NATIONAL CAPITAL COMMISSION
COMMISSION DE LA CAPITALE NATIONALE

REQUEST FOR PROPOSAL

Design, Supply, Installation and Commissioning of Radio Communication System

NCC FILE NO.
NO DE DOSSIER DE LA CCN: **SS007**

ADDRESS ENQUIRIES TO: Stacy Semé E-mail: stacy.seme@ncc-ccn.ca	INVITATION DATE/DATE DE L'APPEL D'OFFRES: September 5, 2022
	BID CLOSING/CLÔTURE DE L'OFFRE: October 26, 2022 at 3 p.m. EDT
RETURN TO: →	Bids-Soumissions@ncc-ccn.ca Submission to refer to NCC tender file # SS007

This page of these RFP instructions is to be dated, signed and returned with your proposal, thereby acknowledging having read, understood and accepted the Request for Proposal which includes the Terms of Reference, the General & Supplementary Conditions, and any/all other attachments referred to herein.

We hereby OFFER to sell and/or supply to the National Capital Commission upon the terms and conditions set out herein, the supplies and/or services listed above and on any attached sheets at the submitted price(s).

Contractor's Name and Address: Tel: Fax: E-mail:	Print Name:	Date :
	Signature: _____	

ADDENDUM ACKNOWLEDGEMENT: I/We acknowledge receipt of the following addenda and have included for the requirement of it/them in my/our tendered price.	_____ Bidder to enter number of addenda issued, if any.

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PART 1 – GENERAL INSTRUCTIONS TO BIDDERS

1) Submit the Detailed Technical Proposal (email #1) and your financial proposal (email #2) to provide services to the National Capital Commission (referred to as the "Commission" or the " NCC"), as per this Request for Proposal (RFP).

   Email #1 to contain the following:
   a. Detailed Technical Proposal.
   b. $50,000.00 Bid Security (a mandatory bidding requirement). Note DO NOT attach your Bid Security within your financial proposal (email #2).
   c. Page 1 of this RFP completed, signed and acknowledging receipt of addendums.

   Email #2 to contain the following:
   a. Your financial proposal (signed and completed in its entirety).

2) Enquiries regarding this bid solicitation must be submitted in writing to the following: Sr. Contract Officer, Stacy Semé e-mail address – stacy.seme@ncc-ccn.ca as early as possible within the solicitation period. Enquiries should be received no later than fourteen (14) calendar days prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may result in an answer not being provided. To ensure consistency and quality of the information provided to Bidders, the Sr. Contract Officer shall examine the content of the enquiry and shall decide whether or not to issue an amendment. All enquiries and other communications related to this tender sent throughout the solicitation period are to be directed ONLY to the Sr. Contract Officer named above. Non-compliance with this requirement during the solicitation period can, for that reason alone, result in disqualification of a tender.

3) The Detailed Proposal is to include all relevant information and structured as defined under Part 2 of the RFP.

4) Joint Venture Submissions: the NCC will accept Detailed Proposals from joint venture entities as per 6.1. Consortia or Teaming Arrangements.
5) Currency: It is mandatory that all fees, hourly rates/unit prices and taxes submitted in this Financial Proposal be in Canadian Dollars in order to be considered compliant and responsive to the RFP.

6) Bid Security. Proponents must submit, with the Detailed Proposal, the mandatory bid security as an integral part of any Detailed Proposal submission as per Appendix G.
7) Evaluation Process. The evaluation process will follow a three-stage process as follows:
   a. Stage 1 – verifies that the Detailed Proposal meets the mandatory requirement of Bid Security. All Detailed Proposals that are received on time will be reviewed to ensure that the mandatory bid security has been submitted. Detailed Proposals complying with this mandatory requirement shall be considered compliant and will proceed to stage 2 of the evaluation process. Detailed Proposals that are not in compliance with this mandatory requirement shall be treated as non-responsive and receive no further consideration.
   b. Stage 2 – evaluates all technical proposals that pass stage 1 according to the mandatory and point rated requirements specified in Appendix F. The technical proposal of those in compliance with Stage 1 will be evaluated and rated according to the prescribed rated requirements and criteria identified in Appendix F.
   c. Stage 3 – evaluates the financial proposals of qualified Proponents. Financial Proposal Review (Stage 3). The financial proposal emails of each technical proposal in compliance with Stage 2 shall be opened to establish the highest combined rating between technical and financial proposal.

8) Basis of Award. Subject to item 9, the Proponent whose technical proposal meets or exceeds the minimum required points specified in stage 2 and who has the highest overall combined rating between technical and financial proposal shall be deemed the successful Proponent.

9) Acceptance of Detailed Proposal
   a. The NCC reserves the right to not accept any of the proposals submitted, to cancel the RFP and/or to reissue the RFP in its original or revised form. The NCC also reserves the right to negotiate with the Successful Proponent and/or any/all Proponents.
   b. Without limiting the generality of 9a, the NCC may reject any proposal, based on an unfavourable assessment as to:
      i. The adequacy of the proposed price to carry out the work.
      ii. The Proponent's performance on other contracts, including but not limited to, the contracts the Proponent may have had or may still have with the NCC.

c. In assessing the Proponent's performance on other contracts pursuant to 9 b ii, the NCC may consider, but shall not be limited to, such matters as.
    i. The efficiency and workmanship of the Proponent in performing the work; and.
    ii. The extent to which the Proponent executed the work in accordance with the Terms and Conditions of the contract.
    iii. Vendor Performance Background:
        a) The NCC may reject a bid where any of the following circumstances are present:
            a. The Proponent or any employee or subcontractor included as part of the proposal, has been convicted under section 121 ("Frauds on the government" & "Contractor subscribing to election fund"), 124 ("Selling defective stores to Her Majesty") of the Criminal Code; or.
            b. With respect to current or prior contracts with the NCC or the Government of Canada.
                i. The Proponent is bankrupt or where, for whatever reason, its activities are rendered inoperable for an extended period.
                ii. The NCC has evidence, satisfactory to the NCC, of fraud, bribery, fraudulent misrepresentation or failure to comply with any law protecting individuals against any matter of discrimination, on the part of the Proponent, any of its employees or any subcontractor included as part of its proposal;
                iii. The NCC has exercised its contractual remedies of suspension, setting off or termination for default with respect to a contract with the Proponent, any of its employees or any subcontractor included as part of its bid; or
                iv. The Proponent's performance on current or prior contracts, including the efficiency and workmanship as well as the level of compliance with contractual Terms and Conditions is, unsatisfactory to the NCC and has been documented as such.

iv. Where the NCC intends to reject a proposal pursuant to a provisions above, the Contracting Authority shall so inform the Proponent and provide the Proponent ten (10) days within which to make representations, prior to making a final decision on the rejection of the proposal.

10) Conditions of Contract Award. Prior to Contract award, the successful Proponent shall provide the following:
   a) Joint Venture Agreement (if applicable). If the successful Proponent is a joint venture, the signed joint venture agreement must be presented.
   b) Proof of Insurance. The Successful Proponent shall provide proof of insurance in accordance with the General Conditions.
   c) Direct Payment and Tax Information Form. The Successful Proponent shall complete and submit to the NCC the Direct Payment and Tax Information Form prior to Contract award. The direct payment service will facilitate the transfer of amounts payable by the NCC to suppliers. The tax information section of the form is a requirement of the Income Tax Act.
   d) CSST or WSIB Certificate. The successful Proponent shall provide a CSST or WSIB certificate as applicable. This is a document confirming that the Contractor is registered, and that his/her file is in good standing order.
   e) Company Security Representative (CSR). The Successful Proponent shall provide the name and coordinates of his/her security representative.
   f) Health and Safety Plan. The Successful Proponent shall provide his/her health and safety plan.
   g) Performance Security: The Successful Proponent shall provide performance security in accordance with Appendix I.

11) Additional Terms and Conditions of the RFP.
   a) Ownership of Contract Documents.
      i. All documents submitted or prepared by the Contractor under the terms of the Contract shall become the property of the NCC, which shall become the owner of the copyright.
      ii. All documents and records, and the information contained therein, provided to the Contractor related to or for the purposes of this Contract shall be treated as confidential. The Contractor shall take all necessary steps to ensure that the documents and records, or any information contained therein, are not copied, provided to,

discussed or disclosed in any manner whatsoever, to any person or entity, other than NCC personnel, unless expressly authorized by the NCC. The Contractor shall ensure that only its authorized employees are given access to the said documents or records and that these employees treat these documents and records, and the information contained therein, as confidential.

iii. As may be directed in writing by the NCC upon the expiry, termination or completion of the Contract, the Contractor shall either return to the NCC forthwith all documents or records provided to it by the NCC or destroy all documents and records, together with satisfactory proof of such destruction.

iv. The NCC shall have unrestricted access to all documents and records provided to the Contractor during the Term of the Contract.

12) Access to Information. Detailed Proposals shall be held in strict confidence. However, Proponents are reminded that the NCC, as a Crown corporation, is subject to the provisions of the Access to Information Act. Information submitted may be eligible for disclosure in accordance with the requirements of the Access to Information Act. In such circumstances, the NCC shall be relieved of its obligation hereunder to keep such information confidential. Such information is usually not released without consent of the pertinent Proponent, unless there is an order made pursuant to the Act. However, the Proponent consents to the public disclosure of its Grand Total by the NCC, and further agrees that it will have no right to claim against the NCC, its employees, agents or servants, or any of them, in relation to such public disclosure.

13) Limitations & Cautions

a. Detailed Proposals shall be irrevocable and remain unchanged in all aspects, including price, during the period of time between the closing date of this RFP and the identification of the Successful Proponent unless expressly agreed to by both the NCC and the Proponent.

b. The NCC reserves the right to request clarification from the Proponent for a mandatory requirement submitted in response to the RFP that in the sole opinion of the NCC, is marginally responsive or vague.

c. Nothing, including but not limited to, this RFP or the Proponent's response hereto, shall in any way impose a legal obligation on the

NCC to purchase or otherwise acquire any product or service from any of the Successful Proponents, unless and until the RFP has received all requisite internal approvals and has been executed by the NCC and the Proponent.

d. The NCC shall not be obligated to reimburse or compensate any Proponent, its subcontractors or manufacturers for any costs incurred in connection with the preparation of a response to this RFP. All copies of proposals submitted in response to this RFP shall become the property of the NCC and shall not be returned.

e. The Contractor is liable for any damage caused by the Contractor, its employees, subcontractors, or agents to the NCC or any third party. The NCC is liable for any damage caused by the NCC, its employees or agents to the Contractor or any third party. The Parties agree that no limitation of liability or indemnity provision applies to the Contract unless it is specifically incorporated in full text in the Contract Articles of Agreement. Damage includes any injury to persons (including injury resulting in death) or loss of or damage to property (including real property) caused as a result of or during the performance of the Contract.

14) A debriefing of a Proponent's Technical Proposal will be provided, if requested to the NCC Project Manager identified in the letter of notification of contract award, within 15 days of receipt of this notice. The debriefing will include an outline of the reasons the submission was not successful

15) The NCC is a Federal Crown Corporation subject to the Federal Goods and Services Tax (GST), the Ontario Harmonized Sales Tax (OHST), and the Quebec Sales Tax (QST). The successful firm will be required to indicate separately, with the request for payment, the amount of GST, OHST and QST, to the extent applicable, that the Commission will pay. These amounts will be paid to the successful Contractor who will be required to make the appropriate remittances to Revenue Canada and the respective provincial governments.

16) The attached General Conditions, Occupational Health & Safety Requirements and the Security Requirements will also form part of the resulting contract.

17) TENDER VALIDITY PERIOD - the tender shall not be withdrawn for a period of 120 days following the date and time of tender closing.

18) Facsimile transmittal of proposals is not acceptable.

19) This RFP and any contract resulting there from is to be interpreted, construed, governed by, and the relation between parties is to be determined in accordance with the laws of the Province of Ontario and such Federal laws applicable therein.

20) The Commission shall not be obligated to reimburse or compensate any proponent, its sub-contractors or manufacturers for any costs incurred in connection with the preparation of a response to this RFP. All copies of proposals submitted in response to this RFP shall become the property of the Commission and will not be returned.

PART 2 – PROPOSAL PREPERATION INSTRUCTIONS & SPECIFICATIONS

1.0 INTRODUCTION

The National Capital Commission ("NCC") in Ottawa, Ontario is requesting proposals from qualified radio communications system manufacturers, dealers, distributors and systems integrators (referred to as “Bidders”) for the "turn-key" design, supply, installation, commissioning and maintenance of a two-way radio communications system (the “System”).

The selected Bidder (Contractor) shall also be responsible for the decommissioning, removal, and disposition of the existing system.

The NCC intends to engage the services of a single Contractor.

The Contract shall be for a period of 6 years from date of contract.

The Contractor grants to the NCC the irrevocable option to extend the term of the Contract by up to two (2) additional one (1) year periods under the same conditions. The Contractor agrees that, during the extended period of the Contract, it will be paid in accordance with the applicable provisions as set out in Appendix A.

The NCC may exercise this option at any time by sending a written notice to the Contractor before the expiry date of the Contract. The option may only be exercised by the Contracting Authority, and will be evidenced for administrative purposes only, through a contract amendment.

The “System” shall include all infrastructure, technology, communications links and interconnections for a System that cost-effectively and reliably meets the requirements of the NCC, including seamless, reliable and clear two-way radio communications coverage throughout the entire the NCC service area with the selected Bidder (Contractor).

The system shall be fully implemented ready for the NCC system acceptance within 18 months from the date of Contract.

The NCC is considering Digital Mobile Radio (DMR) technology as the preferred technology using the NCC licensed radio channel frequencies.

All technical proposals shall clearly and comprehensively describe:

- the proposed system design and configuration
- system infrastructure and radio site facilities

- the specific technologies used throughout the system including radio channel access modes.
- system connectivity
- the committed level of system performance
- full extent and intensity of reliable two-way radio communications coverage.
- radio channel access delays (typical average and peak periods).
- the process for decommissioning the existing system and to de-install all technology

The System shall be owned by the NCC.

Proposal responses, the RFP and the Specifications will be an integral part of any contract that may be negotiated with a selected Bidder (if any).

The Contractor shall be able to provide its services in both French and English.

2.0 CONTRACTOR & VENDOR DEFINITIONS

Bidder: A commercial radio communications technology (hardware, software and firmware) manufacturer, distributor, dealer, or systems integrator that submits a proposal for the design, supply, installation and commissioning of the System in response to this RFP.

Contractor: A Bidder who has been selected by the NCC for the design, supply, installation and commissioning of the System in response to this RFP in accordance with a contract.

Presumptive Contractor: A Bidder that has been selected by the NCC for contract negotiations with the intent of executing a contract subject to final agreement between the Bidder and the NCC.

Shall/Must: Mandatory requirement

3.0 OVERVIEW OF THE NATIONAL CAPITAL COMMISSION

The National Capital Commission (NCC) is a Crown corporation of the Federal Government governed by the *National Capital Act,* which, in order to fulfill its mandate, owns a comprehensive portfolio in Canada's Capital Region, situated and skirting both sides of the provinces of Ontario and Quebec. The NCC owns numerous facilities and parks which allows visitors to the Capital Region to take advantage of activities and have access to sites to discover the Nation's Capital.

The parcels of land owned and controlled by the NCC, including that of the Gatineau Park, located in the province of Quebec, the Rideau Skateway and the Greenbelt that surrounds the City of Ottawa, in the province of Ontario, offer access to the general public for various activities and usage.

The Gatineau Park offers activities which include cross-country skiing, snow shoeing, hiking, mountain biking, walking trails, fishing, swimming, and wilderness camping. Also offered to the general public during their Gatineau Park visit, are shelters in sectors of the park. These shelters, as well as all open land within the Gatineau Park, and all lands owned by the NCC are monitored by Conservation Officers and in some areas by volunteers for the safety of the general public.

This two-way radio system is used by the NCC for daily operational (non-emergency) communications and emergency communications.

The NCC has identified the need to replace its current two-way radio system to continue to protect the health and safety of the general public and the NCC personnel and volunteers, respond to Government of Canada security requirements, protect heritage structures, and improve client service.

The NCC is seeking a complete solution to resolve current deficiencies and issues and provide for expansion and growth in the future.

4.0 BACKGROUND

The NCC currently owns and operates a two-way radio system which provides coverage to the Greenbelt in the Ottawa area, the Rideau Canal, the Leamy Lake area, and within Gatineau Park. The current system is approximately 20 years old.

Reliable radio communications coverage throughout Gatineau Park is more important than ever due to the recent modernization and trail expansions.

A system that meets the configuration, operational, radio coverage, and future expansion is required in order to protect the health and safety of the general public, the NCC personnel and volunteers, the Government of Canada security needs, and improve client services on behalf of the NCC.

The current two-way radio system that includes existing infrastructure, handheld, vehicle, and fixed (base station) radios shall be completely replaced in accordance with this RFP.

All existing installed NCC owned radio communications facilities, including all equipment and related materials, shall be properly decommissioned and de-installed, and removed

from the current locations for disposition as directed by the NCC as part of the work required in the RFP.

5.0 OVERVIEW OF NEW RADIO COMMUNICATIONS SYSTEM REQUIREMENTS

NOTE: No NCC structure, facility or other infrastructure inside Gatineau Park shall be employed for the radio system other than for the chalets and shelters.

No new infrastructure (towers, poles, buildings, radio site facilities, etc.) for the radio system will be permitted inside the Park.

The new NCC radio communications system shall be a Very High Frequency (VHF) two-way radio communications system using the NCC licensed frequencies that meets the minimum two-way radio communications coverage reliability and system capacity (loading) needs as specified in the RFP.

The new System shall include:

- Radio system infrastructure including radio antenna structures (towers, buildings, etc.), and radio equipment shelters or space within existing buildings or shelters that shall be selected and identified by the Bidders to provide the radio communications coverage *and* radio system connectivity.

  Note: Bidders shall be responsible for ensuring the radio system infrastructure is available and accessible to the NCC for the new system for a minimum of 10 years regardless of the future maintenance contractor.

  Bidders shall include clear commitments, preliminary prices, and sample agreements from site owners for use of the sites by the NCC subject to the NCC approval.

  The NCC shall be responsible for negotiating final license or lease agreements for the use of the radio sites.

- All infrastructure radio transmitter and receiver technology and antenna systems including backup electrical power.

- Interconnection of all infrastructure technology and infrastructure sites to provide seamless two-way radio communications throughout the specified coverage area and interconnection with the NCC dispatch centre.

  Note: Radio dispatch consoles are not required as all dispatch locations will use base stations and off-air communications through the system.

- All handheld, vehicle and fixed station radio communications technology including installation of all vehicle and fixed radio equipment and antenna systems.

- Assessment of existing solar power systems for the shelters and chalets, and repair, upgrade or replacement of the solar power systems as recommended by the Contractor and approved by the NCC

Fixed stations include shelter radios and antenna and dispatch (office) radios and antennas.

The Contractor shall fully remove existing fixed station and vehicular radios and antenna systems including antennas, mounting, cables, and fasteners, as part of the implementation of the new system.

The specific removal, inventory, storage of existing technology, equipment, materials, etc. shall meet the requirements detailed in this document.

6.0 PROPOSALS

All proposals must be received by the National Capital Commission on or before the exact time and date set for their reception following instructions in Part 1 of tender package. Care must be taken to email tenders in good time as tenders received after the specified time and date will not be accepted or considered.

The proposals *must* be for a fixed price "turn-key" design, supply, installation, acceptance, commissioning, and maintenance of the System as a complete solution.

Proposals that are not "turn-key" and/or are not for the complete project (i.e., partial system solution proposals) will not be accepted by the NCC.

Bidders *must* propose all labour, equipment and other technology, tools, materials, supervision, insurance, facilities and all other items and services required to satisfactorily complete all work in accordance with the RFP for a turn-key radio communications system.

6.1.Consortia or Teaming Arrangements

Bidders are free to form a consortium, a teaming arrangement or joint venture with other Bidders for a complete, fully integrated turn-key solution.

However, a consortium or team shall be led by only a single prime contractor ("Bidder"). The prime contractor (Bidder) shall have complete (full) and irrevocable responsibility for the proposal, and for the successful completion of the fully integrated, turn-key system implementation, warranty and maintenance. The prime contractor shall be fully

responsible technically, financially, managerially (including all project management functions and communications with the NCC) for all work and deliverables provided by all members of the team or consortium, including any proposals.

Note that Detailed Proposals that are submitted to the NCC by a consortium or joint venture must be signed by an authorized representative of each of the firms comprising the joint venture. Each Detailed Proposal submitted by a joint venture must include a covering letter advising the NCC of the constituent firms' intention to operate as a joint venture if they are awarded a Contract for the work. The letter shall identify each of the firms comprising the joint venture and must be signed by a duly authorized representative of each of the constituent firms. The covering letter submitted with each Detailed Proposal must include a statement acknowledging that each party to the joint venture understands and agrees that they are jointly and severally liable for all obligations under the RFP as well as any contract awarded as a result of the RFP.

Joint ventures shall appoint a single contact for all communications with the NCC during the proposal stage, proposal evaluation and subsequent contract negotiations and execution.

The prime contractor shall be prepared to provide evidence satisfactory to the NCC, of the corporate and financial stability of the prime contractor and all members of the team, consortium, and joint venture.

Evidence may be in the form of audited financial statements, and/or corporate bank declarations of financial capability, and/or other evidence as may be determined by the NCC.

6.2 Bidder Responsibility

By signing a Proposal, each Bidder acknowledges and certifies that:

1. It has fully examined the RFP.

2. The RFP specifies the NCC's rights with which may be exercised.

3. It sought and examined all necessary information that is obtainable by making reasonable inquiries relevant to the NCC's requirements, including the risks and other circumstances that may affect its Proposal.

