

**MEASUREMENT CANADA
ELECTRICITY TRADE SECTOR REVIEW**

**Ensuring Accuracy and Equity
in Electricity Metering:
A Discussion Paper**

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President's Message

I am proud of what Measurement Canada has accomplished in ensuring that Canadians have a fair, efficient and competitive marketplace in which to do business. Our commitment is to continue to ensure accuracy and equity in trade in all business sectors in the most effective, transparent and innovative way possible. I speak for all Measurement Canada employees: we want to ensure that our programs and services meet the needs of today's marketplace.

In launching our Trade Sector Reviews, we are seeking the informed views of marketplace stakeholders to help us ensure that we are doing the right things in accomplishing our mission and secondly, to help us find ways in which we can do the right things better. These reviews are in no way connected with marketplace deregulation occurring in some provinces in the electricity and other sectors. However, for this reason, perhaps it is timely that we chose the electricity sector as one of the first sectors in which to conduct this type of review.

The results will determine the resources we place in this sector in the coming years relative to other sectors such as the water metering, natural gas, retail petroleum products and food products sectors to name but a few. Many of you will likely have an interest in many of these other sectors as well. Measurement Canada is accountable for ensuring accuracy and equity of trade measurement in all business sectors.

Our challenge is to provide stakeholders with the information you need to participate in an informed manner. I invite all electricity marketplace stakeholders to read this Discussion Paper and then to actively help us in finding the answers to the questions posed. I would like to extend a special invitation to electricity consumers to actively participate in this process and to continue to work with us afterward during implementation. We look forward to some very fruitful consultations and to continuing to serve all Canadians in the best way we can.

Alan E. Johnston
President, Measurement Canada

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Disclaimer

All documents published by the review team are intended to generate discussion. All efforts are made to ensure that no "errors in fact" are published in this Discussion Paper. In the case that this has inadvertently happened, any such error will be corrected in an updated version of this document which will be posted/published on our web-site <http://mc.ic.gc.ca>. No formal redistribution of this document will occur solely for this reason. Comments received will be considered for inclusion in any subsequent version of this document or in a new document as is appropriate.

Executive Summary

Measurement Canada, an agency of Industry Canada ensures that equitable and accurate measurement is achieved in the Canadian marketplace. To accomplish our mission and live within our resources, we have recently launched a series of Trade Sector Reviews, the purpose of which is to determine our appropriate level of intervention in individual business sectors to adequately protect the public interest. We seek to minimize the cost of our intervention by using innovative alternative service delivery mechanisms to deliver needed marketplace services. Eliciting and integrating the views of informed sector stakeholders are an important part of our decision-making process.

The Electricity Trade Sector is a sector well known to Measurement Canada and one in which the federal government has been actively involved in ensuring fair and accurate measurement ever since the *Electricity Light Inspection Act* was promulgated in 1894. It is among the first business sectors to undergo a Trade Sector Review. Under this review, Measurement Canada is seeking the views of informed electricity marketplace stakeholders on what changes are needed in our existing level of intervention and in what innovative ways could each of our needed programs and services be efficiently, effectively and transparently delivered in this sector? The outcome of this consultation will determine the amount of resources Measurement Canada will devote to this sector relative to others sectors in the long term.

We are confident that electricity marketplace participants once informed of the issues, can help us find the appropriate answers to these questions. The outcome of this consultation will be a strategy and implementation plan explaining how Measurement Canada will work with sector stakeholders to ensure that the desired level of equity and accuracy expressed by marketplace participants, is achieved in the long term in this sector. It is particularly important to us that the views of electricity consumers including the vulnerable parties in transactions are adequately heard, understood and acted upon during this consultation. A vulnerable party is an electricity purchaser who relies solely on a meter owned and/or maintained by another party to determine consumption - i.e., lacks any other acceptable means to verify the meter's accuracy.

As stated in the Presidents message consumers, home owners and small business owners are encouraged to take their place at the discussion forums across the country. We, the trade sector review team, recognize that this is a challenging situation and are willing to discuss options to facilitate your participation. You are important as a vulnerable party in the transactions and encouraged to use this opportunity to help determine Measurement Canada's intervention in this trade sector.

Consequently, we urge all participants in the electricity trade sector to read this discussion paper to inform yourself of the issues at stake and then to become actively involved in this public dialogue.

