Addendum #2

to

London Hydro's

Request for Proposal

for

Advanced Metering Infrastructure (AMI) – Phase I Smartmeter Deployments

Issued: October xx, 2007

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1. INTRODUCTION

1.1 Background

As the lead local distribution company (LDC) in a Smartmetering consortium consisting of twenty-one (21) LDC's, on August 15th, 2007 London Hydro issued a *Request For Proposal (RFP)* and an *Information Supplement* for Advanced Metering Infrastructure (AMI) to enable bidders to submit a two part proposal comprising of a technical and project management proposal and a cost proposal. Full titles of the RFP documents are given in Section 1.6, *Reference Documents*, below.

Within the RFP document, Section 4.3, *Bidders Conference*, Section 4.4, *Requests for Clarification or Additional Information*, and Section 7.5.4, *Addenda: Errors and Omissions*, provide a formal mechanism for London Hydro (on behalf of the Smartmeter consortium) to issue revisions, additions and clarifications to the RFP.

These addenda are prepared in accordance with London Hydro's guideline document entitled: *Guidelines for Responding to Bidder's Inquiries and Issuing Addenda*.

1.2 Purpose and Intent

This addendum forms an integral part of the contract documents and shall be included therein. Bidders shall read the complete Addendum and take into account items affecting their proposal. No consideration will be allowed for increases (extras) to the Contract Price due to failure of the Bidder to familiarize himself with this addendum.

Each bidder shall be responsible for ascertaining, prior to submitting a Proposal, that it has received all issued Addenda.

1.3 Interpretation

This Addendum forms part of and shall be read together with the RFP documents.

All terms used in this Addendum which are defined in the RFP documents shall have the meaning assigned therein unless the context otherwise requires.

In the event of any inconsistency between the terms of this Addendum and the RFP documents, the terms of this Addendum shall prevail. Where the conflict is with the terms of an additional Addendum or amendment entered into after the date hereof, the terms of the later Addendum or amendment shall prevail.

1.4 Acknowledgement of the Addendum

Bidders shall formally acknowledge receipt of this addendum in their proposal submission. A suggested approach is inclusion of the following phrase in their covering letter (as described in Section 7.2.1, *Cover Letter*, of the RFP):

Receipt of Addendum Numbers _____, _____, _____ is hereby acknowledged.

1.5 Conventions

The conventions described following are used for published addenda to the RFP and Information Supplement:

- Every amendment to the RFP will be uniquely identified by the designator "#RFP-n", where "n" is the amendment number starting at "1" and continuing, irrespective of addendum. For example, if there were two amendments in this addendum designated #RFP-1 and #RFP-2, any amendments contained in the next addendum would start at #RFP-3.
- Every amendment to the Information Supplement will be uniquely identified by the designator "#IS-n", where "n" is the amendment number starting at "1" and continuing, irrespective of addendum. For example, if there were three amendments in this addendum designated #IS-1, #IS-2 and #IS-3, any amendments contained in the next addendum would start at #IS-4.
- For amendments, deleted text is shown with strike-outs and yellow highlight.
- For amendments, changed or new text is shown with green highlight.

1.6 Reference Documents

The following documents are referred to within this Addendum:

[1] London Hydro *Request for Proposal for Advanced Metering Infrastructure (AMI) – Phase I Smartmeter Deployment*; dated August 14, 2007

[2] Information Supplement to London Hydro Request for Proposal for Advanced Metering Infrastructure (AMI) – Phase I Smartmeter Deployment; dated August 14, 2007.

[3] London Hydro internal document entitled: *Guidelines for Responding to Bidder's Inquiries and Issuing Addenda*; Revision R0.

[4] London Hydro internal document entitled: *Guidelines for Conducting the Bidders' Conference*; Revision R1.

2. RFP CORRECTIONS AND REVISIONS

The RFP amendments given below, issued subsequent to the original RFP document, override the referenced clauses within the original RFP document.

2.1 Amendment #RFP-3

- RFP Reference: Section 6.3.1, *Expandability (Scalability) Requirements*; page 69.
- Original Text: The AMI Master Control Computer and WAN interfaces shall have sufficient inherent expandability to sustain the system for at least ten (10) years, based on the assumptions regarding growth of the meter population as listed below:
  - The existing electric meter population (as given in Table 6-3, Table 6-4 and Table 6-5) is approximately 140,000;
  - Approximately 2,400 new services (with associated revenue meters) are added each year;
  - If the provincial government mandates conversion of bulk metered apartment buildings to individual tenant meters (via such instruments as Ontario proposed draft Regulation, *Installation of Smart Meters and Smart Sub-Metering Systems in Condominiums*), the conversions within 690 buildings will see the addition of 29,388 tenant meters.
  - A 3% allowance shall be provided for anticipated other factors.