5. It did not use the assistance of the NCC's employees to prepare the Proposal and had no contact with the NCC after the RFP was released, except as expressly stipulated in the RFP.

6. It satisfied itself as to the correctness and sufficiency of its Proposal and all responses from the NCC.

7. It will comply with the rules and procedures set out in this RFP.

6.3 Mandatory Bidders Conference

A Bidder's Conference will be conducted by the NCC in person at the date and time indicated below.

Date: September 13 - 14, 2022 (possibility of September,15 2022)
Time: 10:00am Eastern time

Bidder's Conference Location: 33 Scott, Chelsea, Quebec, J9B 1R5

Please RSVP by communicating with Contracting Authority, Stacy Semé at stacy.seme@ncc-ccn.ca by September 9, 2022

It is expected a meeting to review the Specifications and answer questions will be approximately 2 hours.

Bidders Conference agenda:

10:00 am to 12:00 pm: Review the RFP and specifications, questions, and answers.

1:30 pm: Tour and visual survey of Gatineau Park chalets and shelters, fixed radio sites at NCC offices and vehicle depot.

Plan for extended day to complete the visual surveys, and for possibly extending the tour and surveys into the following day.

The NCC to arrange transportation for the tour and site surveys.

The site visits will be to each of the fixed radio communications sites identified in the Specifications. It is expected that the site visits will require an extended working day.

Bidders must communicate with the Contracting Authority, Stacy Semé, no later than September 9 ,2022 at 2:00PM EST to confirm attendance and provide the name(s) of the person(s) who will attend.

6.4 Proposal Responses & Format

All proposals, and all supporting documentation and literature may be in either English or

French.

All proposals shall respond to each section and sub section in the Specifications in the same order as in the Specifications, and, the Mandatory & Rated Bidding Requirements.

The proposal submissions shall use the following electronic formats:

1. Text of the proposal including tables and graphics that are integral to the text: MSWord or Adobe .pdf.

2. Brochures, photographs, and other graphics: Adobe .pdf

3. Spreadsheets, including all pricing proposals: MS Excel.

6.5 Price & Delivery Quotations

The Price & Delivery forms include the specific quantities of each type of user equipment required by the NCC.

The Price and Delivery forms shall be completed using the Excel referenced in Appendix A of the RFP and shall meet each of the requirements specified in this section.

All prices shall be in Canadian Dollars.

All prices shall include delivery of all materials, equipment, and labour on-site in throughout the NCC service area.

All prices shall include the applicable consumption taxes as a separate item in the Price & Delivery forms.

All transportation of people, equipment, materials, etc., including transportation in the National Capital Region, and transportation to and from all radio sites and facilities, shall be the responsibility of the selected Bidder (Contractor).

6.5.1 Life Cycle Costs

Bidders shall project *the 10-year life cycle costs* for the new system in all proposals based on:

1. Initial capital costs.

2. Maintenance costs using the quoted service contract costs in the Price & Delivery forms over a 10-year period.

3. Replacement of 75% of handheld radio transceivers and accessories (e.g., including chargers, antennas, and speaker microphones) over the 10-year period using the quoted prices in the Price & Delivery forms.

The life-cycle cost estimates shall use current dollar values and shall exclude inflationary or cost escalation factors.

6.6 Future Price Increases

The NCC shall use the Consumer Price Index (CPI) to adjust on a yearly basis the annual maintenance fees of the Contract. The annual maintenance fee for the first Year of the Contract shall be as provided by the Contractor and indicated in Appendix A. For subsequent Years of the Contract, the Fixed Fees shall be established as follows:

2.6.1 Year Two of Contract (April 1, 2024 to March 31, 2025)

The annual Fixed Fee (excluding taxes) for the second Year shall be based on the annual Fixed Fee (excluding taxes) during the first Year (April 1, 2023 to March 31, 2024) plus or minus a price adjustment based on the Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau (AIOG), specifically the percentage difference between the CPI – AIOG of December 2022 and December 2023, plus applicable taxes.

Example only:
CPI-by city (monthly) for Ottawa-Gatineau for December 2023 is 133.9.
CPI-by city (monthly) for Ottawa-Gatineau for December 2022 was 131.6.

% difference = ((133.9/131.6) x 100) - 100 = 1.7% increase
(decrease if % difference is negative)

2.6.2 Year Three of Contract (April 1, 2025 to March 31, 2026)

The annual Fixed Fee (excluding taxes) for the third Year shall be based on the annual Fixed Fee (excluding taxes) during the second Year (April 1, 2024 to March 31, 2025) plus or minus a price adjustment based on the Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau (AIOG), specifically the percentage difference between the CPI – AIOG of December 2023 and December 2024, plus applicable taxes.

2.6.3 Year Four of Contract (April 1, 2026 to March 31, 2027)

The annual Fixed Fee (excluding taxes) for the fourth Year shall be based on the annual Fixed Fee (excluding taxes) during the third Year (April 1, 2025 to March

31, 2026) plus or minus a price adjustment based on the Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau (AIOG), specifically the percentage difference between the CPI – AIOG of December 2024 and December 2025, plus applicable taxes.

2.6.4 Year Five of Contract (April 1, 2027 to March 31, 2028)

The annual Fixed Fee (excluding taxes) for the fifth Year shall be based on the annual Fixed Fee (excluding taxes) during the fourth Year (April 1, 2027 to March 31, 2028) plus or minus a price adjustment based on the Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau (AIOG), specifically the percentage difference between the CPI – AIOG of December 2025 and December 2026, plus applicable taxes.

2.6.5 Year Six of Contract (April 1, 2028 to March 31, 2029)

The annual Fixed Fee (excluding taxes) for the sixth Year shall be based on the annual Fixed Fee (excluding taxes) during the fifth Year (April 1, 2027 to March 31, 2028) plus or minus a price adjustment based on the Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau (AIOG), specifically the percentage difference between the CPI – AIOG of December 2026 and December 2027, plus applicable taxes.

2.6.6 Year Seven of Contract - Optional (April 1, 2029 to March 31, 2030)

The annual Fixed Fee (excluding taxes) for the seventh Year shall be based on the annual Fixed Fee (excluding taxes) during the sixth Year (April 1, 2028 to March 31, 2029) plus or minus a price adjustment based on the Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau (AIOG), specifically the percentage difference between the CPI – AIOG of December 2027 and December 2028, plus applicable taxes.

2.6.7 Year eight of Contract - Optional (April 1, 2030 to March 31, 2031)

The annual Fixed Fee (excluding taxes) for the seventh Year shall be based on the annual Fixed Fee (excluding taxes) during the sixth Year (April 1, 2028 to March 31, 2029) plus or minus a price adjustment based on the Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau (AIOG), specifically the percentage difference between the CPI – AIOG of December 2028 and December 2029, plus applicable taxes.

Note: The Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau is available on Statistics Canada's website in table "Consumer Price Index by city (monthly) All items for Ottawa-Gatineau".

6.7 Scope of Proposal and Content

All proposals shall include as a minimum:

1. Complete and detailed information *in response to each section and subsection* in the Specifications, and, in the Mandatory & Rated Bidding Requirements.

2. Complete pricing details as requested in the RFP.

3. Specific line item prices where requested. Bundling of prices where line item prices are requested, is prohibited.

4. A *proposed implementation schedule* starting from award of contract by the NCC, to complete system acceptance and commissioning of the system.

5. *In addition to the specific responses* to each Section of the RFP *as a minimum:*

   a) *Block level system and interconnection drawings* and as applicable *system flow diagrams* that clearly illustrate the overall system and interconnections of the system as a whole, and the main components at each radio communications item and facility, and logical subsections of the system.

   b) *Detailed technical specifications* and technical brochures/data sheets for all proposed technology and applicable services.

   c) identification of specific infrastructure locations that provide the predicted reliable RF coverage throughout the NCC service areas, and site-specific parameters such as antenna elevation on the sites.

6.8 Service and Maintenance

6.8.1 Facilities

Bidders shall have full service and maintenance facilities in the Ottawa-Gatineau area or within reasonable driving distance from the center of the Ottawa - Gatineau area to provide response to troubleshooting and repairing system problems including fixed station, vehicle and handheld radio equipment in a timely manner.

Please refer to the section below that specifies the maximum response times for the NCC requests for service.

Remedial maintenance and service calls to the Gatineau Park shelters and chalets shall be addressed with the NCC with the objective of a resolution within the shortest practical time with agreement by the NCC.

All proposals shall include a proposed arrangement and method(s) to respond to NCC requests for service and to provide timely responses as defined in the Warranty and Service and Maintenance Sections below.

All proposals shall clearly describe the technology and system technical support capabilities that will be provided to the NCC, 24 hours a day, 365 days a year.

The type or level of technical support, the method of contacting technical support expertise, and the maximum guaranteed response time with full technical support capabilities shall be clearly specified in all proposals.

All maintenance and service facilities shall be existing, established facilities that are available for inspection and evaluation by the NCC as part of the RFP evaluation process.

The service and maintenance facilities shall not be changed, relocated, or reduced in capability without the NCC's prior approval.

A detailed list of qualified service and maintenance facilities that are proposed for supporting the NCC's maintenance work, and for factory level service and repair work also shall be clearly described in all proposals.

The number and type of skilled personnel, and the specific repair and maintenance capabilities of each proposed facility shall be clearly described in all proposals.

The names, addresses, telephone numbers and contact person for all service facilities shall be identified in the proposals.

The NCC reserves the right to inspect all proposed service facilities, and to reject a Bidder at the NCC's sole discretion if the NCC judges the service and maintenance facilities to be unacceptable.

6.8.2 System Monitoring and Trouble Calls

Bidders shall have a 24 hour per day, 365 days per year system monitoring centre (Network Operations Centre or NOC) that continuously monitors the performance and operation of the complete system.

The system monitoring and annunciation of problems shall identify the problem to a specific site or part of a site, to enable further troubleshooting and repair in an efficient and expedited manner.

The monitoring facility shall also be a central contact for problems to be reported by the NCC at any time of day and night, 24 hours a day, 365 days per year.

All problems identified by the Contractor either through the Contractor's system monitoring facility or as a result of problems reported by the NCC, shall be addressed by the Contractor without delay in accordance with the maintenance response requirements specified in this RFP.

6.9 Warehouse (Storage) Facilities

The NCC does not have warehouse facilities to store any of the radio equipment, materials, tools, etc., pending implementation of the System at the various locations.

Secure storage in a suitable warehouse facility shall be the responsibility of the Contractor, including insurance and cost (including premiums and deductibles) of the insurance.

6.10 Personnel Security Clearance

The Contractor's personnel who have access to information declared confidential by the NCC, access to the NCC offices, network facilities and other locations identified by the NCC as restricted shall have Government of Canada "Secret" clearance.

The NCC will process all security clearance requirements.

The Contractor shall be responsible for providing suitable replacement candidates for personnel that may be denied clearance by the NCC for security clearance processing by the NCC.

6.11 Variances with RFP & Specifications

Where permitted in the RFP, items that are **not** in full compliance or that vary from the Specifications, shall be clearly identified in the proposal responses as variances, and shall include specific and clear reference to the relevant section in the Specifications, and the precise nature of the variance.

The primary intent is for the NCC to be able to clearly identify each variance and deficiency, and the associated impact (if any) on the acceptability of the proposed system solution to meet the NCC's needs as determined by the NCC.

6.12 Bidder Qualifications and Experience

Bidders shall have experience supplying, installing, and commissioning at least three (3) public service (public safety) mobile two-way radio Communications systems comparable with the scope and magnitude of the NCC System within the last six (6) years.

6.12.1 Bidder Project Experience and References

Bidders shall provide the following information in sufficient detail to enable the NCC to clearly and definitively evaluate each Bidder's qualifications, experience and capabilities.

1. Previous Projects and References

a) Full legal name of customer and if applicable "doing business as" name.

b) Primary business or service

c) Scope of project in terms of:

- number of radio sites
- extent of geographic area covered
- type of technology and system configuration
- Number of radio users operating on the system
- Date that project started
- Date that project (system) was commissioned and accepted by customer
- Customer contact name, title, telephone number and email address for purposes of verifying the above information and to determine customer's satisfaction with the Bidder and project outcome.

6.12.2 Bidder Personnel Resources

Bidders shall provide detailed resumes itemizing experience and qualifications for all key project personnel listed below in a maximum of 2 pages each with the specified role on the proposed NCC radio communications system project.

1. Corporate management who will be overseeing the project

2. Project management

3. Key design/engineering personnel

4. Key System integration-production personnel

5. On-site personnel who will be directly involved in and be responsible for:

   - on-site project management and personnel supervision.
   - on-site inspection of all delivered technology and materials.
   - installation of the System.
   - testing and verifying the installation and performance of the System during the installation phase, including resolution of items and follow-up as necessary through system acceptance tests and commissioning.
   - complete system acceptance tests and commissioning of the System including follow-up items and resolution.
   - warranty and maintenance.

6.13 Bidder's System Implementation Schedule

All proposals shall include the Bidder's schedule for the complete implementation including:

1. Design work.

2. Equipment delivery to the Bidder.

3. Assembly and testing at the Bidder's facility prior to "factory acceptance" tests.

4. Staging and "factory acceptance" at the Bidder's facility.

5. Delivery of a completely staged and tested system on-site to the NCC radio system facilities in Ontario and Quebec.

6. On site installation and initial testing.

7. "System acceptance" tests.

8. Resolution of outstanding issues for final system acceptance testing and verification to full commissioning.

The Bidder's proposed schedule shall include clearly identified milestones and tasks as identified above and other Bidder recommended milestones and tasks for each of the major activities and events that are required for completion of the Contract from date of contract award by the NCC.

6.14 Prime Contractor and Sub-Contractor Declaration

All proposals shall clearly identify the hierarchy of the prime Contractor and any sub-Contractor relationships for the full supply, installation, testing and commissioning of the entire system as follows (please also refer to the prime Contractor, subcontractor consortia or teaming requirements stated previously in the RFP):

1. Prime Contractor name, address, and contact person.

2. All sub-Contractors to the prime Contractor and all sub-Contractors to the sub-Contractors including:

   a) An itemized list of all sub-Contractors and their specific responsibilities for the supply, installation and implementation of the proposed system

      Note: The sub-Contractor list shall include system maintenance and service Contractors.

6.15 Proposal Evaluation and Contractor Selection

Please refer to Appendix F for the bid evaluation and scoring criteria.

Bidders shall complete Appendix F – Bid Evaluation.

Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.

An evaluation team composed of representatives of the NCC and an independent contractor will evaluate the bids.

The NCC may request all Bidders to make a formal or informal presentation of the proposed solution(s), Bidder's capabilities, and experience, and/or to demonstrate the proposed product(s) and technology during the proposal evaluation phase.

6.16 Contractor Responsibilities

The Contractor shall be responsible for the design, supply, integration, installation, testing, system acceptance, and commissioning of all materials, technologies (software, firmware and hardware), and to provide all labor, technical expertise and support required to guarantee a fully integrated, operational System in compliance with this RFP, including but not necessarily limited to the following:

1. Design of all the System and technology (hardware, software and firmware), including interfaces, interconnections and system configuration.

2. Reprogramming, reconfiguring and verification of performance and operation of any existing the NCC equipment that may be retained for the new (replacement) system.

3. Supply, installation, testing, commissioning and certification of all equipment, including antennas, antenna transmission lines and all system related components, installation hardware and materials, applicable software and firmware and solar power systems for a fully integrated, operational System in accordance with the Specifications.

4. System performance verification in accordance with the Specifications.

   The Contractor shall be responsible for meeting the radio coverage performance and system reliability requirements detailed in these Specifications.

5. Removal of existing the NCC system technology, including antennas, antenna transmission lines for fixed stations including shelters and base station locations, and installation of technology and required facilities to meet the RFP Specifications.

6. Removal of existing vehicle radio equipment and associated antennas, and installation of new (replacement) equipment.

7. Evaluate, repair, upgrade or replace solar power systems at the shelters and chalets

8. Warranty support, including on-site, on-line web site/email, and telephone technical support, 24 hours a day, 7 days a week.

9. Full contract compliance, including the compliance of all sub-Contractors for all services, products, cost and schedule.

10. Responsibility for all costs in addition to the contract price, for all schedule and cost overruns that are not caused by the NCC, as determined by the Contractor and the NCC in good faith negotiations.

11. Ensuring that the System meets all applicable standards and policies either explicitly as stated in the Specifications, or as determined by the NCC as part of the NCC proposal evaluation and contractor selection process including:

    a) Innovation, Science and Economic Development (ISED) Standards and Radio System Specifications.

    b) electrical performance and safety requirements (Provincial and local).

    c) Worker safety requirements in accordance with the Ontario Work Safety & Insurance Board and federal government regulations and Quebec QC Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST).

    d) all other safety and quality of work requirements (federal, provincial, and local.)

12. Providing assurance and evidence that all products and services provided by the Contractor are acceptable and approved for use in the system by the following:

    a) ISED.

    b) The manufacturers, including software providers.

    c) The distributors and dealers.

13. Providing clear declaration with evidence as required that all products and services are suitable and approved as described. When requested by the NCC, and at no additional cost to the NCC, the Bidder/Contractor shall promptly provide documented proof of such suitability and/or approval to the full satisfaction of the NCC.

14. Evidence that all technology (hardware, software, and firmware) is currently readily available as commercial off-the-shelf (COTS) products.

15. Preparation of a detailed implementation schedule, plan, and procedures for approval by the NCC, and maintenance of the implementation schedule, plan and procedures throughout the complete implementation of the System, as approved by the NCC.

16. Preparation of a detailed test plan and procedures for approval by the NCC.

17. Detailed design documentation that shall enable the NCC to verify the design, as the basis for the NCC's confidence in the Contractor's design by the NCC. Note that the NCC verification process and approval is for the NCC's purposes and does not imply a detailed check of all items or replace the Contractor's verification and assurance.

    The design documentation shall include all infrastructure sites, site parameters, technology, network connectivity, system performance and functionality.

18. Preparation of a detailed transition plan from the existing systems to the upgraded and new System that will ensure a smooth transition without disruption to existing critical communications for all the NCC facilities and operations.

19. As-built drawings and related design documentation that shall accurately record and display the final system design, interconnections, technology and as installed and commissioned.

20. Provision of all tools, test equipment, and all materials required for self-sufficient assembly, installation, testing, troubleshooting, correction of deficiencies, and acceptance of all technology and the System.

    Note: Contractors shall not assume that the NCC is able to provide any technical support, equipment, materials or tools for the installation, testing, acceptance, and on-going support of the System.

21. Full implementation of the system ready for the NCC acceptance within 18 months from Contract date.

6.17 Contractor Liability Insurance Requirements

The Contractor shall, at its own expense, purchase, provide and maintain in force for the duration of the contract comprehensive general public liability insurance, naming the National Capital Commission as additional insured, against claims for personal injury (including death) or property damage or public liability claims due to any accident or occurrence, arising out of or in connection with the execution of the contract, indemnifying and protecting the National Capital Commission to a limit of not less than five million ($5 000 000.00) per occurrence.

6.18 Commercially Available Off-The-Shelf Technology & Field Modifications

1. All technology shall be fully developed, proven and commercially available off the shelf. Bidders shall not propose any technology that has not been in production and field proven in systems and environments similar to the NCC's operations.

2. Field modifications are prohibited.

All modifications to any technology and its intended use (software, firmware and hardware), shall be "factory" level and "factory" approved, and original equipment manufacturer approved and authorized in accordance with the original manufacturer's standards and specifications, and shall meet all applicable regulatory and other applicable standards and specifications.

"Factory level" may include the factory authorized dealer/distributor level, as determined by the original equipment manufacturer.

The field modification restriction applies to any modification regardless of when they occur, and regardless of whether or not they may be considered "product wide" or special for the System.

All technology shall be supplied complete with original equipment manufacturer formal, detailed technical descriptions and other documentation, test results, installation, system maintenance and operating procedures.

6.19 Contractor's Design and Installation Documentation

The Contractor shall provide detailed system design drawings, specifications and relevant documentation that shall clearly identify all system design, system performance, installation, and functional details for approval by the NCC, prior to proceeding with equipment procurement or final design commitments.

Equipment procurement and design commitments by the Contractor prior to receiving the NCC's approval, shall be the sole responsibility of the Contractor, and no costs or expenditure of time and resources by the Bidder will be reimbursed by the NCC for any technology, design or other Bidder effort that may be rejected by the NCC if the NCC had not provided previous written approval.

The documentation required for approval by the NCC shall include as a minimum:

1. Technology performance and functional specifications.

2. System wide connectivity and interface specifications and interconnections.

3. Physical layout drawings of all equipment for each radio site, base station, shelter, and vehicle.

4. Wiring and interconnections of all equipment at each radio site, base station, shelter, and vehicle.

5. Programming / programmed functions and layout, including interface configuration, for all user and infrastructure radio and control equipment and dispatcher radios.

6. System functional and performance specifications and operating procedures.

7. Proof that the technology is field proven and currently available off the shelf.

8. Complete “as-built” documentation as described above at the time of system commissioning at the point of NCC acceptance, including:

   a) the programming status of all equipment.

   b) all equipment performance measurement results, including end-to-end system as a whole.

   c) all functional test results of all equipment, and the end-to-end system as a whole.

   d) Bills of Materials for all technology and physical installation materials.

   e) declaration of full compliance with the contract specifications

   f) all system and technology interconnections (full system and technology connectivity)

   g) all system acceptance test and measurement procedures and test and measurement results.

   h) complete, unabridged service manuals for all technology.

