



Telecom Decision CRTC 2015-560

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CISC Emergency Services Working Group – Final consensus report regarding the location of Femto and distributed small cell antennas for 9-1-1 services

*The Commission **approves**, with modifications, the recommendations made by the CRTC Interconnection Steering Committee's (CISC) Emergency Services Working Group (ESWG) on how to identify the location of Femto cell antennas and distributed antenna system (DAS) hub sites to 9-1-1 call takers. The Commission **directs** all wireless carriers to implement the recommendations applicable to (i) DASs, as expeditiously as possible, and no later than nine months from the date of this decision, and (ii) Femto cells, if and when wireless carriers deploy them.*

*The Commission also requests that the ESWG continue its research to find a standard solution for wireless carriers to report the most current location of a mobile Femto cell, and provide its recommendations to the Commission for approval at least three months before the proposed initial deployment of Femto cells in Canada. The Commission **directs** any wireless carrier that proposes to deploy Femto cells on a mobile basis in its network prior to Commission approval of a standardized solution by the ESWG to file with the Commission, at least three months before deployment, its proposed solution to report mobile Femto cell location moves.*

Background

1. Wireless carriers around the world are beginning to deploy small cell antennas (including Femto cells, Pico cells, Micro cells, and distributed antenna systems¹ [DASs]) that cover smaller geographic areas (small cells) than traditional large cell towers.
2. Small cell antennas are deployed to increase a signal's coverage area or to increase network capacity (e.g. for densely populated areas). They are sometimes deployed in locations that do not have civic addresses (e.g. utility poles, street lights, billboards, bridges, and tunnels).

¹ Small cells include Femto cells (typical cell radius of 10 metres), Pico cells (200 m), Micro cells (500 m), and distributed antenna systems (which include multiple antennas with a combined radius of up to 800 m). These cells are "small" compared to the coverage area of a full-size cell tower, which may have a radius of up to 35 kilometres.

3. The Commission approved recommendations made by the CRTC Interconnection Steering Committee (CISC) Emergency Services Working Group (ESWG) regarding location identification issues related to the deployment of small radio cells, specifically Micro and Pico cells, in *CISC Emergency Services Working Group – Consensus report regarding the location of small cell antennas for 9-1-1 services*, Telecom Decision CRTC 2014-662, 18 December 2014.
4. In that decision, the Commission requested that the ESWG continue its research into identifying the possible location of Femto cell antennas and provide its recommendations to the Commission within a reasonable time frame or, at the very latest, before the initial deployment of Femto cell antennas in Canada.

The ESWG Report

5. On 19 May 2015, the CISC ESWG submitted the following consensus report (the Report) to the Commission for approval:
 - *Femto and Distributed Small Cell Site Addressing – Final Report* (ESRE0069)
6. The Report can be found under the “Reports” section of the ESWG page, which is available under the CISC section of the Commission’s website at www.crtc.gc.ca.
7. In the Report, the ESWG recommended that the same process be used to identify the locations of Femto cell antennas and DAS hub sites to 9-1-1 call takers as that used for Micro and Pico cells, which the Commission approved in Telecom Decision 2014-662.
8. The ESWG stated that to its knowledge, there have been no Femto cell deployments in Canada.
9. The ESWG submitted that Femto cell antennas pose a unique location identification challenge since they may be installed by home or business owners rather than by wireless carriers. Therefore, they can be moved to different locations without the location information being provided to wireless carriers.
10. The ESWG conducted research on how the National Emergency Number Association (NENA)² addresses this mobility issue, and concluded that there is currently no

² NENA is a 9-1-1 standards-making organization whose mission is to foster the technological advancement, availability, and implementation of the 9-1-1 emergency system. NENA is based in the United States, has a Canadian chapter, and its membership is composed mostly of public safety answering points (PSAPs), equipment vendors, and telecommunications service providers.

standardized approach to report Femto cell antenna moves to the 9-1-1 automatic location information (ALI) database.³

11. The ESWG therefore recommended that the best approach at this time is to assume that Femto cells in Canada are to be deployed in a fixed manner, and that as a result, they could be treated in a similar fashion to Micro and Pico cells. The ESWG noted that if future Canadian deployments prove that Femto cells are indeed movable, this assumption will need to be revisited.