  Based on the foregoing, the AMI system shall be scalable to at least 200,000 electric metering points
- Revised Text: The AMI Master Control Computer and WAN interfaces shall have sufficient inherent expandability to sustain the system for at least ten (10) years, based on the assumptions regarding growth of the meter population as listed below:
  - The existing electric meter population (as given in Table 6-3, Table 6-4 and Table 6-5) is approximately 140,000;
  - Approximately 2,400 new services (with associated revenue meters) are added each year;
  - ~~If the provincial government mandates conversion of bulk metered apartment buildings to individual tenant meters (via such instruments as Ontario proposed draft Regulation, Installation of Smart Meters and Smart Sub-Metering Systems in Condominiums), the conversions within 690 buildings will see the addition of 29,388 tenant meters.~~
  - Although there are 690 bulk-metered multi-residential buildings in London, consisting of 29,388 apartment and condominium units, conversion to individual tenant metering arrangements under the provisions of Ontario Regulation 442/07, *Installation of Smart Meters and Smart Sub-Metering Systems in Condominiums*, is not anticipated

to exceed 5,000 units (and likely only in those buildings with metered load centres that were previously converted to bulk-metered arrangements).

- A 3% allowance shall be provided for anticipated other factors.

Based on the foregoing, the AMI system shall be scalable to at least ~~200,000~~ 175,000 electric metering points

2.2 Amendment #RFP-4

- RFP Reference: Section 4.1, *Contact for Contractual Matters*; postal code in address block on page 10.
- Original Text: London, Ontario
  N6A 2T7
- Revised Text: London, Ontario
  ~~N6A 2T7~~
  N6A 4H6

2.3 Amendment #RFP-5

- RFP Reference: Section 4.2, *Contact for Technical Matters*; postal code in address block on page 10.
- Original Text: London, Ontario
  N6A 2T7
- Revised Text: London, Ontario
  ~~N6A 2T7~~
  N6A 4H6

2.4 Amendment #RFP-6

- RFP Reference: Section 7.1, *Submittal*; postal code in address block on page 80.
- Original Text: London, Ontario
  CANADA N6K 2T7
- Revised Text: London, Ontario
  ~~CANADA N6K 2T7~~
  CANADA N6A 4H6

2.5 Amendment #RFP-7

- RFP Reference: Appendix D.2, *Table of Conformance for London Hydro's RFP*; missing row on page 125.
- Original Text:

6.7.2	Service Maintenance Support		
7.0	**Proposal**	**Noted**	**--**

- Revised Text:

6.7.2	Service Maintenance Support		
6.7.3	Meter Design for End-of-Life Disassembly and Materials Recycling		
7.0	**Proposal**	**Noted**	**--**

2.6 Amendment #RFP-8

- RFP Reference: Section 3, *Calendar of Events*; page 9 – extension of proposal due date.
- Original Text: Proposal Due Date October 24th, 2007 by 3:00 PM
- Revised Text: Proposal Due Date ~~October 24th~~ November 14th, 2007 by 3:00 PM

3. INFORMATION SUPPLEMENT CORRECTIONS AND REVISIONS

The Information Supplement amendments given below, issued subsequent to the original Information Supplement document, override the referenced clauses within the original Information Supplement document.

There are no amendments to the Information Supplement in this Addendum #2.

4. ANSWERS TO BIDDERS QUESTIONS

The questions raised to date by one or more bidders have been captured below, along with the Smartmeter consortium's answers. These answers to bidders' questions are intended only to assist bidders in better understanding the prevailing conditions, the consortium's expectations, and guidance to bidders in the preparation of their respective proposals. Nothing in this section should be construed as modifying or overriding any requirement stated in the RFP or Information Supplement.

Question #1: With reference to Section 6.1.3.1, *Installing Regional Collectors / Repeaters on Roadway Lighting Luminaires*, of the RFP, the final paragraph (on page 32) makes reference to a "*joint-use attachment agreement*" with the City. Could you elaborate? Could you provide us with any ideas of pricing?

Answer: Whenever one party (i.e. municipality or utility) has facilities installed on facilities or fixtures owned by another party, the attachment or occupancy is covered by a legal agreement referred to in the industry as a "*joint-use attachment*" agreement. London Hydro owns the majority of the distribution poles (≈ 28,000) within its franchise service territory, but has joint-use occupancy agreements covering the installation of its electrical distribution facilities on some 2,700 poles owned by Bell Canada, some 300 poles owned by Hydro One Networks (the provincial transmitter), and 10 poles owned by Rogers. Similarly, the telecommunications and CATV carriers have aerial cable attachments and powered amplifiers installed on many of London Hydro's poles which are covered under a separate "joint-use attachment" agreement. Similarly, the municipality has many of their population of roadway lighting fixtures attached to London Hydro's poles.

If an LDC were to install a regional collector (or repeater) on the davit arm of the municipality's roadway lighting system, it would be necessary to obtain explicit permission from the owner (which will likely require submission of a Professional Engineer's certificate that the device to be attached will not cause mechanical undue loading on the davit arm, nor pose a health and safety risk to the workers that maintain the roadway lighting system), and enter into a formal "joint-use agreement" covering access, responsibilities, etc. for the attachment.