6.20 Contractor’s Transition & Implementation Plan

The Contractor shall prepare a comprehensive transition and implementation plan as part of the contract negotiations process that clearly identifies all specific activities and events for the smooth and cost-effective implementation and transition to the System.

The implementation plan shall be subject to the approval of the NCC and shall be updated as required throughout the entire implementation of the radio system replacement, to reflect the current status and shall include all revisions to the plan that have been previously approved by the NCC.

The implementation plan shall form the basis for all project management activities and decisions and shall not be changed by the Contractor without the prior approval of the NCC.

The implementation plan and all implementation procedures shall be based on providing a smooth, cost-effective trouble-free implementation and transition to the new System with no disruption to existing critical radio communications. The plan and procedures shall not unduly restrict or burden NCC personnel and operations. The plan shall clearly identify where the implementation will impact the NCC operations, including personnel.

The implementation plan shall include as a minimum:

1. A clear description of the plan for:

   a) smooth transition from the existing system to new system

   b) decommissioning of the existing system

2. Detailed project schedule, with all salient tasks and milestones including start and completion dates.

3. Specific resources that require the NCC's involvement at any point throughout the complete implementation of the System, to enable successful completion of the Contract.

4. Identification of critical risks that may delay or disrupt the implementation of the System or the NCC operations, including the smooth transition and integration, or which may adversely affect the design, supply, the installation, the technical performance, and/or the acceptance of the System. In addition, the contractor shall identify specific risk mitigation strategies for all identified risks.

5. Specific activities and events that will be required at each milestone before proceeding to the next milestone. This includes activities and events that either will affect the NCC operations or are at risk of affecting the NCC operations.

6.21 Acceptance Test Plan and Test Procedures

Prior to finalizing the design of the System for approval by the NCC, the Contractor shall prepare a comprehensive acceptance test plan for approval by the NCC that will be used to establish all test criteria to definitively demonstrate to the NCC that the System will meet all specifications and contractual commitments as part of the acceptance and commissioning of the System.

The test plan shall identify all specific resources and facilities that will be required to be provided by the NCC for completion of all acceptance tests and inspections.

After approval of the acceptance test plan by the NCC, the Contractor shall prepare detailed test procedures to conduct all system acceptance tests and inspections that will be strictly adhered to by the Contractor. The procedures will be used as the basis to determine acceptability of the System in its entirety, in accordance with the system specifications and all contractual commitments.

All test procedures will be witnessed by the NCC.

All test plans and procedures shall be subject to the prior approval of the NCC and shall not be revised without the prior approval of the NCC.

7.0 RELEVANT STANDARDS & TECHNOLOGY COMPLIANCE REQUIREMENTS

The proposed System shall as a minimum, meet the following standards.

1. Innovation, Science & Economic Development (ISED) Standards and Specifications including RSS119 Issue 12.

2. Telecommunications Industry Association (TIA) TSB 88 Wireless Communications Systems Performance in Noise and Interference Limited Situations.

3. TIA 102 - Telecommunications, Land Mobile Communications (APCO/Project 25) if applicable.

4. European Technical Standards Institute (ETSI) TS 102-361 and TS 102-398 related to DMR systems (if applicable).

5. All technology shall be sourced only from manufacturers that are recognized Bidders of public service/public safety communications and DMR technology and systems in North America.

6. All radio communications transmitters and receivers, and relevant technology including unintentional radiators and receivers supplied in accordance with this Specification shall be certified by ISED.

7. All technology shall meet the minimum performance, operating and environmental standards and technical requirements specified in this Specification.

8. Demonstrated, reliable operation in at least 3 public service/public safety communications systems in North America.

8.0 RADIO COMMUNICATIONS COVERAGE REQUIREMENTS

8.1 General

Note: All coverage predictions shall reference TIA TSB-88 for Delivered Audio Quality (DAQ) as specified in the following sections.

The System shall provide for automatic seamless and reliable two-way radio communications between all user radios using handheld (portable) and vehicle radios throughout the entire NCC service area, anywhere within the reliable radio coverage areas defined above.

The NCC radio communications system users/operators shall not be required to switch radio channels on the radios or devices and shall not be required to make any adjustments to the radio or device controls to maintain seamless, reliable two-way radio communications throughout the entire NCC service area.

Stationary and in-motion handheld and mobile radios and fixed radios shall be able to successfully transmit and receive voice and non-voice signalling anywhere within the coverage area by only activating the PTT (Push To Talk) for transmitting, and adjusting the radio receive audio volume control as required by the user.

Any automated transmissions such as signalling, shall also be able to be transmitted and received anywhere the coverage area, but without requiring intervention by anyone (shall be fully automated).

The radio coverage shall permit any NCC radio to communicate on the voice channel with any other NCC radio within the defined coverage area. This capability shall include all the NCC fixed facilities (offices, chalets and shelters as described in Appendix E) and include reliable two-way radio communications (including signalling/automated communications control functions) with all handheld, vehicle and fixed radio users.

All signalling and other automated communications functions shall be fully functional and able to successfully complete communications with at least the same coverage and reliability as the voice communications.

8.2 Handheld (Portable) Radio Communications Coverage

Please refer to Appendix B for a Google Earth .kmz file and to Appendix C for a .pdf map of the NCC service area where reliable two-way radio communications coverage is required for *handheld radios (portables)*.

Note that vehicle radio coverage and fixed radio coverage are addressed separately.

The map is separated into geographic coverage reference zones marked Zone 1, Zone 2 and Zone 3 with each Zone divided into smaller geographic "Sub-Zones". Note that any Zone reference includes its related Sub-Zones.

Each Zone (including Sub-zones) is for geographic coverage reference and represents a level of importance for reliable two-way radio handheld radio communications coverage when the handheld radio is outdoors (outside of vehicle or structure).

Bidders shall provide coverage maps displaying the handheld two-way radio coverage when handheld radios are communicating with other handheld, vehicle, or fixed radios through the NCC service areas as depicted in Appendix C maps.

Please refer below for the required format of the maps to be submitted to the NCC.

The Bidders shall display the predicted coverage overlayed on the maps by assigning a specific colour based on the predicted communications audio quality that meets each of the three TIA TSB-88 DAQ levels specified below.

The NCC will assess the predicted coverage based on the distribution of DAQ levels within each Zone/Sub-Zone, including where coverage is void or below the lowest of the three DAQ levels.

Note that these Zone locations are only for assessing the extent and distribution of radio coverage. The NCC coverage requirement is for any radio in any Zone to be able to communicate with any other radio (handheld, vehicle, or fixed) in the same or any other Zone for seamless, automatic "end-to-end" coverage throughout the entire area, as described in this document.

Each Bidder's predicted coverage as displayed on the coverage maps shall enable the NCC to conduct an evaluation according to the NCC's required level of importance for each Zone (including Sub-Zones) and the DAQ level of all locations within each Zone/Sub-Zone.

1. Zone 1 (Geographic)

Greatest importance for reliable two-way handheld radio communications coverage.

Zone 1 will be assigned the highest weighting for the evaluation and score of each Bidder's predicted coverage for the following areas within Zone 1:

a) Area 1A: Lac La Peche

b) Area 1B: Lac Philippe

c) Area 1C: Southeast Gatineau Park

d) Area 1D: Core Area Sector

e) Area 1E: Green Belt

f) Area 1F: Urban Lands

2. Zone 2 (Geographic)

2nd most important for reliable two-way handheld radio communications coverage.

No geographic names are associated with the areas below.

Zone 2 will be assigned the 2nd highest weighting for the evaluation and score of each Bidder's predicted coverage for the following areas within Zone 2:

a) Area 2A

b) Area 2B

c) Area 2C

d) Area 2D

e) Area 2E

f) Area 2F

3. Zone 3 (Geographic)

3rd most important for reliable two-way handheld radio communications coverage.

No geographic names are associated with the areas below.

Zone 3 will be assigned the 3rd highest weighting for the evaluation and score of each Bidder's predicted coverage for the following areas within Zone 3:

a) Area 3A

b) Area 3B

c) Area 3C

d) Area 3D

e) Area 3E

f) Area 3F

8.2.1 Communications Audio Quality Weighting for Handheld Radio Coverage

Delivered audio quality (DAQ) levels based on TIA TSB-88:

1. Level 1: Delivered audio quality (DAQ) of 3.4 or better.
2. Level 2: Delivered audio quality (DAQ) of 3.0 - 3.4.
3. Level 3: Delivered audio quality (DAQ) of 2.0 - 3.0.

The following table is included as a reference only.

Reference Only

DAQ Delivered Audio Quality	Faded Subjective Performance Description
1	Unusable, Speech present but unreadable
2	Understandable with considerable effort. Frequent repetition due to Noise/Distortion
3	Speech understandable with slight effort. Occasional repetition necessary due to Noise/Distortion
3.4	Speech understandable with repetition only rarely needed. Some Noise/Distortion
4	Speech easily understood. Occasional Noise/Distortion
4.5	Speech easily understood. Infrequent Noise/Distortion
5	Speech easily understood.

8.2.2 Evaluating & Scoring Bidder's Predicted Handheld Radio Coverage

The coverage predictions (modeling) shall be for two-way radio handheld radio communications coverage when the handheld radio is outdoors (outside of a vehicle or a

structure) in a “swivel” holster with the radio (including antenna) worn on the belt at waist level.

The coverage predictions shall include parameters for body shielding, land clutter (trees, buildings, etc.) and other propagation RF attenuation that will impact reliable two-way radio communications.

The coverage reliability predictions shall ensure that the map displays are accurate for 95% of all transmissions.

Each Bidder’s predicted coverage as displayed on the Bidder’s coverage maps will be evaluated and scored by the NCC according to the DAQ communications quality predicted and displayed throughout each of the Zones and Sub-Zones, summarized as follows:

1. Geographic:

    a) Zone 1: Highest level of geographic importance weighting

    b) Zone 2: 2nd highest level of geographic importance weighting

    c) Zone 3: 3rd highest level of geographic importance weighting

2. DAQ performance:

    a) DAQ 3.4 or better = highest DAQ weighting

    b) DAQ 3.0 - 3.4= 2nd highest DAQ weighting

    c) DAQ 2.0 – 3.0= 3rd highest DAQ weighting

Areas that are predicted to be void (no predicted coverage) or below DAQ 2.0 will not be scored.

8.3 Vehicle (Mobile) Radio Communications Coverage

The vehicle radio coverage shall be based on a standard ¼ wave whip mounted antenna in the centre of the vehicle roof clear of all close proximity obstructions

The coverage predictions shall include parameters for land clutter (trees, buildings, etc.) and other propagation RF attenuation that will impact reliable two-way radio communications.

The coverage reliability predictions shall ensure that the map displays are accurate for 95% of all transmissions.

8.3.1 Evaluating Predicted Vehicle Radio Two-Way Coverage

Coverage reliability for two-way vehicle radio communications shall meet both of the following:

a) *a minimum of DAQ 3.4* along all roads within Gatineau Park identified on the maps provided by THE NCC, and throughout areas 1D, 1E, and 1 F.

b) All other geographic areas that as a minimum shall be the same or better than the predicted handheld radio coverage.

8.4 Fixed Radio (Chalets, Shelters, Offices etc.) Two-Way Communications Coverage

The fixed radio used in the chalets, shelters and offices coverage shall be based on the antenna configurations proposed by the Bidders in accordance with the general requirements specified in this document.

Please refer to Appendix E for a list and a map of the fixed facilities.

The coverage predictions shall include parameters for land clutter (trees, buildings, etc.) and other propagation RF attenuation that will impact reliable two-way radio communications.

The coverage reliability predictions shall ensure that the map displays are accurate for 95% of all transmissions.

8.4.1 Evaluating Fixed Radio Two-Way Communications Coverage

Coverage reliability for two-way fixed radio communications shall meet *a minimum of DAQ 3.4* at all fixed radio locations for communications through the infrastructure.

8.5 Coverage Predictions and Maps for NCC Evaluation

Map File References: Appendix B - RadioCoverage_Google Earth
Appendix C - RadioCoverage 11x17.pdf (tabloid)

Bidders shall provide evidence using the Appendix C Google Earth file for handheld radio coverage and a separate Google Earth file for vehicle radio coverage that shall display the predicted two-way radio communications coverage for the proposed system design.

Bidders shall retain the same Zone boundaries and other objects and references, layers, breakouts, etc. that are included in the NCC provided files referenced above.

The map file for handheld two-way radio coverage and a separate map file for vehicle two-way radio coverage submitted by the Bidders shall enable the NCC to evaluate the coverage predicted by the Bidders without restrictions including the capability to move layers, copy specific data from the submitted files to a separate NCC file for analysis, etc.

Bidders shall also submit a .pdf copy version of each map that shall enable the NCC to visually reference the pdf version to the electronic file that the NCC will evaluate using NCC applications.

The Google Earth format coverage display (and .pdf copies) shall clearly identify all areas of reliable coverage using different colours for DAQ 3.4, DAQ 3.0 and DAQ 2.0 as defined above in accordance with TIA TSB-88.

A composite map of all 3 DAQ levels shall be provided for handheld coverage and a separate composite map for vehicle coverage with the highest DAQ level colour on the top layer, 2nd highest DAQ level colour on the next layer and the 3rd DAQ level colour on the bottom layer.

Areas with levels below (worse than) DAQ 2.0 shall be either in a separate distinctive colour, or no colour display on the base map.

The colour and appearance for each DAQ level shall including the following:

- The appearance of each DAQ level / colour shall be distinct from the other DAQ colours and easily readable on a composite coverage map for all 3 DAQ levels.

- The opacity (transparency) of the colour overlays shall enable very clear and distinctive visual evaluation of each layer, with important geographical features such as roads, clearly identified under the layers.

- If a colour is used to display areas below DAQ 2.0, the colour shall be the bottom layer of all 4 levels.

- Each layer shall be distinctive and not “blend” or “fade” into the next layer, and the colours shall not be graduated to display the separate DAQ levels; i.e., no gradual fading and no gradual colour shifting from one DAQ level to the next level, and no use any symbols or markings that do not clearly and distinctively identify each DAQ level.

In addition to the mandated maps and map formats described above, Bidders may include separate maps for additional detail if required to enable the NCC to clearly and easily evaluate the extent of predicted reliable radio communications coverage in detail for the

proposed new radio system and compare the coverage to the NCC's specific coverage requirements.

Bidders shall provide upon request, specific detailed technical parameters and other design information as required by the NCC to enable the NCC to replicate evaluate the proposed system design and predicted radio communications coverage as part of the evaluation process and as required after selecting a Bidder (Contractor) to enable the NCC to carry out independent RF coverage analyses.

8.6 Radio Communications Infrastructure Sites & Facilities

Bidders shall be responsible for identifying radio sites with suitable radio facilities for the proposed reliable radio communications coverage.

The radio sites (towers, building roof-tops and other types of antenna support structures) shall be determined by the Bidders to be available and accessible to the NCC for the purposes of installing and maintaining radio communications antenna systems, radio communications transmitter and receiver equipment and accessories as an integral part of the NCC radio communications system over at least a 10 year period.

Bidders shall include in their proposals, evidence that the selected infrastructure radio sites have been approved by the site owners and managers for the installation of the required NCC antenna systems and radio equipment, subject to negotiations with the NCC and execution of an agreement between the NCC and the site owners/managers.

The infrastructure including all radio sites and antenna structures shall be fully approved by all government regulatory agencies (Federal, Provincial, County and municipal) such as ISED, NAV CANADA, Transport Canada, local planning authorities, etc.

All proposals shall include the prices (fees) quoted by the site owners/managers for the lease or rental of the radio sites to be finalized by the NCC.

9.0 SUMMARY OF RADIO EQUIPMENT AND ACCESSORIES

Please refer to Appendix A, Price & Delivery forms for quantities of each type of user technology.

9.1 Fixed Radio Communications at NCC Facilities

Please refer to the map in Appendix D for an overview of the locations of the NCC facilities that require fixed base station radio communications.

There are 2 fundamental types of fixed radios at the NCC facilities:

- Desktop style “dispatch” base stations with AC electrical power supplies at the NCC offices

- Wall mounted tamper-proof solar powered radios at shelters and chalets

9.2 User Handheld & Vehicle Mounted Radio Requirements

User radio communications technology shall include:

1. Handheld (portable) radios with antennas, external speaker-microphones, heavy duty carrying cases (holsters) and desk top chargers

3. Vehicle mounted radios with microphones and antennas

10.0 RADIO COMMUNICATIONS FREQUENCIES AND VOICE CHANNELS

10.1 Radio Frequency Channel Requirements & Channel Access

The proposed system shall use radio channel frequencies currently licensed to the NCC with additional radio channels to be licensed to the NCC to augment existing the NCC licensed radio channels if required to meet the NCC’s coverage and voice communications access needs.

The Contractor shall be responsible for determining the number of radio channel frequencies that will be required to meet the NCC’s needs including the existing licensed frequencies and additional radio channels that may be required.

It shall be understood that due to the nature of radio licensing, the NCC may not be able to obtain any or some additional radio channels, licenses, or license modifications, and that the proposal including design, shall clearly state the requirements for additional the NCC channels or licensing changes, and shall clearly state alternatives if specific channels or changes to existing licenses are not possible or feasible for the NCC.

Bidders shall propose digital land mobile radio communications technology that meets the NCC’s minimum radio communications radio channel access (loading) needs for rapid access to any available radio channel at any site (based on radio coverage) for two-way radio communications without blocking or other radio channel access delays.

“Radio channel access” means access to a radio frequency radio channel (channel assigned by ISED) that provides the necessary exclusive (separate) “voice path or voice channel” in the context of digital radio channel access technology and access protocols.

This may mean 1 voice path on 1 radio frequency channel, or 2 “simultaneous” voice paths on 1 radio frequency channel via a digital channel access protocol.

The NCC requires the system capability of a minimum of 6 voice paths (voice channels) that provide completely separate voice communications paths and can be accessed virtually or essentially simultaneously without delay or blocked access to the system, and without delay of the transmission after access is provided by the System.

Each proposal shall clearly specify and describe the proposed RF channel arrangements throughout the entire system for accessing the radio channels throughout the NCC service area, and any potential restrictions or radio channel access delays that could occur at any time 24 hours a day, 365 days a year.

Bidders shall clearly specify the total MAXIMUM system access time and the TYPICAL access time for a radio (radio user) to access the system and begin transmitting a voice message from the initial PTT activation by a radio user.

The Bidder specified channel access times shall include a clear, succinct description of conditions under which the access times are specified.

The stated time shall be the total system access delay, including user radio and infrastructure transmitter attack time, digital signalling or preamble, and any network delays.

10.2 Currently Licensed the NCC Radio Frequencies

The following radio frequencies are currently licensed to the NCC by Innovation Science & Economic Development (ISED) and may be used for the new System subject to authorization by Innovation Science & Economic Development (ISED).

The NCC shall be responsible for maintaining the licenses and for paying the ISED license fees.

Please refer to the following table for a summary of the existing radio frequency channels and present licensed locations.

EXISTING SYSTEM FREQUENCIES & LICENSED LOCATIONS					
Station Type	Tx Frequency (MHz)	Rx Frequency (MHz)	Station Location/Area of Operation		
			Address	Lat	Long
Fixed Repeater & associated mobile stations	164.4300	168.4500	Camp Fortune 0.9 km From Main Tower	45 30 23	075 50 22
Repeater & associated mobile stations	163.2600	163.9200	Fire Tower - Chelsea, QC	45 32 40	075 59 41
Repeater & associated mobile stations	162.7800	165.1500	Queen Elizabeth Tower	45 24 54	075 42 20
Mobile	164.7300	164.7300	National Capital Area		
Mobile	164.7300	164.7300	Gatineau Park Area, QC		

10.3 Proposed Radio Frequencies

All Bidder proposals shall clearly itemize the required radio frequency requirements to meet the NCC's radio coverage and voice channel access needs.

If additional radio frequency radio channels are required to meet the NCC's requirements, the Bidder's proposal shall clearly identify the quantity and parameters of the channels that will be in addition to the existing the NCC radio frequency channels listed in this section of this document.

The Contractor shall be responsible for identifying additional radio frequency channel requirements and for filing the applications for additional radio frequency channels with ISED with the appropriate approval and authorization by the NCC.

Any additional radio channels shall be licensed to the NCC by ISED.

If changes to the existing radio channel parameters are required, the Bidder shall clearly identify the existing licensed parameter and the revised parameter and the specific channel(s).

The Contractor shall be responsible for preparing and filing the ISED modification applications for using the frequencies for the new system, and for the NCC's approval of each application.

The proposals shall also comment on the probable availability of additional suitable frequencies that can be licensed to the NCC throughout the NCC service area, and to provide specific recommendations that can be considered by the NCC for licensing of additional radio frequencies.

Alternatives and options that the Bidders deem beneficial to the NCC will also be considered by the NCC.

11.0 RADIO SYSTEM TECHNOLOGICAL REQUIREMENTS

11.1 General

Bidders shall propose a digital land mobile radio communications technology that meets the NCC's minimum radio communications coverage, radio channel access and reliability need to ensure that the NCC radios will be provided communications in accordance with this RFP.

The NCC is considering DMR 2 slot TDMA technology with 2 voice communications slots per RF channel.

However, Bidders may propose alternatives to DMR, such as P25 if the Bidder feels an alternative technology will be more beneficial to the NCC.

As a minimum, all infrastructure, base (fixed) station, vehicle and handheld radio transmitters and receivers shall meet the following standards:

a) ISED RSS119 Issue 12, and applicable TIA specifications including TSB 88.

b) Applicable ETSI standards and specifications for DMR technology

c) Note: All base station, vehicle, and handheld equipment shall be capable of both digital radio communications and FM analog communications.