Introduction to Trade Sector Reviews

Have you ever stopped to think about how many things are bought and sold each day in Canada which require some form of weighing and measurement? Buying anything from a kilogram of apples at the grocery store to a litre of gasoline requires a weights and measures system which is both fair and accurate for both buyers and sellers. Measurement Canada has sole jurisdiction in this area; its mission is:

To ensure equity and accuracy where goods and services are bought or sold on the basis of measurement, in order to contribute to a fair and competitive marketplace for Canadians.

In keeping with this mandate, Measurement Canada periodically undertakes a Trade Sector Review to assess measurement performance in a business sector. A Trade Sector Review is a thorough process which relies on significant consultation between Measurement Canada and marketplace stakeholders (i.e. the buyers and sellers of commodities or services in a given business sector). The broad objective is to establish the appropriate role for Measurement Canada in the sector in order to ensure that measurement accuracy and equity is being achieved in a fair, cost-effective and transparent manner.

During a Trade Sector Review, Measurement Canada investigates whether our marketplace intervention is appropriate, open, transparent, cost effective and consistent with international best practices. During each review, we assess current compliance levels and equity performance in the sector to determine or confirm in consultation with informed stakeholders what our appropriate level of intervention should be and to focus our resources where most needed.

Trade Sector Reviews are future oriented. They are initiated in anticipation of changing marketplace conditions. The purpose is to “stay ahead of the curve” by putting in place the regulatory environment which will be needed as the marketplace changes. The purpose is to be proactive not reactive.

During a Trade Sector Review, Measurement Canada seeks to obtain the views from marketplace participants on questions such as:

- < To what extent is Measurement Canada involvement needed in this business sector and in which particular areas (e.g. wholesale or retail transactions, new technology evaluation, standards development, enforcement, etc.)?
- < What measurement programs/services are needed and what is the best role for Measurement Canada in them (e.g. traceable calibration of test equipment, approval of new measuring devices, initial verification and reverification of measuring devices)?
- < How can the needed programs/services or parts of them be delivered economically through Alternative Service Delivery methods?

- < What information should be used for monitoring and reporting accuracy and equity performance and how should this be done?

Specific technical issues or requirements are not the subject of discussion in a Trade Sector Review. Measurement Canada discusses technical issues in working groups or through the direct communication with our district, regional and headquarters staff. Also, Measurement Canada has recently established the Canadian Forum for Trade Measurement (CFTM) as a formal forum for discussing certain technical issues. The CFTM's first annual meeting is planned for Montreal on November 15 - 17, 2000.

During each trade sector review, after considering all stakeholder input thoroughly, we apply the following decision making criteria and rationale in deciding our appropriate intervention:

1. Stakeholder Support
 - < Vulnerable parties (not in control of the device) must support all recommendations (level of intervention and alternate service delivery mechanisms).
 - < General agreement from all stakeholders on all recommendations. Preferred weighting is given to the stakeholders in the trade transaction.
 - < General support from third parties (those who are not parties to the trade transaction)
 - < Dissenting opinions are recorded
2. Stakeholder Reach
 - < All affected parties represented
 - < Stakeholders are informed of the issues
3. Aligned with MC Mission and Strategic Direction
4. Sustainable (implementable)
 - < Within MC's limited resources
 - < Time lines realistic
 - < Sustainable by industry
5. International Competitiveness and Canada's Reputation
 - < International considerations. In line with other industrialized nations.
6. Clear Roles and Responsibilities
 - < Responsibilities must be clear

- 7. Suits Present and Foreseeable Future (industry context)
- 8. Flexibility to revisit recommendations if major oversight
 - < Mechanism established for redress if glaring oversight

The result of a Trade Sector Review is a strategy and implementation plan outlining how Measurement Canada will work with the sector stakeholders to ensure equity and accuracy is achieved in a fair, cost-effective and transparent manner on an ongoing basis. It could include, for example, the private and public sector partnerships and monitoring mechanisms that Measurement Canada uses to ensure efficient and effective measurement performance in the marketplace.