Perhaps as a proxy of the cost, one can use the case of a powered CATV amplifier installed on a distribution pole. The present attachment fee is $22.[35] per year. The amplifier load is un-metered - the cost of electricity will depend upon the estimated consumption but $39.[50] per month is representative for the population of CATV amplifiers within London Hydro's service territory.

Note: The aforementioned costs are not something that would be incurred by the bidder. Rather London Hydro would include these costs in the development of "*system most probable cost*" models.

Note: It is understood that in various field trials of AMI systems, RF problems have been encountered when antennas are affixed to davit arms. Whereas the main pole acts as a fixed object, the combination of the cantilever loading of the roadway lighting fixture and air movement results in constant motion of any attached RF antenna. In some jurisdictions, stabilizer arms have been proposed, but in many cases, these encroach on requisite electrical clearances to energized circuits (and are impractical to install).

Note: Bidders are also reminded of Section 2.7, *Installing Regional Collectors / Repeaters on Luminaires (Section 6.1.3.1)*, of the Information Supplement. Some LDC's will not consider such an arrangement on account of the associated technical and administrative challenges.

Question #2: With reference to Section 6.1.5.1, *Distribution System Overview*, of the RFP (page 35), can you provide us with information about the average distance between transformers in the medium-voltage distribution circuitry? What are the ranges of voltages (minimum and maximum) in this distribution?

Answer: With respect to the average distance between transformers, I'm not sure that there is a specific answer to this question, nor how meaningful such a statistic would be. As noted in Appendix C, *Maps and Drawings*, of the RFP, London Hydro's franchise service territory covers some 422 square kilometers. Table 6-2, *Magnitude of London Hydro's Distribution System*, provides some insight into the length of circuitry at each of the distribution voltages.

Note: In interpreting Table 6-2, one need be aware that the length of single-phase lateral circuits was divided by three to arrive at an "equivalent three-phase circuit length". Similarly, the length of two-phase lateral circuits was divided by 1½.

Within that service territory, the numbers and types of distribution and power transformers is tabulated in Table 4-1 below:

Table 4-1, Quantities and Types of In-Service Distribution and Power Transformers

Transformer Category	2.4/4.16Y kV	4.8/8.32Y kV	8/13.8Y & 13.8Δ kV	16/27.6Y kV	Total
Single-phase loop-feed padmounted distribution transformers; live-front & dead-front; 25 to 167 kVA	536	20	18	4,895	5,469
Three-phase padmounted distribution transformers; live-front & dead-front; radial-feed & loop-feed	81	2	67	928	1,078
Single-phase pole-mounted distribution transformers; 10 to 167 kVA	2,618	681	382	4,196	7,877
Three-phase pole-mounted distribution transformers	80	--	--	--	80
Single-phase submersible transformer	--	--	--	2	2
Three-phase subway-style network transformers; 500 – 1500 kVA	--	--	94	--	94
Single-phase indoor vault-style transformers	--	--	--	45	45
Three-phase substation power transformers	--	--	7	41	48
Single-phase dry-type transformers; 25 – 150 kVA	151	--	--	--	151
Customer-owned substations	5	--	28	130	163
Others (rabbit, autotransformer, etc).	--	--	--	57	57

The power transformers within Hydro One Networks' transformer stations (points of primary supply to London Hydro) are equipped with under-load tap-changers. London Hydro's municipal substation and distribution transformers are generally equipped with off-load tap-changer switches.

Like all LDC's, London Hydro designs its distribution system to provide utilization voltages (typically 120/240, 120/208Y, 347/600Y or 2400/4160Y) at the customer's service entrance

panel in accordance with CSA Standard CAN3-C235-83, *Preferred Voltage Levels for AC Systems, 0 to 50,000 V*.

Question #3: Regarding sub-metering, can you provide detail on how many units each of the participating LDC's will have once their apartment buildings / condominiums are individually metered?

Answer: Firstly, there is no requirement within the RFP or Information Supplement to supply Smart sub-metering systems for application in multi-residential buildings. The very phrasing of the question suggests that the bidder may have a false impression concerning Ontario Regulation 442/07, *Installation of Smart Meters and Smart Sub-Metering Systems in Condominiums*. This Regulation does not make individual metering mandatory in multi-residential buildings; rather it is enabling legislation that is specific to condominiums. If a condominium's board of directors wishes to proceed, this regulation facilitates the voluntary installation of smart meters and smart sub-meters in condominiums without requiring an amendment to the condominium's declaration.

Having said that, LDC's such as London Hydro have always given the developers of multi-residential buildings the option of a bulk-metering arrangement or individual tenant metering (via metered load centres populated with network-style revenue meters). Under the Smartmetering initiative, these plug-in network-style revenue meters (as identified in Section 5.1.1 and Section 5.2.1 of the RFP) will simply be replaced with "Smart" plug-in network-style revenue meters.

Other LDC's, such as Oakville Hydro, have actively pursued the retrofit of bulk-metered multi-residential buildings with Smart sub-metering systems manufactured by Quadlogic Meters Canada Inc – refer to Section 2.1.7, *Disclosure of Smartmeter Pilot Projects*, of the Information Supplement.