   Analog communications may be required for joint agency operations or providing mutual aid and assistance to other entities / organizations that operate analog systems in the VHF band as part of their mutual aid communications.

d) All Bidder proposals shall include detailed radio equipment RF performance, electrical and physical manufacturers' minimum guaranteed specifications.

Proprietary technology is not acceptable for the NCC system. Technology that is available from, and approved by and for multiple suitable manufacturers, is mandatory.

The technology shall be significantly and confidently field proven in a rugged, public service type of environment similar to the NCC system requirements (including geographic operating area, usage, physical environment, etc.).
Technologies that are not field proven, are unacceptable.

Technology includes hardware, software, firmware as applied to the proposed the NCC system.

11.2 Technology Specifications

All Bidder proposals shall include the detailed manufacturers' specifications and brochures for all technology that is being proposed. The technology includes infrastructure technology (RF transmitters-receivers, audio and control interfaces, antenna systems, etc.), fixed stations, vehicle and handheld radio technology and accessories, solar and battery technology, equipment enclosures, etc.

All technology will be evaluated by the NCC for suitability for high activity critical daily use and emergency radio communications system used in a highly active public services environment, including if the technology is suitably field proven.

All proposals shall provide detailed manufacturer specifications including guaranteed performance, functionality, required electrical power, required installation and operating conditions, durability, physical dimensions, and form factor that are guaranteed as a minimum level of performance.

"Typical" specifications that exceed the minimum may be also provided but shall be clearly stated so the NCC can clearly identify the differences between the minimum and typical specifications.

The specifications shall be for all technology including accessories and shall include:

1) Infrastructure, fixed station, vehicle and handheld radio performance, functional and operating conditions for all equipment
2) Radio battery performance for specified duty-cycles and operating conditions for all battery-operated equipment.
3) Physical dimensions, reliability standards, environmental and electrical power specifications for all technology.

11.3 Push-To-Talk ANI Requirements

The System shall include push-to-talk automatic number identification capabilities that will transmit a unique identification for each radio including fixed radios (dispatch base stations, shelter radios, vehicle radios and handheld radios every time the push-to-talk on any radio is operated.

The base stations located at the “dispatch” locations at the NCC offices shall include PTT ANI decoding to enable the NCC radio operators at each dispatch location to identify the unique ANI code of the transmitting radio.

The push-to-talk ANI function shall include aliasing of the unique radio identifier so that the displayed identification on each radio that includes a LCD or equivalent display that shall identify the transmitting radio, using the NCC determined nomenclature such as ”Supervisor 1” or “Shelter 2” etc.

11.4 Radio Equipment Adjustments & Servicing

The user vehicle, handheld and fixed radio equipment shall be fully configurable and adjustable for all radio frequency operation and radio equipment functions and features using the software that is specifically intended and approved for that purpose by the radio manufacturer.

All service software shall be suitable for installation and operation using any commercial off the shelf “mid-grade consumer grade” computer equipment. Bidders shall state the required minimum computer requirements including operating system, minimum processor speed, minimum RAM, electrical power requirements, and required interfaces/ports for connection to the system technology.

Special manufacturer supplied interconnecting service cables and interfaces are permissible provided the Bidder can demonstrate that the cables and interfaces are normally stocked and available from multiple sources in Canada and will be available for the projected life of the system.

All equipment shall be able to be serviced within Canada, by all manufacturer approved radio service facilities.

All proposals shall clearly describe the service software capabilities, interfaces, and the computer/device requirements for using the software.

11.5 Encryption

The NCC is considering basic (DES) encryption as a minimum requirement for the new system, subject to further review by the NCC and possible discussions with the selected Bidder (Contractor). Encryption will provide benefit to the NCC and is generally considered to be an integral part of digital radio communications.

The NCC may have a requirement for advanced encryption (AES) for some of the handheld and vehicle radios with the new system.

The number of AES equipped radios will be determined by the NCC as part of the negotiations with the presumptive contractor.

All proposals shall clearly and succinctly describe the types and levels of encryption that are available for the proposed technologies.

One factor that the NCC will evaluate is the additional financial cost and possible technical and operational implications for encryption compared to non-encrypted (clear) communications.

All proposals shall clearly describe the proposed encryption and the relative costs for basic digital encryption standard (DES) and for advanced encryption standard (AES) compared to non-encrypted (clear) communications.

12.0 DISPATCH BASE STATION RADIO REQUIREMENTS

12.1 Dispatch / “Office” Base Station Radios (Transceivers)

Dispatch base stations shall be located in various NCC offices to provide office personnel with radio communications with the NCC radio users throughout the NCC defined areas for reliable two-way radio communications coverage.

Please refer to Appendix D for a list of the fixed base station locations.

The radio base stations shall be desktop mounted style with AC electrical power supplies for connection to the standard AC electrical outlets in the NCC offices.

The base station radios shall include internal base station radio speakers.

The base station radios shall be supplied with desktop style microphones with push-to-talk switch.

The base station radio from factor (packaging) shall be an integral unit with radio transceiver and power supply in a common enclosure, and shall provide a clean,

professional look, including simple, clean and out of the way routing of the power cable and antenna cable.

The NCC may consider Bidder proposals for a desktop mounted transceiver with an external AC power supply that is located under the desk or other suitable location in close proximity to the radio transceiver location. The NCC's consideration of a specific style and mounting configuration shall be at the full discretion of the NCC.

Bidders shall include detailed descriptions, photographs and/or brochures for the proposed base stations.

The base stations shall include a front face panel with the following displays and controls:

1. LCD (or equivalent) display that shall clearly display:

   a) The selected radio (communications) channel using NCC designated terminology.

   b) The identification of a radio that is transmitting communications over the NCC radio system on the selected radio (communications) channel.

      Note: Each radio, including the base stations shall be assigned a unique identifier that shall be aliased to NCC designated terminology to enable the base station radio operators to clearly and immediately identify the calling radio.

2. Transmitting indicator light that shall clearly identify to the base station radio operator that the microphone push-to-talk switch is pressed, and the radio transceiver is transmitting.

3. Receiving indicator light that shall clearly identify to the base station radio operator that the radio is receiving a transmission from another NCC radio on the selected radio (communications) channel.

4. Radio transceiver radio (communications) channel selector control.

5. Radio receiver volume control that controls the audio volume level to the radio transceiver speaker that is being used.

   Note: The volume control function shall include a minimum volume setting that prevents the receiver speaker audio level from being reduced to zero by the radio operator. The radio transceiver minimum level setting shall be determined by the NCC and shall an adjustment that is internal to the transceiver (either software or manual control adjustment) to prevent inadvertent or intentional reduction of the minimum level setting by the base station radio operator.

6. The transceiver / base station shall not cause interference or be susceptible to interference from other NCC facility electrical devices and electronics.

12.2 Dispatch Base Station Antennas

Currently, the NCC base stations employ indoor antennas that are mounted in various locations in the NCC dispatch base station facilities.

Bidders shall propose a suitable antenna type and mounting configuration for each base station in each NCC facility.

Outdoor mounted antennas are preferred from the perspectives of general RF performance, Safety Code 6, and reducing potential for electromagnetic interference with other electronic devices in the office, including intended RF transmitter/receivers such as wireless routers and computer accessories, etc.

However, Bidders may propose either interior mounted antennas, or outdoor mounted antennas depending on the coverage reliability between the base station locations and the system infrastructure and acceptable RF isolation to personnel working in the area of the base stations and antennas.

If the Bidder selects interior mounted antennas, the antenna shall be configured and located at a distance and in a location that minimizes direct RF radiation exposure to personnel.

In all cases, the locations of the antennas shall meet Health Canada Safety Code 6 guidelines.

Antennas shall not be located near or in the same room as sensitive electronic equipment, such as computer systems, networks, electronic sensors or alarm systems.

Antenna ERP shall be adjusted for the minimum required to achieve reliable two-way communications coverage.

If a Bidder determines that indoor antenna locations will not provide acceptable radio communications coverage for the base stations, and/or provide acceptable RF isolation for human exposure to the RF radiation in accordance with Safety Code 6, Bidders shall recommend suitable exterior antenna locations and mounting for the base station antennas.

In all cases, industry standard best practice shall be employed for all antennas.

12.3 Push to Talk ID (ANI) Display

All Bidder proposals shall clearly describe all Push-to-talk ("PTT") ANI encoding and decoding functions and capabilities in all proposed base station radios.

12.3.1 PTT ID Non-Emergency Transmissions

All radios shall automatically transmit the radio unique PTT ID each time the radio is transmitting.

The PTT ID decoding and display for the NCC radio communications system shall be incorporated into each "dispatch" base station and any other THE NCC radio specifically configured for PTT ID decoding and display.

The PTT ID codes and the associated time/date stamp for each code shall be clearly visible on each base station LCD display without requiring the radio operator to activate any controls or functions to display the time/date stamp.

All PTT IDs shall be decoded, time and date stamped, aliased, via an NCC editable look up table and displayed in real time to provide the radio operators with immediate radio identification of the transmitting radio.

The latest PTT ID that is displayed shall remain on display to the operator until the next PTT ID is received.

The display shall include controls that shall enable the operator to be able to scroll back in time to view the sequential history of PTT IDs including the time stamp for each PTT ID.

The base station shall provide an industry standard (common) electronic data output that can provide a data source to an external database device. The NCC may want to include this device as an option initially or add it at a later time, to provide the NCC with a method for storing, processing, and retrieving PTT ID information for an indefinite period of time.

No one shall be able to clear or remove any PTT ID from the display or list or history.

The technology shall enable authorized NCC personnel to edit and update the lookup table (cross referencing PTT ID with user recognizable IDs) without complex procedures.

12.3.2 PTT ID (ANI) Emergency Transmissions

Each handheld and vehicle radio shall include an "emergency transmit" switch that when pressed, shall automatically transmit an emergency PTT ID that includes the normal PTT ID with an "emergency" tag.

The emergency PTT ID will be activated via each individual radio and used to alert personnel and dispatchers that the operator of that radio requires special assistance.

The emergency transmission shall be automatically, and repetitively transmitted until the initiating radio (handheld or vehicle) operator presses the normal push-to-talk switch.

It is understood that the NCC radio users/operators shall be able to selectively switch to an alternate voice channel to be able to continue communications for various reasons such as to coordinate the response to the emergency without broadcasting the coordination over the voice channel used by the radio that transmitted the emergency, to avoid potential communications interruption of the repetitive emergency transmission, etc. This will also be available to avoid coordinating activities that are audible to others near the radio that transmitted the emergency PTT ID.

The handheld radio microphone (both the external speaker-mic and the internal handheld microphone) shall be activated during the emergency transmission to enable the handheld radio user to orally call out the nature of the emergency without having to press the normal radio push to talk switch.

This feature shall be software programmable that can be enabled and disabled by a qualified service technician.

An audible alert shall occur at each base station and shall continue until the operator of the h base station operators manually reset the alert.

Resetting the alert on the base station shall mute the aural tone but shall not reset or delete the visual emergency transmission display.

13.0 CHALET & SHELTER BASE STATIONS

13.1 General

Radio base stations in the chalets and shelters are intended for public use in emergencies.

Bidders shall provide detailed descriptions of the proposed base station design that meets the requirements below.

NCC radio users on the same voice path/radio channel shall be able to monitor and communicate with the public over the shelter and chalet radios.

Access to radio communications by the public shall be restricted to a simple, robust public access user interface that will permit any member of the public to initiate a radio transmission and to receive two-way voice communications with NCC personnel.

Although the radios will be inside the shelters and chalets, the radios will be exposed to a wide range of temperatures, and the NCC cannot guarantee that the shelter radios will be protected from exposure to water/moisture.

The configuration shall provide immediate and straightforward access to the public via the public assess user interface.

Bidders shall provide a description of the methods and technologies that are proposed for the shelter and chalet radios including the public access interface.

The packaging of the user interface may be integral with the radio transceiver or may be separate.

The push-to-talk switch and the speaker-microphone shall enable any person of the general public to be able to quickly and easily identify and press the push-to-talk switch and speak into the microphone to transmit an emergency call.

The speaker shall enable the user to clearly hear radio communications without making any adjustments or activating and switches or other controls.

The interface shall include a manually activated (not VOX) push-to-talk switch and an enclosed speaker and microphone.

The PTT switch shall be of sufficient size and shall be easy to activate for a wide range of public users with a variety of physical dexterities and strengths to be able to reliably press (activate) the PTT switch.

The PTT switch activation shall be via a physical mechanical pressure by the user, and shall exclude “touch sensitive”, capacitive or other electronic sensing. Stylus or other similar devices are not permitted.

The audio volume control shall be pre-set and hidden and protected from adjustment by the public.

The audio level shall be high enough for a wide range of public to be able to hear the communications over the speaker, even during significant wind noise, rain noise, etc.

A clear, vandal-proof sign shall be posted in close proximity to the push-to-talk switch and speaker-microphone with simple, easy to read and understand instructions for the use of the push-to-talk switch and speaker-microphone.

The signs shall be in both English and French. Universal symbols shall be used in addition to the English and French wording.

Bidder proposals shall include example wording, font, symbols, etc. for the NCC to evaluate.

The size and other physical characteristics of the interface shall be suitable for a wide range of ambient light conditions and shall be suitable for a wide range of public to be able to see, understand and activate the controls.

The chalet and shelter base station radios shall be vandal-proof, and resistant to typical damage encountered in an outdoor public environment that includes wildlife.

The transceiver, the push-to-talk switch and speaker shall be in a tamper-proof sealed enclosure that protects the transceiver, push-to-talk switch and speaker wiring from moisture and liquid spills.

If the transceiver is enclosed separately from the public access controls and microphone and speaker, the transceiver shall be enclosed in a locked, tamper-proof, sealed enclosure. The transceiver shall be mounted in an inconspicuous location.

Any interconnecting cables between the transceiver, the transceiver electrical power source, the public access interface, and antenna shall be in metal conduit or installed in the walls to prevent any public access to the wiring.

If the public access interface is separate from the transceiver or any other component, the components shall be in close proximity to each other to minimize the length and vulnerability of the interconnecting cables.

Metal conduit is specified to reduce the potential for cutting or breaking the conduit and wiring.

All aspects of the equipment and installation shall be designed and installed for rugged public access in a remote, rugged wilderness environment. All functions features and operation shall be protected against tampering and damage caused by misuse and vandalism, and animal/pest damage.

Materials shall not be susceptible to rodent or other wildlife damage.

The Bidder shall provide all drawings, photographs, and descriptions to provide the NCC with a clear understanding of all aspects of the shelter base stations, for evaluation of the NCC.

The NCC reserves the right to require that the Bidders provide actual demonstration equipment for the NCC to evaluate all physical aspects of the equipment that would be implemented.

All aspects of the shelter and chalet base stations shall be evaluated by the NCC at the sole discretion of the NCC, based on the NCC's confidence that the design, construction, and packaging is suitable for use in the shelters and chalets.

13.2 Electrical Power

Electrical power to the radio equipment will be supplied from a solar -battery system.

Bidders shall clearly specify in all proposals, concerns, issues and recommendations for use and/or replacement or upgrade of the existing solar systems to meet the NCC's needs in accordance with this RFP.

Bidders shall include prices to replace and/or upgrade any or all parts of the existing solar power systems that are necessary to meet the reliability and performance requirements for the radio equipment at each chalet/shelter.

The solar power system shall provide reliable electrical power to the radio equipment 24 hours a day, 365 days a year based on the prevalent worst period (minimum) sunlight conditions throughout the Ottawa region.

Ultimately, the Contractor shall be responsible for ensuring that the solar power system meets all requirements for reliability and autonomy, whether the existing system is not changed, repaired, upgraded or replaced.

Radio communications system Bidders shall specify the following in each proposal for the radio equipment at each chalet/shelter to enable the NCC to assess alternative solar power system supplier prices at the NCC's discretion:

1. Maximum and minimum operating and standby voltage requirements.

2. Peak current at the maximum and minimum voltage.

3. Average current at the maximum and minimum voltage based on a 24-hour duty cycle of:

    a) 5% transmit

    b) 45% receive

    c) 50% standby

13.3 Antenna Systems

The Contractor shall be responsible for the supply and installation of all antennas, antenna transmission lines, connections, and all antenna mounting hardware for all radio sites, including supply and installation of weather and water-proof waveguide ports, and/or sealed glands and/or weather heads for routing all antenna RF and electrical cables from the antennas to the radio equipment inside the shelters and chalets.

All installation work shall be in full compliance with all federal, provincial and municipal laws and regulations, and shall not compromise in any way, the safety and security of the public, maintenance workers and NCC personnel at the locations during and after the installation work.

The Contractor shall supply and install the complete antenna system for each transmitter and receiver station including:

1. Heavy duty antenna and mounts.
2. Antenna mounting mast
3. Antenna transmission line (RF coaxial cable).
4. Stainless steel transmission line hangars (plastic/nylon straps, clamps and tie-wraps are prohibited).
5. RF jumpers.
6. Lightning suppressors.
7. Grounding of the antennas systems (transmission lines, mounts, etc.)
8. Waveguide ports or suitable cable entry glands and/or weather heads for RF and electrical cables from the antenna structures to the radio equipment inside the buildings.
9. Other equipment or materials necessary for complete installation and connection of the antennas and related equipment
10. Verifying the performance of the antenna system in accordance with the specifications.

The length of the antenna transmission line and RF jumpers between the equipment and the antenna, connector genders, lightning suppressors, and cable and grounding routing and interconnection details have been estimated for purposes of Bidder design and price proposals.

Final details such as cable lengths, connector genders, etc. and other installation details described above will be finalized after the site installation details have been confirmed with the site owners after contract award.

The Contractor may be requested by the NCC to evaluate all existing antenna structures, mounts and hardware at the chalets and shelters to determine if any of the existing antenna structures, mounts and hardware are suitable for re-use for the new antennas.

All antenna mounting configurations and locations on the exterior of buildings and other structures shall be certified by a structural engineer registered with the Professional Engineers, Ontario (PEO) or the Ordre des Ingénieurs du Québec.

13.4 Antenna Mounting on Chalets & Shelters

The antennas shall be mounted on the chalets and shelters to extend above the rooftop of the structures.

The antenna mounting masts and hardware shall be designed and installed to withstand the wind, snow and ice loads on the antenna and mounts without any damage to the antenna, mounts, pipe mast or building including bending, twisting or tilting under extreme weather conditions encountered throughout the NCC service area.

All exterior materials and components shall be either hot galvanized steel, stainless steel or aluminum.

The types and orientation of the antennas shall be determined by the Contractor to provide for reliable two-way radio communications between each chalet and shelter and the radio communications system.

All antenna mounting configurations and locations on the chalets and shelters or other structures for mounting the antennas shall be certified by a structural engineer registered with the Professional Engineers, Ontario (PEO) or the Ordre des ingénieurs du Québec.

14.0 INFRASTRUCTURE

14.1 Infrastructure Backup Power Requirements

All infrastructure radio equipment and control systems shall be electrically powered from an uninterruptable power source that shall provide continuous electrical power to all System technology at all infrastructure sites in the event of a commercial utility power failure.

All Bidder proposals shall clearly describe the backup electrical power capabilities at all System infrastructure sites.

14.2 LMR Radio Sites & Facilities

All proposals shall include the radio site details as specified in the following tables.

Pleas add tables as required and mark N/A at Ste Number and Name for tables that are not required.

