes that any transition to an expanded numbering format contemplated in this decision would be restricted to non-geographic numbers used for non-voice services. It would not impact geographic numbers at this time.

32. Regarding the recommendation to use the CO codes in area code 600 for non-geographic purposes, the Commission notes that demand for those codes has historically remained low. So far, only 16 out of a possible 798 CO codes in area code 600 have been assigned, with the two most recent assignments being in 2004 and 2016 for satellite communications. Setting aside an additional 14 CO codes, as the report recommends, should be sufficient to meet future demand for similar uses. Assigning the remaining 768 CO codes for non-geographic purposes would provide 7.68 million additional non-geographic telephone numbers.

33. Regarding the recommendation to remove restrictions on the use of N11 codes and the CO code 555, the Commission notes that most of the numbers within CO code 555 were removed from the pool of geographic numbering resources in 2017, and N11 codes are currently only used for voice services. Removing the restrictions on their use in all 6YY areas codes would not disrupt current N11 services or other voice services and would add 480,000 non-geographic telephone numbers. Lifting these restrictions would also align Canadian policy with that of the United States, which removed such restrictions in 2020.

34. Together, these measures would add approximately 8.16 million non-geographic resources and delay exhaust by one year. The Commission considers that these measures are viable and reasonable short-term solutions that can be implemented rapidly. They would provide a substantial amount of non-geographic resources until an expanded numbering format can be implemented.

35. Adopting these measures would necessitate updates to the guidelines used in the administration of numbering resources. The Commission therefore directs the CSCN to complete such updates, consistent with the report's recommendations.

36. Regarding the recommendation to reserve area codes 677 and 688 as the first codes to use for the 1+12 or the 1+14 format, the Commission notes that this would not immediately make more non-geographic numbers available. However, when combined with the other recommended measures, it would create a viable pool of unassigned numbers to which digits could be added for that purpose. Implementation of the other recommended measures would delay the exhaust of area codes 677 and 688 to 2029 and 2030 respectively.

37. Although other 6YY area codes could also be used for the 1+12 or the 1+14 format, transitioning these area codes might take longer than it would for area codes 677 and 688 because of existing number assignments. Earmarking those area codes now for that purpose would simplify future transitions. This approach would ensure that Canada has numbers available for transition to the 1+12 or the 1+14 format. Also, reserving area codes 677 and 688 does not prevent them from being used, if needed, before an expanded format is implemented.

38. The CSCN did not recommend any of the other options it explored, which the Commission notes either carry implementation risks and might not be ready in time, or do not support communication between different networks, making them less useful and reliable than the recommended options.

39. In Telecom Regulatory Policy 2024-26, the Commission issued several directions to conserve geographic numbers and reduce their use for services that do not need them. The Commission considers that adopting the CSCN's recommendations aligns with the objectives of that policy. Adding to the pool of non-geographic numbers will help Canadian carriers keep up with IoT market demands without depleting the supply of geographic telephone numbers.

Conclusion

40. In light of all of the above, the Commission directs the Canadian Numbering Administration, by **2 March 2026**, to:

    (a) designate 768 CO codes in area code 600 as non-geographic;

    (b) eliminate the restriction on the assignment of 555 and N11 codes 211, 311, 411, 511, 611, 711, and 811 in all non-geographic area codes; and

    (c) reserve area codes 677 and 688 for future implementation of an expanded numbering format using additional digits.

41. Furthermore, the Commission requests that the CSCN amend, by **2 March 2026**, the following guidelines to reflect directions (a) and (b) in the previous paragraph:

    - *Central Office Code (NXX) Assignment Guideline*;
    - *Canadian Non-Geographic Code Assignment Guideline*; and
    - *Canadian NPA 600 NXX Code Assignment Guideline*.

Secretary General

Related documents

- *Implementing thousand-block pooling*, Telecom Regulatory Policy CRTC 2024-26, 5 February 2024
- *CISC Canadian Steering Committee on Numbering – Consensus report CNRE121A regarding an update of unassignable NXXs in the Canadian Non-Geographic Code Assignment Guideline*, Telecom Decision CRTC 2018-51, 6 February 2018