It is suggested that bidders with available smart sub-metering solutions include such information within their proposal. The Bid Evaluation Plan includes provisions by which LDC's can assign a limited number of "*bonus technical points*" to features deemed "… *well beyond the stated minimum requirements or preferences, and that also provide some value to the LDC*". Some consortium LDC's may wish to assign their bonus points to this feature.

Question #4: With reference to Section 7.1, *Submittal*, of the RFP, it is understood that ten (10) hard copies of the proposal are required. However, the third paragraph ("*Hard copies of the proposal shall be provided …*") indicates that an electronic version delivered on one of the defined media is an acceptable alternative. If, for example, we elected to provide our proposal in electronic format on a CD, is one (1) CD acceptable or do you need ten (10) copies of the CD?

Answer: Bidders are reminded of slide #32 at the bidders' conference which shows that the proposals will be circulated amongst consortium LDC's to carry out parts of the bid analysis. As such, if the bidder elects to provide hard copies or electronic versions of their proposal on say a CD, then ten (10) copies will be required.

Bidders are reminded of the requirement to separate the technical and cost aspects of the proposal, so ten (10) technical CD's and ten (10) financial CD's will need to be submitted.

Question #5: With reference to Section 2.1, *Provincial Context for Project*, Section 2.3, *Informal Regional Smart-Meter Purchasing Consortium*, Section 7.5.5, *Public Records*, and Appendix D.8, *Bidder's Consent to Limited Dissemination of Proposal*, some bidders have requested confidentiality agreements (or non-disclosure agreements) covering detailed financial information for privately-held companies, technological advances in the state-of-the-art (e.g. smart antennas, coupling devices that incorporate innovative noise reduction techniques, etc.), and even the Appendix D.5 cost elements.

Answer: London Hydro has referred the matter to its corporate lawyer (that has considerable expertise with MFIPPA). If we are receptive to this notion, a simple plain-English form of confidentiality agreement between the participants in the Smartmeter consortium and individual bidders will be drafted to cover a very narrow span of subjects, such as detailed financial statements for private companies, and technological advances not yet covered by patent protection. See also Question #8 in Addendum #1.

Question #6: In reference to Section 5.3, *Optional Supply of Qualified Installation Labour*, will London Hydro accept indicative installation pricing, other than the hourly rate requested, for the review of other consortium members?

Answer: It is not clear here what the bidder means by "*indicative*" installation pricing and no illustrative example was provided, but the answer is "*yes*". The actual remuneration arrangement to the successful bidder for installation assistance is something that would be worked out between each LDC and their respective "*successful bidder*" as one element of the Statement of Work negotiations.

Please understand that there is a mutual interest in a swift Phase I success by both the LDC and the successful bidder (to that LDC) and for this reason if the successful bidder has an installation division or other partnership arrangement with a qualified installation company (that is deemed acceptable to the LDC), the scope of work for the AMI system will undoubtedly be expanded to include the installation work under the umbrella Statement of Work.

However, if the successful AMI bidder is not offering installation services (or the arrangement is deemed unacceptable to the LDC due to previous safety violations, poor references, etc.) then London Hydro (and likely other consortium LDC's) would solicit competitive sealed bids for installation contractors.

Question #7: It is observed that London Hydro is considering technology and communications as the priority of this RFP process, and service-model data collection and field installations are secondary requirements. If a vendor were to address only outsourcing components (i.e. excluding procurement of technology), targeting meeting the needs of other consortium members, would their proposal be accepted for review by these members, or would it be considered non-compliant by London Hydro and therefore not be available to any member of the consortium?

Answer: The only outsourcing contemplated is installation labour for the Smartmeters as described in Section 5.3, *Optional Supply of Qualified Installation Labour*, of the RFP, and hosting for the AMI Master Control Computer as described in Section 2.13, *Supplementary Master Control Computer Requirements (Section 6.2.8)*, of the Information Supplement.

Please understand that this RFP is all about procuring AMI systems with options for the successful bidder to additionally supply installation labour and hosting services. If the successful bidder doesn't have a meter installation division (which we think will typically be the case), then a separate Request will be solicited for qualified installation labour. It is likely that the Smartmeter consortium would continue its collaborative work and develop a uniform Request document. Given differences in LDC's, this may range from qualified meter exchange contractors at some LDC's to supervision, project management, and end-to-end testing at other LDC's. Outsourcing contractors should focus their attention on this second Request.

Question #8: With respect to Appendix D.5, *Price Proposal and Cost Elements*, is pricing in US dollars acceptable?

Answer: No. However we realize that bidders need some protection against volatility in the currency exchange rate, especially if the LDC has the option of extending the contract to encompass Phase II up to a year after the Phase I contract has been executed. LDC's routinely buy underground power cables based on fixed aluminum and copper prices with an escalation clause to compensate for price volatility in the metals market between the time of order placement and actual power cable manufacturing (which could be appreciable for two- or three-year supply contracts). For out-of-country bidders, it would seem reasonable to include a mutually-acceptable escalation clause in the Statement of Work document that would be applied to Phase II deliveries (where the LDC exercised this option).