Site 1: (Name & Address)	
Site Function	
Coordinates Lat. & Long (deg-min-sec)	
Antenna structure	
LMR antenna make/model	
Antenna gain & pattern	
If not omni, LMR antenna dipole orientation (azimuth)	
LMR Antenna AGL (Metres)	
LMR transmission line type & approximate length	
Transmitter combiner make/model	
Receiver multicoupler make/model	
LMR equipment location	

Site 2: (Name & Address)	
Site Function	
Coordinates Lat & Long (deg-min-sec)	
Antenna structure	
LMR antenna make/model	
Antenna gain & pattern	
If not omni, LMR antenna dipole orientation (azimuth)	
LMR Antenna AGL (Metres)	
LMR transmission line type & approximate length	

Site 2: (Name & Address)	
Transmitter combiner make/model	
Receiver multicoupler make/model	
LMR equipment location	

Site 3: (Name & Address)	
Site Function	
Coordinates Lat & Long (deg-min-sec)	
Antenna structure	
LMR antenna make/model	
Antenna gain & pattern	
If not omni, LMR antenna dipole orientation (azimuth)	
LMR Antenna AGL (Metres)	
LMR transmission line type & approximate length	
Transmitter combiner make/model	
Receiver multicoupler make/model	

Site 4: (Name & Address)	
Site Function	
Coordinates Lat & Long (deg-min-sec)	
Antenna structure	
LMR antenna make/model	
Antenna gain & pattern	
If not omni, LMR antenna dipole orientation (azimuth)	
LMR Antenna AGL (Metres)	
LMR transmission line type & approximate length	
Transmitter combiner make/model	

Site 4: (Name & Address)	
Receiver multicoupler make/model	
LMR equipment location	

Site 5: (Name & Address)	
Site Function	
Coordinates Lat & Long (deg-min-sec)	
Antenna structure	
LMR antenna make/model	
Antenna gain & pattern	
If not omni, LMR antenna dipole orientation (azimuth)	
LMR Antenna AGL (Metres)	
LMR transmission line type & approximate length	
Transmitter combiner make/model	
Receiver multicoupler make/model	
LMR equipment location	

Site 6: (Name & Address)	
Site Function	
Coordinates Lat & Long (deg-min-sec)	
Antenna structure	
LMR antenna make/model	
Antenna gain & pattern	
If not omni, LMR antenna dipole orientation (azimuth)	
LMR Antenna AGL (Metres)	
LMR transmission line type & approximate length	
Transmitter combiner make/model	
Receiver multicoupler make/model	

Site 6: (Name & Address)	
LMR equipment location	

Site 7: (Name & Address)	
Site Function	
Coordinates Lat & Long (deg-min-sec)	
Antenna structure	
LMR antenna make/model	
Antenna gain & pattern	
If not omni, LMR antenna dipole orientation (azimuth)	
LMR Antenna AGL (Metres)	
LMR transmission line type & approximate length	
Transmitter combiner make/model	
Receiver multicoupler make/model	
LMR equipment location	

Site 8: (Name & Address)	
Site Function	
Coordinates Lat & Long (deg-min-sec)	
Antenna structure	
LMR antenna make/model	
Antenna gain & pattern	
If not omni, LMR antenna dipole orientation (azimuth)	
LMR Antenna AGL (Metres)	
LMR transmission line type & approximate length	
Transmitter combiner make/model	
Receiver multicoupler make/model	
LMR equipment location	

Site 8: (Name & Address)	
Site Function	
Coordinates Lat & Long (deg-min-sec)	
Antenna structure	
LMR antenna make/model	
Antenna gain & pattern	
If not omni, LMR antenna dipole orientation (azimuth)	
LMR Antenna AGL (Metres)	
LMR transmission line type & approximate length	
Transmitter combiner make/model	
Receiver multicoupler make/model	
LMR equipment location	

Site 9: (Name & Address)	
Site Function	
Coordinates Lat & Long (deg-min-sec)	
Antenna structure	
LMR antenna make/model	
Antenna gain & pattern	
If not omni, LMR antenna dipole orientation (azimuth)	
LMR Antenna AGL (Metres)	
LMR transmission line type & approximate length	
Transmitter combiner make/model	
Receiver multicoupler make/model	
LMR equipment location	

15.0 SYSTEM (INFRASTRUCTURE) CONNECTIVITY

15.1 General

Bidder proposals shall include specific network/connectivity design details including, methods and technology for connecting all infrastructure for a fully operational and reliable land mobile radio communications system that meets all the NCC's needs in accordance with this RFP and Specifications.

The connectivity is expected to be licensed microwave links.

However, the NCC may consider alternatives to microwave links such as optical fibre or a hybrid microwave and optical fibre network.

The proposed network shall be dedicated (unshared) for connecting the entire NCC system.

Regardless of the proposed network media and system configuration, the network capacity including bandwidth and latency shall not be less at any time including peak radio communications load periods, than the minimum bandwidth and latency requirements to ensure consistently clear, uninterrupted and fully reliable radio communications throughout the entire radio communications system.

Shared network connectivity that in any way or at any time compromises the integrity of the radio communications or results in any level of reduced radio communications clarity, consistency or reliability is prohibited.

15.2 Licensed Wireless (Microwave) Network

The tables below shall be completed for each site in the wireless network.

15.2.1 Wireless Licensed Frequency Bands

Preliminary general discussions have been held with ISED regarding availability of microwave spectrum throughout the NCC service area (general Ottawa and Hull areas including Gatineau Park).

ISED has indicated that there may be spectrum that can be made available above 11 GHz for a NCC licensed wireless network, although all links may not be in the same frequency band.

Each Bidder shall be responsible for proposing a specific frequency band for each link based on preliminary assessment of likely RF spectrum that may be suitable, either

through preliminary discussions with ISED or other methods that each Bidder may have to assess microwave spectrum availability.

The Contractor shall be required to coordinate the microwave spectrum and to submit applications to ISED in accordance with Radio Standards Procedures RSP113.

15.2.2 Proposed Microwave Site and RF Path Details

All proposals shall include detailed RF path analyses for each wireless link that shows the detailed path profile, the detailed technical RF signal and path parameters and path reliability for each wireless link in the network, based on the following site details that shall be provided by each Bidder.

Site 1: Site Name	
Site Function (Hub, relay, etc.)	
Site Coordinates	
Antenna structure	
Path #1 Fwd to (site name or coordinates):	
Preliminary proposed frequency band (GHz)	
Antenna make/model	
Antenna AGL	
Path #2 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path 31 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #4 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Equipment room location	

Site 2: Site Name	
Site Function (Hub, relay, etc.)	
Site Coordinates	
Antenna structure	
Path #1 Fwd to (site name or coordinates):	
Preliminary proposed frequency band (GHz)	
Antenna make/model	
Antenna AGL	
Path #2 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path 31 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #4 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Equipment room location	

Site 3: Site Name	
Site Function (Hub, relay, etc.)	
Site Coordinates	
Antenna structure	
Path #1 Fwd to (site name or coordinates):	
Preliminary proposed frequency band (GHz)	
Antenna make/model	
Antenna AGL	

Site 3: Site Name	
Path #2 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #3 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #4 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Equipment room location	

Site 4: Site Name	
Site Function (Hub, relay, etc.)	
Site Coordinates	
Antenna structure	
Path #1 Fwd to (site name or coordinates):	
Preliminary proposed frequency band (GHz)	
Antenna make/model	
Antenna AGL	
Path #2 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #3 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	

Site 4: Site Name	
Path #4 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Equipment room location	

Site 5: Site Name	
Site Function (Hub, relay, etc.)	
Site Coordinates	
Antenna structure	
Path #1 Fwd to (site name or coordinates):	
Preliminary proposed frequency band (GHz)	
Antenna make/model	
Antenna AGL	
Path #2 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #3 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #4 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Equipment room location	

Site 6: Site Name	
Site Function (Hub, relay, etc.)	
Site Coordinates	

Site 6: Site Name	
Antenna structure	
Path #1 Fwd to (site name or coordinates):	
Preliminary proposed frequency band (GHz)	
Antenna make/model	
Antenna AGL	
Path #2 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #3 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #4 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Equipment room location	

Site 7: Site Name	
Site Function (Hub, relay, etc.)	
Site Coordinates	
Antenna structure	
Path #1 Fwd to (site name or coordinates):	
Preliminary proposed frequency band (GHz)	
Antenna make/model	
Antenna AGL	
Path #2 Fwd to (site name or coordinates):	
Antenna make/model	

Site 7: Site Name	
Antenna AGL	
Path #3 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #4 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Equipment room location	

Site 8: Site Name	
Site Function (Hub, relay, etc.)	
Site Coordinates	
Antenna structure	
Path #1 Fwd to (site name or coordinates):	
Preliminary proposed frequency band (GHz)	
Antenna make/model	
Antenna AGL	
Path #2 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #3 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #4 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	

Site 8: Site Name	
Equipment room location	

Site 9: Site Name	
Site Function (Hub, relay, etc.)	
Site Coordinates	
Antenna structure	
Path #1 Fwd to (site name or coordinates):	
Preliminary proposed frequency band (GHz)	
Antenna make/model	
Antenna AGL	
Path #2 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #3 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Path #4 Fwd to (site name or coordinates):	
Antenna make/model	
Antenna AGL	
Equipment room location	

15.3 Alternative Infrastructure Connectivity- (Optional)

Bidders that propose an alternative to a microwave only network shall include in the proposals, a clear, detailed preliminary network design and comprehensive explanation of the reasons for the alternative and the benefits to the NCC specifically addressing:

- system reliability
- system performance
- cost

- on-going system maintenance

Bidders that propose optical fiber either as a complete or hybrid solution shall identify the specific dark fibre plant owner, the fibre termination and access points, the detailed routing between the infrastructure sites, and cost to the NCC.

The proposals shall include preliminary agreements with the fibre plant owner for use of the dark fibre by the NCC and the preliminary pricing for use of the fibre subject to negotiations by the NCC.

16.0 HANDHELD AND VEHICLE RADIO SPECIFICATIONS

Note: All handheld and vehicle radio equipment shall be capable of both digital radio communications and FM analog communications.

Analog communications may be required for joint agency operations or providing mutual aid and assistance to other entities / organizations that operate analog systems in the VHF band as part of their mutual aid communications.

The construction of the radio equipment, including accessories, shall be rugged and of public service quality, including durable, impact resistant material and of rugged construction to withstand the heavy use, and temperature extremes that can be expected to be normally encountered in active public service operations in Ontario and Quebec, and shall be subject to the prior approval of the NCC.

The radio, including accessories, shall be evaluated based on the NCC's confidence that the design, construction, and packaging is suitable for use by the NCC under their rugged operating conditions.

16.1 Handheld Radio Specifications

16.1.1 Handheld Radio Ergonomics

The handheld radio shall permit easy one-handed operation even when the radio is installed in its protective carrying case.

The handheld radio shall be capable of being worn on a belt with other items or carried in an internal/external pocket of a vest, holster, or other clothing or accessories worn by police officers.

The handheld radios will be evaluated based on the size, form-factor (packaging and shape), the arrangement and positioning of operating controls, in addition to the functional and performance requirements in the Specifications.

Note: The radios are normally operated one-handed. Personnel may be wearing gloves at various times. In addition, the users will often be actively engaged in other safety related activities, therefore the physical size, and the accessibility to radio controls are important features when the NCC is evaluating new radio equipment.

16.1.2 Handheld Radio Packaging

All handheld radios shall meet the following requirements.

The transceiver design shall restrict ingestion of all moisture caused by indirect water spray, or "mist" conditions.

All Bidders shall clearly and fully describe all features of the proposed handheld radio equipment that are designed to withstand or restrict moisture ingestion.

All Bidders shall also describe the potential damaging effects on the radio reliability, performance and life caused by moisture on the transceiver case, the protective carrying cases, the battery contacts, and accessory connector contacts.

The construction of the transceiver shall be of a durable, impact resistant material and of rugged construction to withstand the heavy use, temperature extremes, indirect water spray, rain and snow conditions that can be expected to be normally encountered in a public service environment similar to the NCC service area and shall be subject to the prior approval of the NCC.

16.1.3 Handheld Radio Batteries, Antennas, and Accessory Connections

All handheld radios shall be supplied complete with user installable and removable battery packs, user installed and removable antennas, and user installed and removable accessories, such as external speaker microphones, headsets, and earphones.

All external accessories, batteries, and the antenna shall be easily attached and disconnected from the handheld transceiver by the users without the need for special tools and without any changes or modifications to the transceivers or accessories. All batteries, antennas, and accessories shall be fully interchangeable among all radio equipment that is proposed and supplied in accordance with this Specifications.

16.1.4 Handheld Radio Indicators and Controls

All controls and indicators shall be easy to use and see in confined spaces where the light conditions range from extremely bright to dim.

Although not essential, it is preferred if the controls and indicators are lit for operation in dark or near dark conditions.

The transceiver shall include the following external indicators and controls that are easily visible, identifiable, and accessible to the operator when the transceiver is both in and out of a carrying case:

a) Power On/Off Switch

b) Momentary Push Button Transmitter Push to Talk Switch

c) Volume Control (continuously variable from lowest level to highest level)

d) Channel Selector Control

Note: The channel that was selected when the radio was powered off and/or when the battery was removed, shall automatically be the channel that is selected when the radio is powered on again.

e) Selected Channel Indicator

f) Transmit Indicator

g) Emergency PTT ID switch

h) Low battery indication

Bidders shall include detailed descriptions, brochures and/or photographs that clearly show the indicators and controls on the proposed handheld radios.

16.1.5 Handheld Radio Time Out Timer

The transceiver shall include a time out timer that shall automatically disable the transmitter after the transmitter has been continuously keyed for a predetermined period of time.

The time out timer shall be automatically and immediately reset, and the transmitter shall automatically be enabled, when the PTT line is released (such as the microphone being un-keyed) for more than 1.0 second.

The time out timer shall be field adjustable (programmable) from 1 minute to 5 minutes (minimum range). The time out timer shall be pre-programmed for a 60 second duration.

The radio shall provide a clear and easily audible alert to the handheld radio operator when the time out timer disables the transmitter.

16.1.6 Handheld Radio Push-To-Talk ID (PTT ID/ANI)

Each radio shall be equipped with a Push-To-Talk ID (PTT ID /Automatic Number Identification (ANI) encoder.

Each time the radio transmits (the Push to Talk line is keyed), the PTT ID encoder shall automatically generate and transmit an identification code that is unique to that radio, at the beginning of each radio transmission.

16.1.7 PTT ID (ANI) Emergency Transmissions

The emergency PTT ID function shall be initiated by a dedicated emergency transmission switch on the radio that can be positively activated by personnel who need emergency assistance.

Although the emergency transmission switch shall be able to be operated using one hand, the location and style of the emergency transmission switch shall minimize the potential for inadvertent (false) activation.

When pressed, shall automatically transmit an emergency PTT ID that includes the normal PTT ID with an "emergency" tag.

The emergency PTT ID will alert dispatchers that the radio user requires special assistance.

The emergency transmission shall be automatically, and repetitively transmitted until the handheld radio user presses the normal push-to-talk switch.

The handheld radio microphone (both the external speaker-mic and the internal handheld microphone) shall be activated during the emergency transmission to enable the handheld radio user to orally call out the nature of the emergency without having to press the normal radio push to talk switch.

16.1.8 Handheld Radio Antenna

The radios shall be supplied with a flexible high efficiency whip style antenna (not a “stubby”) with a length that is suitable for rugged public service use.

An optional reduced efficiency compact or "stubby" antenna shall also be available for the NCC to use in situations where the use of a compact antenna is required. The NCC will purchase the optional compact antennas as required.

The RF pattern of either antenna shall be omni-directional in an open, unobstructed environment, and shall exhibit a relatively broad beam vertical lobe.

The antenna mounting requirements shall enable the NCC radio operators to easily and repeatedly remove and replace the different antennas without requiring any special tools, and without causing damage to the radio or antenna.

The antenna shall be ruggedly constructed and shall be able to withstand the handling and type of operation normally encountered in active public service operations in Ontario and Quebec and shall be subject to the prior approval of the NCC.

16.1.9 Handheld Radio Battery

The transceiver battery shall be an integral part of the transceiver case and shall be easily routinely removable (at least 4 times per day) without the need for special tools or equipment, and regardless of the charge level of the battery. The battery shall not be susceptible to inadvertent or accidental removal during operation in a rugged public service environment.

The design of the battery holder and release mechanism on the battery case, and on the body of the transceiver case shall be designed and constructed to withstand repetitive removal, and re-installation of batteries at least 4 times per day over the expected life of the transceiver unit and continue to securely retain the battery in the transceiver case in a new transceiver/battery manner.

The entire battery shall be rechargeable and shall provide for a minimum of eight (8) hours continuous operation with a duty cycle of 5% transmit, 5% receive and 90% standby.

The battery shall be capable of being properly recharged with the same level of control and monitoring regardless of whether the battery is connected to the transceiver or separate from the transceiver.

The battery shall be able to regularly withstand a "rapid" charge at least 4 times during a 24-hour period on a daily basis to permit recharging from a completely discharged state to a fully charged state in 1 hour. In addition, the battery shall be able to withstand a trickle or maintenance charge in a fully charged condition indefinitely.

The batteries supplied with the transceiver (including spare batteries) shall be fully conditioned and “analyzed” (tested) to a minimum of 100% of its rated energy capacity. The batteries shall be tested and conditioned (if appropriate for the specific battery chemistry), a maximum of two weeks prior to being placed in service by the NCC.

All proposals shall provide descriptions of the proposed battery technology and detailed battery specifications including:

a) the detailed battery operating specifications when the batteries are in use on a handheld radio.

b) the detailed battery charging specifications for both standard and rapid charging conditions.

c) the detailed battery maintenance requirements including conditioning.

d) the predicted useful life of the battery under the normal operating conditions when charged and maintained in accordance with the battery specifications.

The predicted useful life shall be specified in total hours of reliable radio performance and the number of charge-discharge cycles to maintain reliable battery and radio system performance.

16.1.10 Handheld Radio Desk Top Battery Charger Units

The battery chargers shall be capable of fully charging and monitoring the transceiver battery when attached to the transceiver, and when the battery is removed from the transceiver.

Bidders' proposals shall describe capabilities included in the chargers for full battery analysis and conditioning in lieu of using an external battery charging and conditioning unit.

If analyzing and conditioning are included, the proposals shall clearly and succinctly describe the specific battery analysis and conditioning operation when a battery is initially inserted into the charger (when connected to a radio and when charged separately), and throughout the analysis, conditioning and charging functions.

Please refer to the subsequent Handheld Radio Battery Analyzer-Conditioner specifications and describe the comparative battery analysis and conditioning capabilities of the proposed battery charger.

The chargers shall be available in single unit and multiple unit configurations. The Bidder shall state the number of charging units in the normal off-the-shelf multi-unit charger.

The chargers shall be capable of recharging a completely discharged battery to a fully charged state in 1 hour. Each position or pocket in a multiple unit shall essentially perform independently, as if it were a single unit. Therefore, the unit shall also be capable of normal, concurrent operation of all pockets.

After the battery has reached full charge, the charger shall automatically revert to a maintenance charge to maintain the battery in a fully charged condition indefinitely. The

charge and re-charge cycles shall be automatically controlled based on "battery charge level" conditions only. Methods that detect charge level or cell activity (such as negative slope detect) shall be employed. "Cycle timing" or "dump" charging shall not be acceptable.

Momentarily removing and then re-installing a fully charged battery shall not result in re-starting a fast charge cycle for more than 2 minutes

The chargers shall not allow the battery cells to become hot or of sufficiently high temperature to cause short-term or long-term battery damage or degrade battery performance.

In addition to normal charging conditions, the chargers shall also monitor and control the charge based on the suitability of the battery using criteria such as temperature (high/low), high voltage, short-circuit, etc.

The battery chargers shall be approved by CSA or Warnock Hersey approvals.

Operating Voltage: 115 VAC, 60 Hz

Indicators: Charging, Charged, Fail. If applicable, also analyzing mode indicator.

The battery chargers shall be approved by CSA or Intek (Warnock Hersey).

16.1.11 Handheld Radio Battery Analyzer-Conditioner

If the single unit and multi-unit desktop chargers do not include full battery analysis and conditioning (if appropriate) capability, Bidders shall propose a battery analyzer/conditioner that can be used as part of an organized handheld radio battery maintenance program. The analyzer/conditioner shall condition the batteries (as appropriate for the battery chemistry) and determine their capacity.

The information provided by the analyzer/conditioner shall be able to be used by the NCC personnel to determine whether or not a battery is suitable for use, and to project the remaining lifespan/replacement time of the battery.

The unit shall be available in a single pocket and a multi-pocket configuration so that the NCC can select the most appropriate configuration(s) based on their own cost/benefit analysis.

The operation of the unit shall be straightforward and shall not require any special technical or other skilled interpretation of operating instructions or procedures. The complete conditioning/analyzing operation shall be fully automatic.

The battery compartments in the conditioner/analyzer shall accept a completely assembled battery pack in a similar fashion as a typical battery charger and shall not require that the individual cells be removed or the battery pack be dissembled and shall not require methods such as connecting clip leads to any part of the battery pack.

In the multi-pocket unit, each pocket shall essentially perform independently, as if it were a single unit. Therefore, the unit shall also be capable of normal, concurrent, but independent operation of all pockets for any combination of different battery models, technology, etc. for which the conditioner/analyzer is capable.

The conditioning (if appropriate for the batter chemistry) shall include a discharge process and charge process and shall be able to restore the battery capacity to full battery performance.

The chargers shall not cause any radio interference or degrade the performance of the radio when it is near a charger or in the charger with the battery being charged.

The entire operation shall be subject to the approval of the NCC.

The battery chargers shall be approved by CSA or Intek (Warnock Hersey).

Operating Voltage: 115 VAC, 60 Hz

1. Battery Analyzer/Conditioner Discharging

   The analyzer shall automatically discharge the battery to a voltage level sufficient restore the battery to full capacity and to analyze the battery capacity without damaging the battery.

   The analyzer shall automatically terminate the discharge cycle when the battery reaches the appropriate voltage level by sensing the voltage level.

   Note: If the Bidder proposed batteries do not require periodic discharging to restore battery capacity, the Bidder shall clearly state the reasons in the proposal, for the NCC evaluation. Regardless, battery discharging and capacity analyzing (testing) devices shall be included either as part of the chargers or as separate devices as specified in this document.

2. Battery Analyzer/Conditioner Charging

After the battery has reached full charge, the charger shall automatically revert to a trickle or equivalent charge to maintain the battery in a fully charged condition indefinitely. The charge and re-charge cycles shall be automatically controlled based on "battery charge level" conditions only. Methods that detect charge level or cell activity (such as negative slope detect) shall be employed. "Cycle timing" or "dump" charging shall not be acceptable.

Momentarily removing and then re-installing a fully charged battery shall not result in re-starting a fast charge cycle for more than 2 minutes.

3. Battery and Conditioner/Analyzing Protection

The discharge and charge rates shall not be excessive and cause any damage to the battery.

The discharging/charging shall not allow the battery cells to become hot or of sufficiently high temperature to cause short- or long-term battery damage or degrade battery performance. In addition to normal discharging/charging conditions, the conditioner analyzer shall also monitor and control its operation based on the suitability of the battery using criteria such as temperature (high/low), high voltage, short-circuit, etc.

The analyzer may automatically perform up to two consecutive conditioning cycles if the battery does not reach the desired capacity after the first conditioning cycle.

Batteries left in the analyzer/conditioner indefinitely shall not be subject uncontrolled repeated cycles, or any other conditions that may negatively affect the battery or the analyzer/conditioner.