Commission's analysis and determinations

12. Given the increasing popularity of small cell technologies, the development of a standard for identifying the location of small cell antennas is necessary and timely. The ESWG's recommended approach creates an accurate and consistent way for wireless carriers to identify the location of DAS hub sites and Femto cell antennas to 9-1-1 call takers.
13. However, as noted by the ESWG, while wireless carriers have not yet deployed Femto cells in their networks, if Femto cells are deployed on a mobile basis, the assumption that they are fixed will have to be revisited and a solution for location identification will need to be developed.
14. The Commission has reviewed the Report and, to ensure that PSAPs are notified of features that are unique to DAS and Femto cells, the Commission **approves** the ESWG's recommendations below, with modifications to two of the recommendations set out in bold:
 - Wireless carriers assign unique emergency service routing digits to Femto and DAS cells;
 - Wireless carriers provide a civic address representative of the physical location of the Femto cell antenna and the DAS central radio hub in the subscriber/customer name field of the ALI record delivered to the PSAP [public safety answering point], when available;
 - Wireless carriers provide static latitude/longitude coordinates of the Femto cell antenna and the DAS central hub antenna location in the subscriber/customer name field of the ALI record, when a civic address is not available or is not representative of the physical location of the small cell (when available, optional information on nearby buildings and/or structures should be provided);

³ Through the ALI database, location information, such as the end-user's callback number or address/location, and in some cases, supplementary emergency services information, is displayed automatically at the PSAP.

- Wireless carriers adopt the common cell classification outlined in Table 1A of the Report for all new and existing Femto and DAS small cell deployments;
 - Wireless carriers prepend the appropriate three-character cell classification type to the Femto/DAS cell site address in the subscriber/customer name field of the ALI record to provide typical cell site coverage information to PSAPs;
 - **Wireless carriers are to collaborate with 9-1-1 service network providers to notify PSAPs that, among other things,** DASs can consist of many antennae (nodes) that allow for non-circular directional coverage of usually less than 800 meters from its central hub and that indoor deployments could cover multiple floors in a commercial building; and
 - **Wireless carriers are to collaborate with 9-1-1 service network providers to notify PSAPs that, among other things,** for Femto cell classification, the mobile handset's Phase II location should be **used as a cross-check against the Femto cell's location information if/when wireless carriers actually start deploying Femto cells.**
15. The Commission **directs** all wireless carriers to implement the above-mentioned recommendations (i) for DASs, as expeditiously as possible, and no later than nine months from the date of this decision, and (ii) for Femto cells, if and when wireless carriers deploy them.
16. The Commission also requests that the ESG continue its research into a standardized solution to report the most current location of a mobile Femto cell, and provide its recommendations to the Commission for approval at least three months before the proposed initial deployment of Femto cells in Canada. Further, the Commission **directs** any wireless carrier that proposes to deploy Femto cells on a mobile basis in its network prior to Commission approval of a standardized solution by the ESG to file with the Commission, at least three months before deployment, its proposed solution to report mobile Femto cell location moves.

Policy Direction

17. The Policy Direction⁴ states that the Commission, in exercising its powers and performing its duties under the *Telecommunications Act* (the Act), shall implement the policy objectives set out in section 7 of the Act, in accordance with paragraphs 1(a), (b), and (c) of the Policy Direction.

⁴ *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, P.C. 2006-1534, 14 December 2006

18. The Commission considers that the policy objectives set out in paragraphs 7(*a*), (*b*), (*g*), and (*h*) of the Act⁵ are advanced by the regulatory measures established in this decision.
19. Consistent with subparagraph 1(*a*)(ii) of the Policy Direction,⁶ the Commission considers that the regulatory requirements set out in this decision are efficient and proportionate to their purpose, and minimally interfere with market forces.
20. Consistent with subparagraph 1(*b*)(iii) of the Policy Direction,⁷ the Commission considers that approval of the ESWG's recommendations (as modified above) related to Femto cell and DAS small cell site addressing for 9-1-1 emergency services is symmetrical for all wireless service providers, regardless of the technology they use, the geographic market in which they operate, and their size.

Secretary General

⁵ The cited policy objectives of the Act are 7(*a*) to facilitate the orderly development throughout Canada of a telecommunications system that serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions; 7(*b*) to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada; 7(*g*) to stimulate research and development in Canada in the field of telecommunications and to encourage innovation in the provision of telecommunications services; and 7(*h*) to respond to the economic and social requirements of users of telecommunications services.

⁶ According to subparagraph 1(*a*)(ii) of the Policy Direction, when relying on regulation, the Commission should use measures that are efficient and proportionate to their purpose and that interfere with the operation of competitive market forces to the minimum extent necessary to meet the policy objectives.

⁷ According to subparagraph 1(*b*)(iii) of the Policy Direction, when relying on regulation, the Commission should use measures that, if they are not of an economic nature, to the greatest extent possible, are implemented in a symmetrical and competitively neutral manner.