Note: The precise wording that may be included in a Statement of Work document is yet to be determined, but the following illustrative wording may alleviate bidders' concerns about their risk exposure to volatility in currency exchange rates:

1. In cases whereby the LDC elects to invoke their option for Phase II procurements, the price in Canadian funds (for Phase II elements) includes the foreign currency component in respect of goods, services or both originating outside Canada as detailed on Schedule A, *Claim for Exchange Rate Adjustments*, which is attached and forms part of this Statement of Work. The initial currency conversion factor, determined on the {proposal due date / contract execution date}, is included on Schedule A.

2. Where a milestone payable includes the importation of goods into Canada, the exchange rate used to calculate the exchange rate adjustment will be the rate applied by Canada Border Services Agency (CBSA) on the date of importation. For a milestone that does not involve the importation of goods, but still includes a foreign currency component, the exchange rate used to calculate the exchange rate adjustment will be the Bank of Canada exchange rate in effect at noon, on the date when the milestone became due and payable.

3. On each invoice (or milestone claim form) submitted against the Contract, the Contractor shall show the exchange rate adjustment amount (either upward, downward or no change) as a separate item on the invoice or milestone payment claim form.

Question #9: If the bidder has already successfully integrated their AMI system to the provincial MDM/R, should we assume that London Hydro (or the consortium LDC) will manage the integration of the provincial MDM/R to their respective CIS system?

Answer: In principle, yes. The Minister of Energy's Smartmeter process model (included as Figure 6-15 of the RFP) considers the data transfers between the AMI Master Control Computer and the provincial MDM/R to be independent of the data transfers between the provincial MDM/R and the CIS.

Question #10: Is there a possibility that consortium members would be interested in sharing AMCC and AMRC devices for the overall benefit of the project?

Answer: Yes. Some LDC's have already expressed interest in having third parties or other LDC's host their Master Control Computer – refer to Section 2.13, *Supplementary Master Control Computer Requirements (Section 6.2.8)*, of the Information Supplement, Question #11 within Addendum #1, and Section 5.4, *Expandability (Scalability) Requirements*, herein.

London Hydro's service territory is entirely surrounded by Hydro One Networks. Section 6.2.10.11, *Inter Master Control Computer Communications*, of the RFP is intended to depict a possible method of minimizing duplicate facilities in the field.

It can be seen from Table 2-36, *Variations in LDC Priorities in Additional AMI Functionality*, as but one example of the differences in consortium LDC's which may have some impact on sharing or cooperative arrangements. An LDC with minimal value-added functionality would not be a good candidate to host a neighbouring LDC's system wherein the neighbour seeks a "fully-loaded" AMI system.

It is probably premature to consider cooperative arrangements until the bid evaluation process is complete and each LDC knows which AMI system is deemed to provide them with "best value". Those LDC's that have made the same system selection can discuss options going forward, which may range from a common Statement of Work all the way to a fully cooperative AMI system.

Question #11: With reference to Section 5.1.2, *Load Shifting Opportunity* (page 13), will London Hydro include load management devices as part of its Phase I deployment? Do you anticipate using load management devices as part of the Smartmetering deployment? If so, is it a requirement to have load management devices accepted by the OPA??

Answer: London Hydro (similar to many consortium LDC's) is a participant in the OPA's *peaksaver*™ initiative (wherein residential central air conditioners can be controlled via a provincial dispatch signal in response to generation shortfalls and constraints on the transmission grid). As OPA is funding this initiative, this agency has selected its technology of choice.

However, London Hydro is also interested in leveraging the AMI communications infrastructure to interact with load-shifting and demand-response devices within customer premises. This technology would be selected by London Hydro and funded out of the rate base.

An important element of London Hydro's smartmetering deployment strategy is to also provide the customer with real tools to benefit from the combination of smartmetering and time-of-use electricity rates without compromise. For low-income town-housing developments (that are typically equipped with electric baseboard heating and electric storage tank water heaters), we envision working with the municipality on a scheme involving grey-water heat recovery units, high-quality low-flow shower heads and faucet aerators, load-shifting controllers for the water heater, and conversion of the electric baseboard units to thermal energy storage units (similar to what was done in Peterborough) – the end-use customer has an equivalent or better experience with hot water and space heating, and benefit from the combination of a Smartmeter and time-of-use rates (via lower monthly bills). By default, the electric distribution system also benefits.

So, whereas it is London Hydro's desire make a portfolio of energy management devices available to our customers as soon TOU rates are introduced, we are apprehensive that the design maturity (with respect to man-machine interfaces, operating principles, etc.) is where it needs to

be for market acceptance. Nonetheless, we are eagerly awaiting bidders' proposals to see the recent advancements in the state-of-the-art.