4. Battery Information Provided by The Conditioner/Analyzer

The conditioner/analyzer shall provide operation indicators including discharging, charging, charged, temperature fail, voltage fail, other fail/error. In addition, the unit shall store and display the capacity of the battery prior to the conditioning/analyzing cycle, and also display the capacity after the cycle. This shall allow the operator to note the condition of the battery prior to conditioning, and subsequent to conditioning. The unit shall also display the battery voltage at all stages of conditioning/analyzing and maintenance charging

The analyzer shall indefinitely store the various battery capacity data for retrieval by the operator until:

a) The operator deletes the information

b) The battery is removed from the analyzer

c) A different battery is placed in the pocket

d) The utility power to the unit fails

16.1.12 Handheld Radio Carrying Cases

The transceiver shall be supplied complete with a swivel mount carrying case that can be secured to a belt, holster fashion, or if desired, hand carried. The case shall also be available as an additional accessory.

The material(s) used in the cases shall be fully stated by the Bidders, including reasons why the Bidders believe the material or combination of materials is well suited to the NCC operations.

The swivel mount shall include the case and a separate detachable mount that can be fastened to a belt. The swivel mount shall provide secure mounting of the case to the mount and shall permit the radio case to swivel or rotate approximately 90 degrees on either side of vertical while still being securely attached to the mount. This swivel action shall permit the radio operator to sit on a chair or vehicle seat with the radio rotated out of the way.

The case shall be detached from the mount if the case is rotated approximately 180 degrees from normal (upside down). Therefore, the radio operator shall be able to easily and without tools, remove the case and radio from the swivel mount.

The case shall enable total unrestricted access and visibility for all transceiver operating controls and indicators without removing the case, or without opening or removing part of the case.

16.1.13 Handheld Radio External Speaker - Microphone

The transceiver shall include provisions for connecting an optional external speaker-microphone. When specifically requested by the NCC, a speaker-microphone shall be supplied with the transceiver or as an additional accessory including at any time during the product life of the radio.

The speaker-microphone shall be connected to the transceiver via an electrical connector. It shall be possible to connect and disconnect the speaker-microphone from the transceiver without the use of special tools or equipment. The connection to the transceiver shall be secure and shall not permit inadvertent disconnection during operation, and when transporting the transceiver.

The speaker-microphone shall include a separate speaker element, a separate microphone element, and a push to talk switch. The speaker-microphone shall provide, clearly audible, undistorted audio, in high ambient noise conditions.

The transmitter deviation (modulation) level and limits from the microphone element shall not be noticeably different than the level from the internal transceiver microphone under the same voice conditions.

16.1.14 Handheld Radio Earphone (Earpiece)

The transceiver shall normally include provisions for connecting an optional external earphone (earpiece).

When specifically requested by the NCC, an earphone or earpiece shall be supplied with the receiver or as an additional accessory.

The earphone shall be connected to the transceiver via an electrical connector on the transceiver. It shall be possible to connect and disconnect the earphone from the transceiver without the need for special tools or equipment.

The connection to the transceiver shall be secure and shall not permit inadvertent disconnection during operation or when transporting the transceiver. The earphone shall be a single earpiece that is comfortable to wear when placed in the ear and shall be designed for secure retention in the ear during normal head motion, without discomfort to the user.

The earpiece shall provide, clear, undistorted audio, in high ambient noise conditions.

Wireless and/or Bluetooth earpieces for connecting the earpiece to the handheld transceiver will be considered by the NCC.

16.1.15 Covert Earpiece & Microphone

The covert earpiece and microphone shall enable surreptitious two-way voice communications using a handheld radio.

The earpiece shall meet the requirements specified above and enable the connection to the earpiece to be hidden behind the ear and interconnected to the transceiver inside the users clothing.

The microphone and push-to-talk switch shall not require the user to overtly display the microphone or need to visibly to press the push to talk switch to transmit a voice message using the handheld radio.

Technologies such as bone conduction microphones and earpiece combinations, and separate earpiece and microphone configurations will be considered by the NCC.

The NCC will consider wired and wireless (including Bluetooth) connections between the earpiece and microphone and the handheld transceiver.

16.1.16 Handheld Radio Vehicular Chargers

Vehicular (mobile) chargers shall be available to enable the radio batteries to be re-charged from the vehicular 12 Volt DC source.

The vehicular chargers shall be permanently mounted in the NCC's vehicles.

The style and construction of the chargers shall be suitable for mounting in a convenient location in the vehicles. The unit shall retain the battery/battery with transceiver and shall be able to withstand the high level vibrations, shock and voltage variations, and normally encountered in active public service vehicles that operate in Ontario and Quebec and shall be subject to the prior approval of the NCC.

Operating Voltage: 11 Volts to 16 Volts DC. The NCC shall have the option of specifying if the charger shall be connected directly to the vehicle battery so that operation will continue even when the vehicle is parked and the battery switch(es) and/or accessory controls are “off”, or only when the battery switch(es) and/or accessory controls are "on".

Operating Temperature Range: -30 deg. C through +60 deg. C

The design and installation of the radios shall not unduly increase the risk of injury to drivers or passengers.

The battery chargers shall be installed in the NCC vehicle meeting the same installation related specifications as detailed for the vehicular radios and shall be subject to the approval of the NCC.

The chargers shall not cause any radio interference or degrade the performance of the radio when it is near a charger or in the charger with the battery being charged.

All other operations and specifications shall be the same as for the desk-top chargers.

16.2 Vehicular Radio Specifications

The vehicular radio shall include:

1. A high quality internal speaker that provides clear audio with sufficient volume to be clearly audible in the NCC vehicles in noise environments encountered in the NCC

vehicles for a wide range of vehicle speeds, engine or motor/drivetrain speeds and loads, during routine, emergency, and other special operations.

2. Capable of connecting to an external speaker that can be located separately from the transceiver, and/or control head, in close proximity to the vehicle operator and front seat passenger for best acoustical conditions.

3. A handheld (palm held) microphone with a separate microphone hanger and hook switch that can be mounted within easy reach of the vehicle operator and front seat passenger.

4. An installation kit including mounting hardware, wiring, and electrical noise filters.

5. A 1/4 wave vehicular whip antenna including transmission line and connector(s).

In addition to the specific transmitter/receiver requirements in the following sections, all vehicle radio transmitters shall meet the following specifications:

Operating voltage range: 11 Volts to 16 Volts DC for all minimum standard performance requirements

Operating Temperature Range: -30 deg. C through +60 deg. C

All Other Specifications: ISED RSS119 Issue 12, and applicable TIA/EIA specifications.

Bidders shall include the detailed vehicle radio equipment brochures and specifications for the proposed vehicle radios

16.2.1 Vehicular Radio Ergonomics

Vehicle radios are often operated by the vehicle driver or passenger when the vehicle is in motion in a wide variety of speeds, terrain, and other driving conditions.

In addition, there are limited suitable mounting options available in the wide range of NCC vehicles. Therefore, the physical size, shape, accessibility to radio controls, etc., are important features when the NCC is evaluating new radio equipment.

The vehicle radios will be evaluated based on the size, form-factor (packaging and shape), the arrangement and positioning of operating controls, the mounting options, in addition to the functional and performance requirements in the Specifications.

16.2.2 Vehicular Radio Packaging

The construction of the vehicular radio equipment, including ancillary equipment, shall be rugged and of public service quality, including durable, impact resistant material and of rugged construction to withstand the heavy use, and temperature extremes that can be expected to be normally encountered in active public service vehicle operations normally encountered in active public service operations in Ontario and Quebec, and shall be subject to the prior approval of the NCC.

The complete vehicular radio, including accessories, shall be evaluated based on the NCC's confidence that the design, construction, and packaging is suitable for use by the NCC departments in vehicles, under their rugged operating conditions.

All vehicle radios that are supplied as part of this specification shall be directly interchangeable between vehicles without modifying either the transceiver or the interconnecting wiring.

The vehicular transceiver unit shall be available in under-dash (front mount) configuration and trunk mount (separate control head and transceiver unit) configuration. The radio controls shall be able to be conveniently located in the vehicle in close proximity to the driver and passenger seat, with all controls and indicators easily visible and accessible to the vehicle operator.

The design and installation of the radios shall not unduly increase the risk of injury to drivers or passengers.

The NCC shall be able to select the under-dash, trunk mount, remote speaker configuration based on the NCC's determination on vehicle-specific Bidder recommendations.

16.2.3 Vehicular Radio Indicators and Controls

All controls and indicators shall be easy to use and see in confined spaces where the light conditions range from extremely bright to dim. The controls and indicators shall be single step operation (e.g., not require activation of a "function" key). The controls and shall be lit for enhanced visibility in operation in dark or near dark conditions.

The indicators shall be clearly visible to the radio operator over a horizontal and vertical viewing angle of at least +/- 45 degrees.

The style of the controls shall enable positive operation of any one control or switch without inadvertently disturbing any other control or switch settings.

The radio shall include the following controls and indicators:

a) Power On/Off Switch

b) Momentary Push Button Transmitter Push to Talk Switch on microphone

c) Volume Control (continuously variable from lowest level to highest level)

d) Channel Selector Control
Note: The channel that was selected when the radio was powered off and/or when the battery was removed, shall automatically be the channel that is selected when the radio is powered on again.

e) Selected Channel Indicator

f) Monitor (Tone Coded Squelch/Squelch Gate Disable)

g) Transmit Indicator

h) Channel Busy Indication

i) Emergency PTT ID switch

The transmitter push-to-talk switch shall be integrated into the palm-held microphone, and shall enable simple, one handed operation of the transmitter while speaking into the microphone.

Bidders shall include detailed brochures and/or photographs and supplementary descriptions as required that clearly show the vehicle radio controls and indicators.

16.2.4 Vehicular Radio Time Out Timer

The transceiver shall include a time out timer that shall automatically disable the transmitter after the transmitter has been continuously keyed for a predetermined period of time.

The time out timer shall be automatically and immediately reset, and the transmitter shall automatically be enabled, when the PTT line is released (such as microphone un-keyed) for more than 1.0 second.

The time out timer shall be field technician adjustable (programmable) from 1 minute to 5 minutes (minimum range). The time out timer shall be pre-programmed for 60 seconds.

The radio shall provide a clear and easily audible alert to the transceiver operator when the time out timer disables the transmitter.

16.2.5 Vehicle Radio Push-To-Talk ID (PTT ID/ANI)

Each radio shall be equipped with a Push-To-Talk ID (PTT ID /Automatic Number Identification (ANI) encoder.

Each time the radio transmits (the Push to Talk line is keyed), the PTT ID encoder shall automatically generate and transmit an identification code that is unique to that radio, at the beginning of each radio transmission.

16.2.6 Vehicle Radio PTT ID (ANI) Emergency Transmissions

The emergency PTT ID function shall be initiated by a dedicated emergency transmission switch on the radio that can be positively activated by personnel who need emergency assistance.

Although the emergency transmission switch shall be able to be operated using one hand, the location and style of the emergency transmission switch shall minimize the potential for inadvertent (false) activation.

When pressed, shall automatically transmit an emergency PTT ID that includes the normal PTT ID with an "emergency" tag.

The emergency PTT ID will alert dispatchers that the radio user requires special assistance.

The emergency transmission shall be automatically, and repetitively transmitted until the radio user presses the normal push-to-talk switch.
The radio microphone shall be activated during the emergency transmission to enable the radio user to orally call out the nature of the emergency without having to press the normal radio push to talk switch.

16.2.7 Vehicular Radio Interior-Mounted Speaker

The transceiver unit shall include provisions for an interior-mounted (external) speaker separate from the control head and transceiver that can be conveniently located within in the vehicle in close proximity to the mobile unit operator.

The external speaker shall be physically larger than the internal speaker and shall provide an increase in audio level and quality when compared to the internal transceiver (control head) speaker.

The receive audio level (volume) of the speaker shall be controlled by the transceiver front panel volume control.

If the transceiver unit includes an internal speaker, the transceiver unit shall include provisions for disabling the internal speaker and connecting the external speaker to provide for full audio output power via the transceiver mobile unit operator volume control.

If the internal transceiver speaker cannot be disabled, the transceiver unit shall still permit connection of an external speaker without reducing the performance or quality of the audio from either speaker, including no loss of audio power, no audio delays, no increase of any distortion. The full 5 Watts of audio power (RMS) shall be available for both speakers connected simultaneously to the transceiver unit.

The external speaker provisions shall enable the external mobile speaker unit to be connected anywhere within the vehicle, within up to six (6) meters of interconnecting speaker cable between the transceiver unit (or control unit) and the external speaker).

The external speaker shall be enclosed in a rugged, compact housing, suitable for mounting anywhere within the interior of the vehicle with a single mounting bracket that includes provisions for tilting or swivelling the speaker face to provide for a direct acoustical path from the speaker to the radio operator.

16.2.8 Vehicular Radio Antenna and Transmission Line

The antenna shall be a flexible 1/4 wave "vehicular" whip antenna suitable for permanent roof, trunk, and fender installation on the full range of NCC vehicles.

The transmission line shall be flexible coaxial cable, equivalent to RG58U or better.

The antenna and transmission line shall be ruggedly constructed and shall be able to withstand the handling and type of operation normally encountered in active public service operations both in extremely hot/cold weather conditions (down to - 30 degrees C and up to 60 degrees C).

The antenna and transmission line shall be supplied and installed with all necessary gaskets and/or sealing material to ensure that moisture does not migrate into the vehicle at the antenna mounting point, or at the transmission line entry point.

The location and the mounting of the antenna on the vehicles shall be recommended by the Contractor and approved by the NCC.

16.3 Vehicle Equipment Installation Requirements

16.3.1 General

All equipment supplied and installed in all vehicles, as part of these Specifications, shall be installed in full compliance with all federal, provincial and municipal laws and regulations, and shall not compromise in any way, the safety and operation of the vehicles, operators, or occupants.

In all cases, the installation of all radio communications equipment in all vehicles shall provide for the following as a minimum:

1. Free and clear access to the radio controls and displays by the vehicle operator and front seat passenger, from a normal vehicle sitting position

2. Mounting of all communications equipment in the vehicle, without obstructing the normal operation of all existing vehicle operating and vehicle accessory controls and switches, including all emergency equipment and controls.

3. The design and installation of the radios shall not unduly increase the risk of injury to drivers or passengers.

4. Secure mounting of all communications equipment in a manner and location that will provide free and easy access for installation, removal and for general maintenance purposes, and to prevent the equipment from becoming detached from the vehicle during operation in a rugged, high activity vehicle environment for active public service vehicles normally encountered in active public service operations in Ontario and Quebec and shall be subject to the prior approval of the NCC.

Note: The communications equipment shall be installed in a manner that minimizes the need to remove or dismantle any other vehicle equipment including other emergency equipment and vehicle accessories, for removal of the communications equipment.

5. All equipment shall be mounted in the vehicle to avoid inadvertent damage either by personnel in the vehicle, collection of water on the floor, in the trunk, etc. of the vehicles, and/or damage caused by objects that may be stored in close proximity to the equipment.

6. All interconnecting cables between the communications equipment, connections to the vehicle electrical system, and all electrical ground connections, shall be installed to avoid inadvertent damage or disruption during normal vehicle maintenance, and shall be neatly routed to enable access to the cables for normal maintenance, repair and replacement if required. All electrical cables shall be secured to the vehicle to avoid contact with water collection on the floor, under the hood, in the trunk, etc. and at the vehicle electrical connections.

7. All connections to the vehicle electrical system, including ground connections, shall use materials and installation methods that prevent corrosion, and result in good electrical contact if water, salt and other moisture with corrosive content is deposited on the electrical connections.

   Note: Direct contact between dissimilar metals that can result in electrolytic action between the dissimilar metals shall be avoided in all cases.

8. All electrical wiring, including all shielded cables, shall be fully protected in a suitable jacketed material that is fire resistant, and is not susceptible to abrasion, cutting or breaking during normal vehicle use and maintenance.

9. All interconnecting cables, and wiring shall be labelled at each end, with a permanent, clearly discernible identification of the cable, to enable service personnel to easily identify the connection source and terminations for each cable.

10. In all cases, the installation of all equipment, electrical connections and cables, including methods of securing all equipment and electrical cables in the vehicles, shall conform to excellent workmanship standards and best practice, in full compliance with minimum industry standards for long-term reliable equipment operation and performance in public service vehicles.

11. Installation of all wiring and electrical cables shall avoid routing the wiring and cables outside the interior of the vehicle.

12. All cable and electrical wiring installation shall avoid contact with any heat generating vehicle operating systems, including exhaust systems, engine blocks and radiators (or other heat exchangers). All cable and wiring shall not be secured to any existing vehicle wiring or cable harness.

13. Nickel plated or tinned RF connectors are prohibited on all antenna connections to the radio communications RF equipment.

    All communications equipment wiring, and electrical cables shall be secured directly to non-moveable body, chassis or unibody chassis like components or other stable attachment points on the vehicle that are firmly, and rigidly attached.

    All attachments and hardware for securing the communications equipment cables and wiring in the vehicle shall be non-corrosive, abrasive resistant materials that will withstand extreme high and low temperatures without breaking or loosening under all typical public service vehicle operations.

    Contact between dissimilar metals that may result in electrolytic action between the dissimilar metals shall be avoided in all cases.

All holes drilled in all vehicles for mounting the communications equipment, and for routing all communications equipment electrical wiring and cables shall be subject to the prior approval of the NCC.

All holes drilled in the vehicle for routing all communications equipment wiring and cables, shall include grommets or other suitable, approved material to avoid causing abrasion, cuts or other damage to the wiring and cables.

All approved holes required for routing wiring and cables to the exterior of the vehicle shall be completely sealed with an approved sealing compound, membrane, or pre-manufactured gland, to prevent outside air and moisture from entering the interior of the vehicle through the holes.

16.3.2 Vehicle Electrical Noise Suppression and Electrical Interference

The Contactor shall be responsible for supplying and installing noise suppressor filters, and for connecting all equipment in accordance with sound installation procedures, to eliminate any electrical noise and other forms of in-vehicle electrical interference that may adversely affect the operation and/or performance of the mobile radio communications equipment and/or interference that may be caused by the communications equipment to any other vehicle electrical system.

The communications equipment shall not be susceptible to, or cause any interference to other vehicle electrical systems, including all vehicle accessories, engine and ignition control systems, microprocessors, and other electrical control equipment required for vehicle operation, communications, and emergency equipment operation.

The Contractor shall be responsible for identifying and correcting all electrical noise and all electrical interference between the radio system, and all other vehicle electrical systems and communications equipment.

16.3.3 Vehicle Airbag/Curtain Installation Restrictions

The requirement and presence of vehicle safety equipment such as airbags, inflatable safety curtains, seatbelt tensioners, safety equipment sensors, or other vehicle occupant safety devices ("occupant safety equipment") in some vehicles can restrict the available mounting space radio mounted inside of a vehicle.

All proposals shall include clear descriptions of the provisions for mounting all proposed equipment in tightly constrained spaces that will provide for:

1. Clear and unobstructed view of the communications equipment controls and indicators, and easy access to all operating controls by the vehicle operator in all vehicles.

2. The communications equipment installation not impeding the performance of the occupant safety devices in any way.

3. No additional damage/harm to vehicle or occupants when an occupant safety device is active, including the potential for any portion of the communications equipment/installation to result in projectiles, or for the communications equipment to end up between the deployed airbag/curtain and an occupant(s).

16.3.4 Vehicular Equipment Mounting Approvals

NCC vehicles may include safety and other important equipment such as fire extinguishers, locking storage boxes, etc.

The Contractor shall determine all detailed in-vehicle equipment mounting requirements in conjunction with the NCC, for approval by the NCC, to ensure that the most suitable radio configuration is selected without requiring the NCC to limit or make configuration changes to the vehicle and equipment configurations.

The Contractor shall make every reasonable effort to avoid unnecessary delays that may be caused by extended delivery times for special mounting hardware and other equipment that is required for the full system installation.

16.3.5 Vehicular Equipment - Removal of Existing Communications Equipment

All proposals shall include the removal of all existing radio equipment from the NCC vehicles including radio communications equipment, wiring and antennas that will not be retained as part of these Specifications.

All specified radio communications equipment shall be removed in a manner that avoids any damage to the existing equipment or to the vehicles, including damage to the mounting brackets and equipment mounting locations, other vehicle equipment wiring and other equipment installed in the vehicle.

To the extent that is practical and cost-effective, the existing equipment wiring shall also be preserved without any damage, notwithstanding the need to cut off cable connectors to facilitate removal of the cable, that would otherwise require significant disassembly or disruption of other vehicle equipment and wiring to remove the existing communications equipment cables.

All radio communications equipment and wiring assemblies that are removed shall be neatly stored in a central warehouse facility that shall be agreed upon between the Contractor and the NCC.

The Contractor shall be responsible for maintaining accurate records of all equipment that has been removed from the NCC vehicles, and to maintain an accurate inventory list that shall be available for audit by, and for submission to, the NCC.

All residual holes in the vehicles that will not be required for installation of the new communications equipment shall be properly sealed in accordance with methods that are approved by the NCC.

16.3.6 Vehicular Equipment Installation Locations

All vehicle installations shall be carried out at a central location in the Ottawa-Hull area to be agreed upon between the Contractor and the NCC.

17.0 System Installation, Removal, storage & Workmanship requirements

17.1 General

All communications equipment supplied and installed at any NCC site, including control and power supply equipment, shall be installed in full compliance with all NCC requirements including all local, provincial and federal government codes and standards, and shall not compromise in any way, the safety and operations of the Systems, or the safety and security of NCC, personnel, NCC contractors or visitors, occupants of the NCC facilities, the Contractor's personnel or the public.

All installation work shall be approved by the NCC.

17.2 Contractor Personnel Qualifications

All Contractor's personnel shall have suitable technical education and be fully trained in accordance with all technology manufacturers training requirements.

All personnel who will be required to climb towers and any antenna mounting or other structures shall be qualified, trained and certified in accordance with the federal government requirements and in accordance with the provincial work standards.

Reference: Section 6.13.2

17.3 Removal and Disposal of Existing Equipment

All proposals shall include the prices for removing all existing radio communications equipment, wiring and antennas from all existing infrastructure radio sites including the shelters and chalets, the NCC headquarters building, and other NCC facilities throughout the Ottawa-Hull region.

All specified radio communications equipment shall be removed in a manner that avoids any damage to the existing equipment or to the furniture or mounting racks and other equipment that may be located in the same racks.

To the extent that is practical and cost-effective, the existing equipment wiring shall also be preserved without any damage, notwithstanding the need to cut off cable connectors to facilitate removal of the cable, that would otherwise require significant disassembly or disruption of other vehicle equipment and wiring to remove the existing communications equipment cables.

However, antenna RF coaxial cables and transmission lines may be sacrificed to expedite the de-installation if it is not practical or cost-effective to preserve the RF cables.

All radio communications equipment and wiring assemblies that are removed shall be neatly stored in a central warehouse facility that shall be agreed upon between the Contractor, and the NCC.

All residual holes in building walls that will not be required for installation of the new communications equipment shall be properly sealed in accordance with methods that are approved by the NCC.

The Contractor shall be responsible for maintaining accurate records of all equipment that has been removed from each site, and the NCC headquarters building, and to maintain an accurate inventory list that shall be available for audit by, and for submission to the NCC.

The Contractor shall work with the NCC to determine the most appropriate methods for removal and subsequent disposition of the existing equipment and materials. the NCC shall designate which removed items (if any) shall be delivered by the Contractor to a central location designated by the NCC and which equipment and materials shall be disposed of by the Contractor.

All equipment and materials including wiring, batteries, antennas, transmission lines, mounts, hardware, etc. shall be completely removed and disposed of in a safe manner in full compliance with all local, provincial and federal safety and environmental standards.

The Contractor shall be responsible for the repair and/or replacement of any equipment that has been removed and/or relocated by the Contractor, that has been damaged because of lack of care, or negligence on the part of the Contractor.

Bidders shall clearly describe their specific plans for removal and disposal for review by the NCC.

17.4 Workmanship and Installation Standards

All installation work shall be in accordance with sound workmanship standards and shall conform to all sound workmanship standards and best practice in accordance with recognized accepted industry practices.

The installation, location, and methods of installation of all equipment shall be subject to the prior approval of the NCC.

Special attention shall be paid to minimizing electrical noise, inductive and capacitive coupling that may cause interference within the NCC system or to outside systems at radio sites.

The Contractor shall be responsible for supplying and installing electrical noise suppressors and other electrical regulators and suppression devices as required, to reduce all potential for electrical noise and interference and possible electrical damage to all equipment.

The routing of wiring, power cables, and RF transmission lines, shall avoid obstructing passage of personnel and shall include safeguards against inadvertent harm to personnel, the general public, or damage to the equipment and facilities.

All antennas and antenna mounting structures shall be installed in full compliance with sound, industry acceptable standards, procedures and best practice, by qualified tower riggers and radio technicians.

All tower and other outdoor, or equivalent outdoor-like environment, mounting structure transmission line hangers shall be stainless steel.

The installation of all antennas, antenna mounting structures, RF transmission lines and waveguide, and any facilities or equipment attached to the exterior of the buildings, radio antenna towers and any other structures, shall meet CSA standards for antenna mounting.

The installation at all sites shall include equipment electrical grounds and electrical power surge suppressors, antenna system grounds, and antenna system lightning suppressors that may be required for protection of the site equipment, and personnel.

Contact between dissimilar metals that may result in electrolytic action between the dissimilar metals shall be avoided in all cases.

All installation work shall be carried out by qualified, skilled trades people.

17.5 RF Transmission Lines and Jumper Cables

All RF transmission lines, and jumper cables shall be solid shield, low loss foam dielectric coaxial cables, and waveguide as applicable.

Nickel plated or tinned RF connectors are prohibited at all sites.

Coaxial connector adaptors are prohibited. All connectors shall be permanently connected to all cables with the appropriate mating connector.

All RF transmission lines shall be properly secured to prevent sagging, and damage to the cables caused by the cable weight.

Cable trays, and/or approved conduit shall be employed as required to meet installation standards that are acceptable to the NCC and the site owners.

All RF cables shall be labeled with the specific applicable cable equipment interconnection, and antenna interconnections to identify all antennas and RF equipment connections at each end of the antenna transmission lines and RF jumpers. All labels shall be permanent label material for the intended purpose.

Exterior RF cable connectors, and RF terminations shall be properly wrapped and sealed against moisture, and corrosive atmosphere. All sealants and adhesive tapes shall be designed and approved for the weather, and atmospheric conditions encountered in the Ottawa area.

The Contractor shall be responsible for determining all minimum installation standards for all sites, and shall obtain the NCC approvals, prior to and after completion of all installation work.

The Contractor shall be responsible for supplying and installing weather sealed ports for cables entering a building or enclosure from outside.

17.6 Electrical Wiring

The electrical wiring for interconnecting the Contractor supplied equipment, shall be the responsibility of the Contractor.

All electrical wiring and all electrical connections shall be in full compliance with all industry accepted electrical codes and regulations.

All electrical wiring shall be neatly routed and bundled as required to maintain neat, easily identifiable, and sound electrical interconnections.

All battery connections shall be protected against inadvertent contact with metal objects or wiring and wiring connections.

All insulating materials shall be designed and approved for the intended purpose.

All electrical grounds and other electrical connections shall be jacketed in abrasive resistant and fire-resistant material, and UL approved for the purpose.

Exterior electrical connections shall be properly wrapped and sealed against moisture, and corrosive atmosphere. All sealants and adhesive tapes shall be designed and approved for the weather, and atmospheric conditions encountered in the Ottawa area.

All electrical connections, including ground connections and materials used for electrical and ground connections shall avoid contact between dissimilar materials that can result in electrolytic or galvanic or other chemical reaction that can affect the conductivity of the connections or result in corrosion or oxidation of the connection or around the area of the connection.

17.7 Damage to the NCC and Radio Site Facilities, Structures and Property

The Contractor shall be responsible for ensuring that the installation, removal, and relocation/disposal as part of these Specifications does not result in any damage or disruption to any radio and non-radio systems, equipment, materials, structures, land, etc.

The Contractor shall be fully responsible for repairing any damage caused by the Contractor's personnel or installation procedures, and to restore all sites and facilities to the pre damage condition,

18.0 Equipment Approvals

All proposed equipment shall be fully approved for use in the proposed the NCC system, in accordance with the standards and regulatory requirements specified in the Specifications.

All Bidders shall provide documented evidence, satisfactory to the NCC, that all equipment to be supplied is fully approved in accordance with all relevant regulatory requirements.

The design, construction, and installation of all equipment shall be subject to the prior approval of the NCC.

The NCC will be responsible for approving radio frequency licensing that shall be prepared and filed by the Contractor for the operation of the system.

18.1 Production Equipment Models

18.1.1 Current Production Equipment

All proposals shall include evidence satisfactory to the NCC, that all proposed equipment are current production models that are currently planned for continued production for at least the next three (3) years.

Proposed equipment that is not yet in production, or equipment that may be scheduled for discontinuation within the next five (5) years, may be rejected by the NCC.

18.1.2 Future Production Model Equipment

All Bidders shall commit to the NCC that directly interchangeable equipment, that is fully compatible with the proposed equipment, will be available in the future for direct replacement of and/or addition to equipment supplied and installed as part of the upgrade.

All future replacements or additions shall not require any modifications, or system re-configuration to the proposed radio equipment or system that will be initially in operation as part of the new system, for the expected life of the system which shall be a minimum of ten (10) years.

18.1.3 Modified Equipment

All modifications that may be required to production model equipment, that will be initially supplied and for future replacement and add-on equipment, shall be incorporated in accordance with the equipment manufacturer's approved production standards and shall be available from the equipment manufacturer as a recognized, and approved production revision.

Field modifications to any proposed equipment that is not approved by the equipment manufacturer will not be acceptable.

19.0 Warranty

19.1 Terms and Conditions

The warranty of all equipment, parts and labor (including all installation work) shall be for a period of not less than one (1) year from the date of formal system acceptance by the NCC.

All proposals shall include the detailed terms and conditions for the Bidder's warranty for all equipment and materials supplied as part of the system upgrade, including the installation of all equipment and materials.

For purposes of the proposals, Bidders shall base the warranty terms on conditions on providing full troubleshooting and other technical support for on-site work, by telephone, web site, and e-mail.

The proposals shall clearly state all special provisions, unique terms and conditions, and related costs to warrant that all equipment and materials supplied as part of the system including installation, shall be free from all production, design and workmanship defects and deficiency for a period of one (1) year from the data of full (formal) system acceptance.

In all cases, the warranties expressed above shall be for all manufactured equipment and materials and for the installation of all equipment and materials.

All terms and conditions of all warranties shall be clearly stated in all proposals.

19.2 Response Times for Service and Maintenance During Warranty Period

All proposals shall clearly confirm the latest response time for all service and maintenance requests from the NCC for troubleshooting and other technical support requested by the NCC.

The latest specified response time shall be for the elapsed time from when the NCC has placed a call for service:

1. Until a qualified technical support person is in contact with the NCC:

    a) Systemic malfunctions, failures and degradation of service: 2 hours maximum.

    b) Single unit, user equipment malfunctions and failures: next business day.

2. Until a qualified technical support person is troubleshooting the reported problem over the system by remote access.

a) Systemic malfunctions, failures and degradation of service: 4 hours maximum after the NCC's initial notification of a problem.

b) Single unit, user equipment malfunctions and failures: next business day.

3. Until a qualified technical support person is on site if the problem cannot be resolved by remote access to the system: 6 hours maximum

19.3 Warranty & Service Spare Equipment

All proposals shall clearly itemize the list of spare radio equipment that will be retained at the Contractor's premises for expedited replacement as required.

20.0 Documentation to Be Supplied by Contractor

As built documentation shall be provided to the NCC for review and approval within 30 days after system acceptance by the NCC.

The Contractor shall supply three (3) complete and identical sets of the following documentation as a minimum for all equipment:

The documentation shall enable the NCC to carry out all service, maintenance, and repair work with suitably trained and skilled personnel independent of the Contractor, if required in the future.

The following is applicable to all radio equipment, control equipment, electrical power equipment and interfaces and microwave system at all radio sites, the primary and backup dispatch centres including dispatcher consoles and base station remote controls

1. Programming status of all equipment.

- Specific features and functions that are programmed into each piece of equipment at each site and for handheld radios and vehicle radios.

- Software and hardware equipment adjustments that affect system-wide performance, such as simulcast transmitter launch time-delays, microwave link time delays (if other than natural propagation delays), transmitter modulation settings, etc.

- Software and hardware equipment adjustments that affect console and interface performance including telephone and logging recorder interfaces.

- System redundancy provisions such as 2 hub sites with separate Tx simulcast and voting receiver control functions

- Dispatcher consoles and Dispatcher base station emote controls.

2. All equipment performance measurement results including RF and voice/audio performance such as modulation fidelity,

3. All functional test results of all equipment including dispatcher consoles and base station remote controls,

4. All functional test results for the end-to-end communications system as a whole including two-way dispatcher and user equipment communications functions

5. Bills of Materials for all technology and physical installation materials (self explanatory)

6. Declaration of full compliance with the contract specifications (self explanatory)

7. Complete manufacturer equipment and system installation manuals for all radio and control equipment, consoles (primary and backup dispatch centres), console interfaces and interconnections and remote controls that include:

   a) detailed physical installation instructions for all equipment, including rack mounting, spacing requirements, restrictions, precautions, etc.

   b) detailed external wiring diagrams including pin-outs if necessary for troubleshooting interconnections.

8. Complete manufacturer service and maintenance manuals for each piece of radio and control equipment, interfaces and consoles (primary and backup dispatch centres) and remote controls that include:

   a) service and maintenance instructions including settings and adjustments.

   b) detailed theory of operation.

   c) schematic diagrams of equipment and interfaces that require internal connections to other equipment and internal adjustments and settings, such as level settings.

   d) wiring diagrams including interconnections to other equipment.

   e) software/hardware programming instructions – description, make/model of programming software and required programming hardware including instructions for connections of programming hardware, and operation of the software.

9. Complete installation drawings showing physical mounting arrangements and electrical interconnections to/between all equipment, interfaces including consoles and remote controls.

    a) Where applicable, written descriptions such as specific wiring limitations and precautions, physical mounting limitations and precautions, recommendations and prohibited mounting configurations/arrangements

10. General overview of the entire end-to-end system:

    a) Block diagrams

    b) Flow diagrams

    c) High level salient component interconnections, similar to the system drawing in the Draft as Built documentation, *but legible*.

    e) interconnections into network switches and microwave network.

    f) microwave network and switches

21.0 Radio User Training

All training sessions shall include course materials and documentation in both official languages to be retained by the NCC.

The NCC requires that the training for the new two-way radio systems be offered in both English and French. This system functionality training is to be carried out at the Gatineau Park NCC Visitor Center in Chelsea, Quebec as well as potentially the NCC Headquarters at 40 Elgin Street in Ottawa.

Bidders shall provide a course outline for requested training.

The operator training proposals shall be based on a "training the trainer" program for up to four (4) NCC trainers.

The training course shall enable the NCC's "trainers" to fully understand all vehicle, handheld and base station equipment operator requirements, and equipment operating functions, in a comprehensive manner, for subsequent training of other NCC personnel.

The training program and all related costs shall include all course materials and training aids that shall become the property of the NCC.

Bidders shall provide a draft of the Training Plan to the NCC for NCC comments and approval.

22.0 Service and Maintenance Proposal

All proposals shall include the prices, terms and conditions, for providing contract maintenance services to the NCC, after the warranty period has expired. The terms and conditions are subject to NCC approval.

Where applicable, based on the proposed technology, the maintenance contract shall also include Contractor "remote" access to specific technologies to diagnose problems, to repair malfunctions and to reprogram the technologies as required and on-site technical support and repair when remote access support is not adequate to resolve a problem.

The response times for service shall be as defined under the Warranty response times above.

22.1 Service Maintenance Terms & Periods

All proposals shall include the standard terms and conditions for maintenance contracts that are available through the Bidder after the warranty period has expired.

The normal service and maintenance contract terms and conditions shall include normal (typical) service and maintenance rates, special provisions for standby, spare equipment, and maximum response times.

A complete list of the service and maintenance contract rate schedules and terms and conditions shall be included for all available service and maintenance contract options.

Specifically, all proposals shall include the fixed prices, terms and conditions for optional contract maintenance services after the expiration of the warranty period in accordance with the Specifications for the following contract terms for:

1. 5 years after the warranty period

2. Two optional (1) year extensions for a total of 7 years after the 1-year warranty period.

23.0 Additional Contract Clauses

23.1 Authorities

23.1.1 Contracting Authority

The Contracting Authority is:

Stacy Semé
Senior Contract Officer
National Capital Commission
Telephone: 343-553-5682
E-mail address: stacy.seme@the NCC-ccn.ca

The Contracting Authority is responsible for the management of the Contract, and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

23.1.2 Technical Authority (to be completed at contract award)

The Technical Authority for the Contract is:

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ___-___-____
Facsimile: ___-___-____
E-mail: _____

The Technical Authority named above is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

23.1.3 Contractor Representative (to be completed at contract award)

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ___-___-____
Facsimile: ___-___-____
E-mail: _____

23.2 Contract Amount

Subject to any increase , decrease, deduction, reduction or set-off that may be made under the contract , the Commission shall pay the Contractor, at the times and in the manner that is set out or referred to in the article entitled Terms of Payment the total estimated amount of $_____ including taxes for all ____ years combined excluding CPI adjustments. The total estimated amount is derived as per the cost breakdown in Appendix A. Note: CPI adjustment will be done for up to 6 years based on the methodology outlines in section 6.6.

It is a term of every contract providing for the payment of any money by the Commission that payment thereunder is subject to there being an appropriation for the particular service for the fiscal year in which any commitment thereunder would come in course of payment Section 40, Financial Administration Act.

23.2 Terms of Payment

Provided that the Contractor is not in default, but subject always to the provisions dealing with set-off or withholding of payments, the NCC shall pay to the Contractor the pertinent monthly amounts on a thirty day net basis (N30) for the work performed in the previous month.

The Commission is a Crown Corporation subject to the Goods and Services Tax (GST) and the Provincial Sales Tax (OHST or QST). The Contractor is required to indicate separately, with the request for payment, the amount of GST and OHST/QST, to the extent applicable, that the Commission will pay. These amounts will be paid to the Contractor who will be required to make the appropriate remittances to Revenue Canada and the respective provincial governments

23.3 Invoicing instructions

All invoices are to make reference to the Commission Contract Number xxxxxx (6 digit number on page 1 once a contract is executed between the Contractor and the Commission) and be forwarded by email at payables@ncc-ccn.ca in Adobe (.pdf) format.

To ensure prompt payment, please prepare your invoice in accordance with the prices quoted. Errors in invoicing can cause delay of payment.

23.5 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the provinces of Ontario.

23.6 Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

1. the Articles of Agreement;
2. the General Services general conditions;
3. the Goods Contracts general conditions;
4. Appendix "A " – Price and Delivery Form;
5. Appendix "B " – Radio Coverage – Google Earth;
6. Appendix "C " – Radio Coverage 11X17;
7. Appendix "D " – Locations of the NCC Facilities that require fixed base station;
8. Appendix "E " – Fixed Radio Facilities;
9. Appendix "F " – Bid Evaluation;
10. Appendix "G " – Bid Bond;
11. Appendix "H " – Labour & Material Payment Bond;
12. Appendix "I " – Performance Bond;
13. Appendix "J" – Government Sites & Contract Security Requirements;
14. the Contractor's bid dated _____ (*insert date of bid*), as amended on _____ ***(insert date(s) of amendment(s), if applicable***).

APPENDIX A

Bidder Price and Delivery Forms

The attached forms are for reference only.

Please Refer to Separate Excel File for entry of all price and delivery information.

APPENDIX B

RADIO COVERAGE - GOOGLE EARTH

APPENDIX C

RADIO COVERAGE 11X17

APPENDIX D

FIXED BASE STATIONS

APPENDIX E

FIXED RADIO FACILITIES

APPENDIX F

BID EVALUATION

Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.

1.0 TECHNICAL EVALUATION

The bid must meet the mandatory technical criteria specified below. The Bidder must provide the necessary documentation to support compliance with this requirement.

Bids which fail to meet the mandatory technical criteria will be declared non-responsive. Each mandatory technical criterion shall be addressed separately.

In their technical bid, Bidders shall explain and demonstrate how they propose to meet the requirements and how they will carry out the Work. By checking “met” the bidder certifies that they have read and are in compliance with the corresponding technical requirement.

Note: Should the evaluation committee not find proof to support compliance of any of the mandatory criteria (technical, financial and bid security),the Contracting Authority may request missing information to be submitted by email within 5 days of being requested.