Question #12: In reference to Appendix E, *Standard Contract Terms & Conditions*, and specifically the clause pertaining to *Delivery* (page 141): "… *TENDERS MUST BE HAND DELIVERED TO THE EXECUTIVE OFFICE NOTED ABOVE TO ENSURE RECEIPT BY THE CLOSING TIME*. …". Is proof of receipt from a courier acceptable?

Answer: It is not necessary for the bidder himself to deliver the proposal package – an agent can certainly be used for this purpose. Bidders only need to understand that the proposal package (whether it be delivered on printed media or electronic media such as a CD) needs to be physically delivered to London Hydro's designated offices by the established deadline. Proposals delivered by facsimile or electronic mail will not be accepted.

Question #13: Section 6.3.1, *Expandability (Scalability) Requirements*, on page 69 of the RFP stipulates that the system be scalable to at least 200,000 electric meter points. Is it acceptable to size the system for Phase I and demonstrate our network server is expandable to 200,000 units, or does London Hydro wish to install network server hardware sized to support 200,000 units and the system's expansion at the beginning of Phase I?

Answer: The utlimate number of electric meter end points has been revised downward from 200,000 to 175,000 – refer to Amendment #RFP-3 above.

Intuitively, a master control computer that is expanded incrementally as the number of in-service meters increases would seem most economic. Bidders are encouraged to configure the baseline system to (at least) accommodate both the Phase I meters (5,237 as per Table 5-2 of the RFP) and the Phase II meters (26,012 as per Table 5-4 of the RFP) – if Phase I is successful, London Hydro simply wishes to procure and install more meters and regional collectors without having to repeat portions of the acceptance testing.

The next decision, as to whether the offering (to London Hydro) should be:

- a master control computer, initially configured to support 32,000+ meters, with expansions options to the full 175,000 electric meters, or simply
- a master control computer, initially configured to support the ultimate 175,000 electric meters,

is largely one where one has to look at the potential cost savings (associated with deferring an expenditure for a given amount of time) versus the additional costs that may be incurred to carry out the system upgrades and to repeat some or all of the acceptance tests. If for example, we were only deferring an investment of $15K by 1½ years, but the nature of the upgrade was such that most of the acceptance testing was deemed necessary of repeating, there is probably no real savings to either party. Conversely, if the LDC was able to defer a $100K investment by 1½ years, but the nature of the upgrade was such that only one of the acceptance tests needed to be carried out after the upgrade, then this represents a savings opportunity to the LDC and should be included in the Proposal for consideration.

Without a better appreciation of the manner in which each bidder's system is scaled, and the various capacity levels, it is difficult to provide more specific guidance to bidders.

5. INFORMATIVE

The information given herein is supplementary to the governing *Request for Proposal* or *Information Supplement*. It is intended to assist bidders in preparing their proposals, but does not override, amend, nor change any of the requirements stated in the baseline documents.

5.1 Supplementary Smartmeter Information

Some bidders have asked for additional information for the Smartmeters to be deployed in both Phase I and Phase II – perhaps an electronic file with coordinate data (e.g. longitude and latitude, street address, or similar) and meter information (e.g. element arrangement, voltage, current, base style).

The requested file could not be extracted from our various corporate computer systems and reformatted in such a way as to eliminate confusion in a reasonable timeframe. Nonetheless, bidders may use the assumptions given in Table 5-1 in preparing their proposals:

Note: London Hydro hasn't yet found a compelling need to maintain coordinate data within its corporate Customer Information System – everything is presently tied to municipal address.

Table 5-1, Supplementary Meter Population Information

RFP Section	Revenue Meter Information	Location Information
5.1.1	Network meters are all socket-style (S-base) as described in Appendix A.2; house meters are all 3-element, combination demand & energy, 120/208Y V, 200 A, bottom-connected (P-base).	Stated in RFP in the clause following Table 5-1.
5.1.2	Stated in RFP in the clause following Figure 5-4.	Stated in the four bullets on page 13 – use the City of London's interactive maps for further geographic information.
5.1.3.1		
5.1.3.2		
5.1.4		
5.1.5		
5.1.6		Stated in RFP in the clause below the two bullets on page 18.
5.1.7	All meters will be single-phase self-contained energy meters as described in Appendix A.1	Use municipal address "1442 Highbury Ave N" as a search criterion in the City of London's interactive map.
5.1.8	All existing meters will be single-phase self-contained energy meters as described in Appendix A.1	Use municipal address "10 Park Lane Cres" as a search criterion in the City of London's interactive map.
5.2.1	Network meters are all socket-style (S-base) as described in Appendix A.2; house meters are all 3-element, combination demand & energy, 120/208Y V, 200 A, bottom-connected (P-base).	Stated in RFP in the clause following Table 5-3.

RFP Section	Revenue Meter Information	Location Information
5.2.2.1		
5.2.2.2		
5.2.3		
5.2.4		
5.2.5		
5.2.6		

5.2 Supplementary Distribution System Topology Information

Some bidders, specifically those offering PLC/BPL solutions, have requested supplementary information regarding the topology (or connectivity) of London Hydro's electrical distribution system. Generally, the information being sought is listed below (or a subset thereof):

[1] Distribution transformer information – a separate record for each transformer specifically identifying:

- Transformer ID
- Longitude of this specific transformer
- Latitude of this specific transformer
- kVA rating of the transformer
- Type indicator for this specific transformer [overhead or underground]
- Residential client count on this specific transformer
- Business client count on this specific transformer
- Circuit ID that this transformer is on

[2] Feeder circuit information – a separate record for each circuit specifically identifying:

- Circuit ID
- Substation ID that this circuit is associated with

[3] Municipal substation information - a separate record for each substation specifically identifying:

- Substation ID
- Longitude of this specific substation
- Latitude of this specific substation

[4] Electric revenue meter information - a separate record for each electric meter specifically identifying:

- Longitude of the specific meter
- Latitude of the specific meter.

[5] Proximity information for each gas / water meter in relation to an electric meter. (Is the meter close enough to send a signal to a nearby electric meter?) Or, latitude and longitude of each gas / water meter. If the gas / water meter is not in proximity to an electric meter or is not within the service territory of the utility, latitude / longitude information is required.

[6] Segmentation Identifier - For utilities that require compliance to a defined segmentation plan (e.g. urban, suburban, rural), please identify the specific circuits or meters that are on each segment.

[7] Meter Population - Number of meters by classification (form factor, residential, C&I, etc.) and if specific options are required, e.g. remote connect/disconnect, and number of meters with those options.

Much of the requested information resides on our Customer Information System (CIS) or Automated Mapping / Facilities Management (AM/FM) system, or can be generated from these systems. Due to major system upgrade projects now underway (e.g. Sierra CIS to SAP CIS, and Enghouse's *CableCAD* AM/FM to Intergraph's *G/Technology* AM/FM system, London Hydro does not have the resources available at this point in time to create the data sets in the format requested. Nonetheless, we are hopeful that the following commentary and referenced information will suffice:

[1] Distribution transformer information – The quantities of in-service transformers is given in Table 4-1 herein. We don't maintain geodetic coordinate information for these transformers, but there are tools within the AM/FM system for readily accessing these transformers. There is no static cross-reference between each transformer and the feeder circuit to which it is connected. Rather this relationship is dynamic and will change continually - refer to Section 6.1.5.2, *Loop-Configured Radially-Operated Distribution Feeder Topology*, of the RFP.

[2] Feeder circuit information – Electricity distribution throughout London Hydro's service territory is carried out via forty-eight (48) - 16/27.6Y kV feeder circuits, thirty-nine (39) 8/13.8Y kV feeder circuits, five (5) - 13.8 kV feeder circuits, three (3) - 4.8/8.32Y kV feeder circuits, and ninety-eight (98) - 2.4/4.16Y kV feeder circuits. The only segment of a feeder circuit that is permanently associated with a feeder designation is that first segment between the station or substation feeder circuit breaker and the first downstream switching device – all other segments are dynamically assigned to a feeder based on the connectivity model. Refer to Section 6.1.5.2, *Loop-Configured Radially-Operated Distribution Feeder Topology*, of the RFP.

Note: London Hydro is in the midst of constructing eight (8) new 16/27.6Y kV feeder circuits as the first phase of a multi-year undertaking to provide additional capacity within the service territory.

Note: Along the boundaries of its service territory, some of London Hydro's customers are presently receiving supply via seven (7) feeder circuits owned by Hydro One Networks. These are referred to as "load transfer customers" and, in time, they will be supplied from London Hydro's distribution circuitry.

[3] Municipal substation information – As noted in Section 6.1.5.3, *Electrical Substations as Signal Injection Sites* (see page 37 of the RFP), London Hydro has fifty-three (53) remaining municipal substations. These will be designated as SUB-1, SUB-2, … SUB-n on the maps. We don't maintain geodetic coordinate information for these substations, but there are tools within the AM/FM system for readily accessing these substations.

[4] Electric revenue metering information – London Hydro does not maintain geodetic coordinate information for in-service revenue meters. Rather revenue meters are associated with municipal addresses in a M:1 relationship, i.e. a given municipal address may have many revenue meters installed (and they aren't necessarily the same type). Bidders are

referred to Appendix C, *Maps and Drawings*, of the RFP for information on the spacial distribution of revenue meters throughout the service territory.

[5] Proximity information for domestic water and natural gas meters – refer to Section 5.4, *Automated Reading of Water Meters*, within Addendum #1.

[6] Segmentation identifier – this is not an attribute that is used in London.

[7] Meter population – electric revenue meter population information is given in Tables 6-3, 6-4 and 6-5 of the RFP, and in Sections 2.10 and 2.11 of the Information Supplement. Further information may be found in Table 5-1 herein. With respect to the number of meters to be outfitted with a remote disconnect accessory, this will depend entirely on the adder price for this accessory and how it impacts the overall business case, i.e. if the adder price for the remote disconnect feature is below the threshold value that changes the business case between negative and positive, then LDC's will undoubtedly procure this accessory for some portion of their installed based of meters.