2.0 MANDATORY CRITERIA

No.	**Mandatory Criteria Section 6.0 - Proposals**	**Met/Not Met**	**Proposed Alternative (where permitted as per RFP)**	**Reference to proposal page No.**
M1	6.7 Scope of Proposal and Content All proposals shall include as a minimum: 1. Complete and detailed information *in response to each section and subsection* in the Specifications. 2. A *proposed implementation schedule* starting from award of contract by the NCC, to complete system acceptance and commissioning of the system. 3. *In addition to the specific responses* to each Section of the RFP *as a minimum:* a) *Block level system and interconnection drawings* and as applicable *system flow diagrams*. b) *Detailed technical specifications* and technical brochures/data sheets for all proposed technology and applicable services. c) identification of specific infrastructure locations that provide the predicted reliable RF coverage throughout the NCC service areas, and site-specific parameters such as antenna elevation on the sites.	☐ Met ☐ Not Met		
M2	6.8.1 Facilities The bidder shall include in their proposals all the items listed under section 6.8.1.	☐ Met ☐ Not Met		
M3	The 6.13.1 Bidder Project Experience and References.	☐ Met ☐ Not Met		

	Bidder **shall** have experience supplying, installing and commissioning at least 3 mobile two-way radio communications systems over the past 6 years comparable to the scope and magnitude of the NCC System. To demonstrate the experience the bidder must provide project summaries which include the following details: a) Full legal name of customer and if applicable "doing business as" name. b) Primary business or service c) Scope of project in terms of: • number of radio sites • extent of geographic area covered • type of technology and system configuration • Number of radio users operating on the system • Date that project started • Date that project (system) was commissioned and accepted by customer • Customer contact name, title, telephone number and email address for purposes of verifying the above information and to determine customer's satisfaction with the Vendor and project outcome.			
M4	6.13.2 Bidder Personnel Resources Bidders shall provide detailed resumes. The resumes must be a maximum of 2 pages each.	☐ Met ☐ Not Met		
M5	6.14 Vendor's System Implementation Schedule All proposals must include the Vendor's schedule for the complete implementation including:	☐ Met ☐ Not Met		

	1. Design work. 2. Equipment delivery to the Vendor. 3. Assembly and testing at the Vendor's facility prior to "factory acceptance" tests. 4. Staging and "factory acceptance" at the Vendor's facility. 5. Delivery of a completely staged and tested system on-site to the NCC radio system facilities in Ontario and Quebec. 6. On site installation and initial testing. 7. "System acceptance" tests.			
M6	6.15 Prime Contractor and Sub-Contractor Declaration All proposals shall clearly identify the hierarchy of the prime Contractor and any sub-Contractor relationships for the full supply, installation, testing and commissioning of the entire system as follows (please also refer to the prime Contractor, subcontractor consortia or teaming requirements stated previously in the RFP).	☐ Met ☐ Not Met ☐ N/A		

No.	Mandatory Criteria Section 8.0 - Radio Communications Coverage Requirements	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
M7	7.0 Technology The proposed System shall as a minimum, meet the specified standards and have demonstrated, reliable operation in at least 3 public service/public safety radio communications systems.	☐ Met ☐ Not Met		
M8		☐ Met		

No.	Mandatory Criteria Section 8.0 - Radio Communications Coverage Requirements	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
	Bidders proposals shall include a detailed map or maps of the NCC required coverage areas with the predicted reliability for two-way radio communications throughout the entire service area per section 8.2 of the RFP.	☐ Not Met		
M9	Coverage reliability for two-way vehicle radio communication *shall be a minimum of DAQ 3.4* along all roads within Gatineau Park identified on the maps provided by the NCC, and throughout areas 1D, 1E, and 1 F.	☐ Met ☐ Not Met		
M10	Bidders shall include in their proposals, evidence that the selected infrastructure radio sites have been approved by the site owners and managers for the installation of the required NCC antenna systems and radio equipment, subject to negotiations with the NCC and execution of an agreement between the NCC and the site owners/managers.	☐ Met ☐ Not Met		
M11	Coverage reliability for two-way fixed radio communications shall meet a minimum of DAQ 3.4 at all fixed radio locations for communications through the infrastructure.at each fixed location.	☐ Met ☐ Not Met		
M12	Bidders shall provide evidence using the Appendix C Google Earth file for handheld radio coverage and a separate Google Earth file for vehicle radio coverage that shall display the two-way radio communications coverage for the proposed system design. Adobe .pdf copies of each of the Google Earth images shall also be provided.	☐ Met ☐ Not Met		
M13	Bidders shall include in their proposals, evidence that the selected infrastructure radio sites have been approved by the site owners and managers for the installation of the required the NCC antenna systems	☐ Met ☐ Not Met		

No.	Mandatory Criteria Section 8.0 - Radio Communications Coverage Requirements	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
	and radio equipment, subject to negotiations with the NCC and execution of an agreement between the NCC and the site owners/managers.			

No.	Mandatory Criteria Section 10.0 – Radio Communications Frequencies And Voice Channels	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
M14	10.1 Radio Frequency Channel Requirements Bidders shall propose digital land mobile radio communications technology that meets the NCC's minimum radio communications radio channel access (loading) needs for rapid access to any available radio channel at any site (based on radio coverage) for two-way radio communications without blocking or other radio channel access delays. Each proposal shall clearly specify and describe the proposed RF channel arrangements throughout the entire system for accessing the radio channels throughout the NCC service area, and any potential restrictions or radio channel access delays that could occur at any time 24 hours a day, 365 days a year. Bidders shall clearly specify the total MAXIMUM system access time and the TYPICAL access time for a radio (radio user) to access the system and begin transmitting a voice message from the initial PTT activation by a radio user. The Bidder specified channel access times shall include a clear, succinct description of conditions under which the access times are specified.	☐ Met ☐ Not met		
M15	10.3 Proposed Radio Frequencies	☐ Met ☐ Not met		

No.	Mandatory Criteria Section 10.0 – Radio Communications Frequencies And Voice Channels	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
	All Bidder proposals shall clearly itemize the required radio frequency requirements to meet the NCC's radio coverage and voice channel access needs. If additional radio frequency radio channels are required to meet the NCC's requirements, the Bidder's proposal shall clearly identify the quantity and parameters of the channels that will be in addition to the existing the NCC radio frequency channels listed in this section of this document.			
M16	The proposals must comment on the probable availability of additional suitable frequencies that can be licensed to the NCC throughout the NCC service area, and to provide specific recommendations that can be considered by the NCC for licensing of additional radio frequencies. Alternatives and options that the Bidders deem beneficial to the NCC will also be considered by the NCC.			

No.	Mandatory Criteria Section 11.0 - Radio System Technological Requirements	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
M17	11.1 General All Bidders proposals shall include detailed radio equipment RF performance, electrical and physical manufacturers' minimum guaranteed specifications.	☐ Met ☐ Not met		
M18	11.2 Technology Specifications Bidders proposals shall include the detailed manufacturers' specifications and brochures for all technology that is being proposed. The technology	☐ Met ☐ Not Met		

No.	Mandatory Criteria Section 11.0 - Radio System Technological Requirements	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
	includes infrastructure technology (RF transmitters-receivers, audio and control interfaces, antenna systems, etc.), fixed stations, vehicle and handheld radio technology and accessories, solar and battery technology, equipment enclosures, etc. Proposals shall provide detailed manufacturer specifications including guaranteed performance, functionality, required electrical power, required installation and operating conditions, durability, physical dimensions and form factor that are guaranteed as a minimum level of performance.			
M19	11.3 Push-to-Talk ANI Requirements The System shall include push-to-talk automatic number identification capabilities	☐ Met ☐ Not Met		
M20	11.4 Radio Equipment Adjustments & Servicing All equipment must be able to be serviced within Canada, by all manufacturer approved radio service facilities. All proposals must clearly describe the service software capabilities, interfaces, and the computer/device requirements for using the software.	☐ Met ☐ Not Met		

No.	Mandatory Criteria Section 12.0 - Dispatch Base Station Radio Requirements	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.

M21	12.1 Dispatch/"Office" Base Station Radios (Transceivers) Bidders shall include detailed descriptions, photographs and/or brochures for the proposed base stations.	☐ Met ☐ Not Met		
M22	12.2 Dispatch Base Station Antennas Currently, the NCC base stations employ indoor antennas that are mounted in various locations in the NCC dispatch base station facilities. Bidders shall propose a suitable antenna type and mounting configuration for each base station in each NCC facility.	☐ Met ☐ Not Met		
M23	12.3 Push to Talk ID (ANI) Display: Bidder's proposals must clearly describe all Push-to-talk ("PTT") ANI encoding and decoding functions and capabilities in all proposed base station radios.	☐ Met ☐ Not Met		

No.	Mandatory Criteria Section - 13.0 - Chalet & Shelter Base Stations	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
M24	13.1 General Radio base stations in the chalets and shelters are intended for public use in emergencies.	☐ Met ☐ Not Met		

	Bidders shall provide detailed descriptions of the proposed base station design. The Bidders shall provide all drawings, photographs, and descriptions to provide the NCC with a clear understanding of all aspects of the shelter base stations, for evaluation of the NCC. The signs shall be in both English and French. Universal symbols shall be used in addition to the English and French wording.			
M25	13.2 Electrical Power Electrical power to the radio equipment will be supplied from a solar -battery system. Bidders shall clearly specify in all proposals, concerns, issues and recommendations for use and/or replacement or upgrade of the existing solar systems to meet THE NCC's needs in accordance with this RFP. Bidders shall specify the following in each proposal for the radio equipment at each chalet/shelter to enable the NCC to assess alternative solar power system supplier prices at the NCC's discretion: 1. Maximum and minimum operating and standby voltage requirements. 2. Peak current at the maximum and minimum voltage. 3. Average current at the maximum and minimum voltage based on a 24-hour duty cycle of: a) 5% transmit b) 45% receive c) 50% standby	☐ Met ☐ Not Met		

M26	Bidders must clearly specify in all proposals, concerns, issues and recommendations for use and/or replacement or upgrade of the existing solar systems to meet the NCC's needs in accordance with this RFP.	☐ Met ☐ Not Met		

No.	Mandatory Criteria Section 14.0- Infrastructure	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
M27	14.1 Infrastructure Backup Power Requirements All infrastructure radio equipment and control systems shall be electrically powered from an uninterruptable power source that shall provide continuous electrical power to all System technology at all infrastructure sites in the event of a commercial utility power failure. All Bidder's proposals shall clearly describe the backup electrical power capabilities at all System infrastructure sites.	☐ Met ☐ Not Met		
M28	14.2 LMR Radio Sites & Facilities All proposals shall include the radio site details as specified in the tables.	☐ Met ☐ Not Met		

No.	Mandatory Criteria 15.0 System (Infrastructure) Connectivity	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
M29	15.1 General Bidder's proposals must include specific network/connectivity design details including, methods and technology for connecting all infrastructure for a fully operational and reliable land mobile radio communications system that meets all THE NCC's needs in accordance with this RFP and Specifications.	☐ Met ☐ Not Met		
M30	15.2.2 Proposed Microwave Site and RF Path Details All proposals must include detailed RF path analyses for each wireless link that shows the detailed path profile, the detailed technical RF signal and path parameters and path reliability for each wireless link in the network based on the tables.	☐ Met ☐ Not Met		
M31	15.3 Alternative Infrastructure Connectivity (Optional) Bidders who propose an alternative to a microwave only network shall include in the proposals, a clear, detailed preliminary network design and comprehensive explanation of the reasons for the alternative and the benefits to the NCC specifically addressing: - system reliability - system performance - cost - on-going system maintenance Bidders who propose optical fiber either as a complete or hybrid solution shall identify the specific dark fibre plant owner, the fibre termination and	☐ Met ☐ Not Met ☐ N/A		

No.	Mandatory Criteria 15.0 System (Infrastructure) Connectivity	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
	access points, the detailed routing between the infrastructure sites, and cost to the NCC. The proposals must include preliminary agreements with the fibre plant owner for use of the dark fibre by the NCC and the preliminary pricing for use of the fibre subject to negotiations by the NCC.			

No.	Mandatory Criteria Section 16.0 - Handheld And Vehicle Radio Specifications	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
M32	16.1.2 Handheld Radio Packaging All Bidders shall clearly and fully describe all features of the proposed handheld radio equipment that are designed to withstand or restrict moisture ingestion. Bidders shall also describe the potential damaging effects on the radio reliability, performance and life caused by moisture on the transceiver case, the protective carrying cases, the battery contacts, and accessory connector contacts.	☐ Met ☐ Not Met		
M33	16.1.4 Handheld Radio Indicators and Controls Bidders shall include detailed descriptions, brochures and/or photographs that clearly show the indicators and controls on the proposed handheld radios.	☐ Met ☐ Not Met		
M34	16.1.9 Handheld Radio Battery			

No.	Mandatory Criteria Section 16.0 - Handheld And Vehicle Radio Specifications	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
	All proposals must provide descriptions of the proposed battery technology and detailed battery specifications.	☐ Met ☐ Not Met		
M35	16.1 10 Handheld Radio Desk Top Battery Charger Units Bidders' proposals shall describe capabilities included in the chargers for full battery analysis and conditioning in lieu of using an external battery charging and conditioning unit.	☐ Met ☐ Not Met		
M36	16.1.11 Handheld Radio Battery Analyzer-Conditioner If the single unit and multi-unit desktop chargers do not include full battery analysis and conditioning (if appropriate) capability, Bidders shall propose a battery analyzer/conditioner that can be used as part of an organized handheld radio battery maintenance program. The analyzer/conditioner shall condition the batteries (as appropriate for the battery chemistry) and determine their capacity.	☐ Met ☐ Not Met ☐ N/A		
M37	16.1.12 Handheld Radio Carrying Cases The transceiver shall be supplied complete with a swivel mount carrying case that can be secured to a belt, holster fashion, or if desired, hand carried. The case shall also be available as an additional accessory. The material(s) used in the cases shall be fully stated by the Bidders, including reasons why the Bidders believe the material or combination of materials is well suited to the NCC operations.	☐ Met ☐ Not Met		

No.	Mandatory Criteria Section 16.0 - Handheld And Vehicle Radio Specifications	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
M38	16.2 Vehicular Radio Specifications Bidders shall include the detailed vehicle radio equipment brochures and specifications for the proposed vehicle radios	☐ Met ☐ Not Met		
M39	16.2.3 Vehicular Radio Indicators and Controls Bidders shall include detailed brochures and/or photographs and supplementary descriptions as required that clearly show the vehicle radio controls and indicators.			
M40	16.3.3 Vehicle Airbag/Curtain Installation Restrictions All proposals must include clear descriptions of the provisions for mounting all proposed equipment in tightly constrained spaces that will provide for: 1. Clear and unobstructed view of the communications equipment controls and indicators, and easy access to all operating controls by the vehicle operator in all vehicles. 2. The communications equipment installation not impeding the performance of the occupant safety devices in any way. 3. No additional damage/harm to vehicle or occupants when an occupant safety device is active, including the potential for any portion of the communications equipment/installation to result in projectiles, or for the communications equipment to end up between the deployed airbag/curtain and an occupant(s).	☐ Met ☐ Not Met		

No.	Mandatory Criteria Section - 18.0 Equipment Approvals	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
M41	18.0 Equipment Approvals All proposed equipment must be fully approved for use in the proposed NCC system, in accordance with the standards and regulatory requirements specified in the Specifications. All Bidders shall provide documented evidence that all equipment to be supplied is fully approved in accordance with all relevant regulatory requirements.	☐ Met ☐ Not Met		
M42	18.1.1 Current Production Equipment All proposals must include evidence that all proposed equipment are current production models that are currently planned for continued production for at least the next three (3) years. Proposed equipment that is not yet in production, or equipment that may be scheduled for discontinuation within the next five (5) years, may be rejected by the NCC.	☐ Met ☐ Not Met		
M43	18.1.2 Future Production Model Equipment All Vendors shall commit to the NCC that directly interchangeable equipment, that is fully compatible with the proposed equipment, will be available in the future for direct replacement of and/or addition to equipment supplied and installed as part of the upgrade.	☐ Met ☐ Not Met		

No.	Mandatory Criteria Section 19.0 - Warranty	Met/Not Met	Proposed Alternative (where permitted as per RFP)	Reference to proposal page No.
M44	19.0 <u>Warranty</u> All proposals shall include the detailed terms and conditions for the standard Bidder's warranty for all equipment and materials supplied as part of the system upgrade, including the installation of all equipment and materials. The warranty of all equipment, parts and labor (including all installation work) shall be for a period of not less than one (1) year from the date of formal system acceptance by the NCC. *Bidder shall read and comply with section 19 of the RFP.*	☐ Met ☐ Not Met		
M45	19.2 <u>Response Times for Service and Maintenance During Warranty Period</u> All proposals shall confirm the latest response time for all service and maintenance requests from the NCC for troubleshooting and other technical support requested by the NCC.	☐ Met ☐ Not Met		
M46	19.3 <u>Warranty & Service Spare Equipment</u> All proposals shall clearly itemize the list of spare radio equipment that will be retained at the Contractor's premises for expedited replacement as required.	☐ Met ☐ Not Met		

No.	Mandatory Criteria	Met/Not Met	Proposed Alternative	Reference to

	Section 21.0 - Radio User Training		**(where permitted as per RFP)**	**proposal page No.**
M47	21.0 Radio User Training Bidder shall be able to provide Radio User Training in both languages based on a "training the trainer" program for up to four (4) NCC trainers.	☐ Met ☐ Not Met		

No.	**Mandatory Criteria** **Section 22.0 - Service and Maintenance Contracts**	**Met/Not Met**	**Proposed Alternative (where permitted as per RFP)**	**Reference to proposal page No.**
M47	22.0 Service and Maintenance Contract All proposals shall include the prices, terms and conditions, for providing contract maintenance services to the NCC, after the warranty period has expired.	☐ Met ☐ Not Met		

Sub Zone	TECHNICAL MERIT Point Rated Technical Criteria 8.0 Radio Communications Coverage Requirements ***HANDHELD RADIO COVERAGE*** ***For Reference Only – to be completed by NCC***	Points (1-100)	Area Weight	Area Score	DAQ Weight	Area & DAQ Net Score
1A	DAQ 3.4 or better		94		1.0	
	DAQ 3.0 TO 3.4		94		0.25	
	DAQ 2.0 TO 3.0		94		0.1	
1B	DAQ 3.4 or better		94		1.0	
	DAQ 3.0 TO 3.4		94		0.25	
	DAQ 2.0 TO 3.0		94		0.1	
1C	DAQ 3.4 or better		94		1.0	
	DAQ 3.0 TO 3.4		94		0.25	
	DAQ 2.0 TO 3.0		94		0.1	
1D	DAQ 3.4 or better		94		1.0	
	DAQ 3.0 TO 3.4		94		0.25	
	DAQ 2.0 TO 3.0		94		0.1	
1E	DAQ 3.4 or better		94		1.0	
	DAQ 3.0 TO 3.4		94		0.25	
	DAQ 2.0 TO 3.0		94		0.1	
1F	DAQ 3.4 or better		94		1.0	
	DAQ 3.0 TO 3.4		94		0.25	
	DAQ 2.0 TO 3.0		94		0.1	
	Total Zone 1					
2A	DAQ 3.4 or better		5		1.0	
	DAQ 3.0 TO 3.4		5		0.25	
	DAQ 2.0 TO 3.0		5		0.1	
2B	DAQ 3.4 or better		5		1.0	

Sub Zone	TECHNICAL MERIT Point Rated Technical Criteria 8.0 Radio Communications Coverage Requirements ***HANDHELD RADIO COVERAGE*** ***For Reference Only – to be completed by NCC***	Points (1-100)	Area Weight	Area Score	DAQ Weight	Area & DAQ Net Score
	DAQ 3.0 TO 3.4		5		0.25	
	DAQ 2.0 TO 3.0		5		0.1	
2C	DAQ 3.4 or better		5		1.0	
	DAQ 3.0 TO 3.4		5		0.25	
	DAQ 2.0 TO 3.0		5		0.1	
2D	DAQ 3.4 or better		5		1.0	
	DAQ 3.0 TO 3.4		5		0.25	
	DAQ 2.0 TO 3.0		5		0.1	
2E	DAQ 3.4 or better		5		1.0	
	DAQ 3.0 TO 3.4		5		0.25	
	DAQ 2.0 TO 3.0		5		0.1	
2F	DAQ 3.4 or better		5		1.0	
	DAQ 3.0 TO 3.4		5		0.25	
	DAQ 2.0 TO 3.0		5		0.1	
	Total Zone 2					
3A	DAQ 3.4 or better		1		1.0	
	DAQ 3.0 TO 3.4		1		0.25	
	DAQ 2.0 TO 3.0		1		0.1	
3B	DAQ 3.4 or better		1		1.0	
	DAQ 3.0 TO 3.4		1		0.25	
	DAQ 2.0 TO 3.0		1		0.1	
3C	DAQ 3.4 or better		1		1.0	
	DAQ 3.0 TO 3.4		1		0.25	
	DAQ 2.0 TO 3.0		1		0.1	

Sub Zone	TECHNICAL MERIT Point Rated Technical Criteria 8.0 Radio Communications Coverage Requirements ***HANDHELD RADIO COVERAGE*** ***For Reference Only – to be completed by NCC***	Points (1-100)	Area Weight	Area Score	DAQ Weight	Area & DAQ Net Score
3D	DAQ 3.4 or better		1		1.0	
	DAQ 3.0 TO 3.4		1		0.25	
	DAQ 2.0 TO 3.0		1		0.1	
3E	DAQ 3.4 or better		1		1.0	
	DAQ 3.0 TO 3.4		1		0.25	
	DAQ 2.0 TO 3.0		1		0.1	
3F	DAQ 3.4 or better		1		1.0	
	DAQ 3.0 TO 3.4		1		0.25	
	DAQ 2.0 TO 3.0		1		0.1	
	Total Zone 3					
	TOTAL HANDHELD RADIO COVERAGE SCORE (Max points = 60,000)					
	TOTAL HANDHELD RADIO COVERAGE POINTS AWARDED					

BASIS OF SELECTION

1. The selection will be based on the highest responsive combined rating of technical merit and price. The ratio will be 75% for the technical merit and 25% for the price.

2. To establish the technical merit score, the overall technical score for each responsive bid will be determined by dividing the total number of points obtained by the maximum number of points, then multiplied by 75.

3. To establish the pricing score, each responsive bid price will be prorated against the lowest evaluated price, then multiplied by 25.

4. For each responsive bid, the technical merit score and the pricing score will be added to determine its combined rating.

5. Neither the responsive bid obtaining the highest technical score nor the one with the lowest evaluated price will necessarily be accepted.

6. The responsive bid with the highest combined rating of technical merit and price will be recommended for award of a contract.

The table below is an example where all three bids are responsive and the selection of the contractor is determined by a 75/25 ratio of technical merit and price, respectively.

In the example below, the total available points equals 135 and the lowest evaluated price is $45,000.

Basis of Selection - Highest Combined Rating Technical Merit (75%) and Price (25%) **Examples only – not reflective of actual scores**			
	Bidder 1	Bidder 2	Bidder 3
Overall Technical Score	90/135	80/135	70/135
Bid Evaluated Price	$55,000.00	$50,000.00	$45,000.00

Calculations	Technical Merit Score	90/135 x 75 = 50	80/135 x 75 = 44.4	70/135 x 75= 38.9
	Pricing Score	45/55 x 25 = 20.4	45/50 x 25 = 22.5	45/45 x 25 = 25
Combined Rating		70.4	66.9	63.9
Overall Rating		1st	2nd	3rd

APPENDIX G

BID BOND

APPENDIX H

LABOUR & MATERIAL PAYMENT BOND

APPENDIX I

RENEWABLE PERFORMANCE BOND

APPENDIX J

GOVERNMENT SITES TENDER & CONTRACT SECURITY REQUIREMENTS