With London Hydro's recent migration to the Intergraph G/Technology AM/FM system, not all the tools, links, and features are operational. Nonetheless, we have extracted our semi-geographic operating schematic diagrams into eight (8) colour PDF image files. These images should be sufficient for illustrating the locations of transformer stations, municipal substations, the routing of feeder circuits, the locations of transformers, switches, etc. and the nominal "open points" on the feeder circuits. These files (zipped under the file name LondonHydroDistributionMaps_PDF) will be sent to all known bidders (i.e. those that have submitted a Notice of Intent to Propose and posted on both London Hydro's website and the MERX site.

5.3 Description of Existing Radio Towers

Some bidders have inquired about the height and coordinates for the three (3) towers depicted in Section 6.1.4.2, *Existing Private Radio Communications Infrastructure*, on page 34 of the RFP. The information in Table 5-2 below was prepared by IBM Consulting as part of an initial paper study for the municipal WiMAX wireless broadband network – as none of these sites were deemed preferred locations for the WiMAX application, no field measurements were carried out to confirm this information, nor were tower profiles and radio inventory lists prepared for these towers.

Table 5-2, Private Radio Tower Descriptions

Radio Tower	Tower Height	Coordinates
Head Office	HASL - 254 m HAAT ~125 ft / 38 m	42.97789° N 081.25003° W Decimal Degrees
Arva Pumping Station	HASL - 270 m HAAT ~125 ft / 38 m	43" 01' 24.74° N 081" 11' 06.44° W Degrees, Minutes, Seconds, Decimal Seconds
Springbank Reservoir	Estimated HASL 232 m HAAT ~125 ft / 38 m	42.957244° N 081.314650° W Decimal Degrees

Note: Tower height estimates are given in terms of "height above average terrain" (HAAT) and "height above sea level" (HASL).

The onus is on bidders contemplating using these towers to conduct their own engineering analysis for tower loading, vertical positioning, potential for interference with other equipment on the tower, and coverage in advance of the proposal submission.

Note: London Hydro cannot accept "conditional" proposals based on the assumption that one or more of these tower locations will be satisfactory, only to discover at a later project phase that such an assumption was incorrect and significant funds, resources and project delays will be encountered to construct new towers or occupy other private tower sites.

5.4 Expandability (Scalability) Requirements

Some bidders have asked if they should we base the total meter count for participating LDC's from the number of meters in the meter detail tables in the Supplement? What should the total meter count be that we should work from?

The AMI system shall be sized to support not only the existing population of revenue meters but also those anticipated to be added over the next decade or so. Bidders are referred to Section 6.3.1, *Expandability (Scalability) Requirements*, of the RFP.

For the convenience of bidders, the expandability requirements stipulated for London Hydro have been applied to the other consortium members to arrive at "ultimate" electric meter populations for which the system shall be designed. These are shown in Column 4 in Table 5-3 below:

Table 5-3, Ultimate Electric Meter Population per LDC

Consortium Member	Present Residential Meter Population	Future TOTAL Meter Population (per Section 6.3.1 of RFP)	Estimated Future TOTAL Meter Population (in 10 Years)	
(Col 1)	(Col 2)	(Col 3)	(Col 4)	
Atikokan Hydro Inc	1,470		2,500	
Bluewater Power, Sarnia	31,000		43,000	
Cambridge & North Dumfries Hydro Inc.	42,800		59,000	
ENWIN Utilities, Windsor	80,000		110,500	
Erie-Thames Powerlines, Ingersoll	13,000		18,000	
Festival Hydro, Stratford	18,000		25,000	
Fort Frances Power Corporation	3,400		5,000	
Greater Sudbury Utilities	41,000		56,500	
Guelph Hydro Electric Systems	42,000		58,000	
Kenora Hydro Electric Corporation Ltd	5,000		7,000	
Kitchener-Wilmot Hydro Inc	71,000		98,000	
London Hydro Inc	127,200	175,000	175,000	
Oakville Hydro Inc.	47,250		65,500	
Peterborough Utilities	29,240		35,000	*
Sioux Lookout Hydro Inc.	2,290		3,500	
St. Thomas Energy, St. Thomas	13,800		19,000	
Thunder Bay Hydro	44,600		55,000	*
Tillsonburg Hydro Inc.	5,400		7,500	
Waterloo North Hydro, Waterloo	46,000		63,500	
West Coast Huron Energy Inc, Goderich	3,500		5,000	
Woodstock Hydro Services Inc	12,500		17,500	
Total:	680,450		929,000	

Note: The LDC's marked with "*" are expecting a lesser growth rate in their meter populations, and have over-ridden the formula results with "best estimate" values.

Bidders should also refer to Question #11 within Addendum #1. Some LDC's may wish other LDC's to host the Master Control Computer on their behalf. Other contiguous LDC's may wish to pursue a cooperative arrangement with a single Master Control Computer. Bidders are urged to include some commentary concerning the meter population expansion thresholds for their offering, and what additional investments need be made to increase from the base offering (that satisfies the requirements for a single LDC) to each successive threshold.

- End of Addendum #2 -