A Comprehensive Game Plan for Trade Sector Reviews

Measurement Canada's goal is to achieve equity and accuracy in all business sectors which depend on measurement for marketplace transactions, while living within our resources. To achieve this we announced in 1997 that we will continue to steer (i.e., set appropriate policy, monitor, audit and enforce it) while encouraging the private sector to row (i.e., perform the hands on meter inspection, calibration and testing work necessary). Furthermore, we will seek stakeholders informed views in deciding how to implement these decisions. As we set about implementing our new service delivery model as listed in Table 1, we remain fully committed to maintaining proper oversight and providing recourse to protect the public interest.

Table 1
Measurement Canada's New Service Delivery Model

Intervention Program or Service	By whom/method
- establishing rules and requirements	Measurement Canada directly
- standards calibration	Using alternative service delivery methods
- prototype device approvals	Using alternative service delivery methods
- meter inspections	Using alternative service delivery methods
- installation inspections	Using alternative service delivery methods
- resolving complaints and disputes	Measurement Canada directly
- monitoring the marketplace and taking action to ensure appropriate levels of compliance	Measurement Canada directly

In 1998, Measurement Canada developed its Marketplace Intervention Model to identify and rank

business sectors in need of potential marketplace intervention. This report entitled *Measurement Canada's Marketplace Intervention Model* as well as a foundation report prepared by the firm KPMG entitled *Recommended Structure for a Marketplace Intervention Model for Trade Measurement* are each available on Measurement Canada's web site.

In 1999, we launched an ambitious project to initiate trade sector reviews systematically across 39 different business sectors. The goal is to complete all of these Trade Sector Reviews by the year 2011. The report entitled *Measurement Canada's Assessment and Intervention Strategy for Canada's Marketplace* provides details and rationale for this comprehensive review and is available on Measurement Canada's web site.

We are taking great care initiating these 39 Trade Sector Reviews. We understand the need to identify the right pace and the right scope. We want a phased approach to avoid overwhelming anyone and to ensure that what we learn in the first Trade Sector Reviews is transferred to subsequent reviews. Consequently, we have decided that, beginning in 2000, our first two trade sectors for review will be the Electricity Sector and the Downstream Petroleum Sector. These will be followed by reviews in the Dairy and Retail Food Sectors starting in 2001.

Regulatory Context for the Electricity Trade Sector Review

The *Electricity and Gas Inspection Act* (EGIA) sets out the Minister of Industry's duties and powers with respect to electricity trade measurement which are administered by Measurement Canada. The *Electricity and Gas Inspection Act* states that any meter, which includes any apparatus used for the purpose of making measurement of, or obtaining the basis for a charge for electricity or gas supplied to a customer must be approved, inspected and sealed. The *Electricity and Gas Inspection Act* applies broadly to any type of measuring apparatus and accessories used for selling and purchasing energy.

The *Electricity and Gas Inspection Act* also specifies rights and responsibilities for contractors (vendors of electricity), owners of meters and purchasers of electricity. These rights and responsibilities are designed to ensure equity and accuracy for both buyers and sellers of electricity. They include, for example: the right of a purchaser to be billed through a sealed and approved meter; the right of a vendor of electricity or an owner of a meter to have access to metering points for maintenance; the right of vendors and purchasers to call for a Measurement Canada arbitrated dispute process; responsibilities for maintenance of meters; and, responsibilities for record keeping associated with the metering devices and the bills generated from them.

Measurement Canada has sole jurisdiction with respect to the administration and enforcement of the statutes which regulate trade measurement in Canada. There is little current overlap, duplication or shared responsibility with any other federal, provincial or municipal department or agency.

Measurement Canada is accountable to Parliament through the Minister of Industry. This means that all its expenditures, program activities, public policy goals and reporting of results must be in keeping with

Industry Canada and Treasury Board rules. As well, the operational information and program results of Measurement Canada are subject to the *Access to Information and Privacy Acts*.

Our mandate at Measurement Canada is to ensure equity and accuracy. We want to achieve this goal in the most efficient and effective way possible and intervene in the marketplace only to the extent necessary. Broadly speaking, our goal is to have the highest levels of equity and accuracy in the electricity trade and the lowest associated costs. We see this goal supporting the competitive position of Canada.

Measurement Canada recognizes that it is accountable for equity and accuracy in trade measurement. It also recognizes, however, the need for cost-effective and efficient delivery of programs and services. Consequently, Measurement Canada is moving from a regime of intervening directly in the marketplace as it sees fit, to one of consulting with stakeholders on the appropriate level, methods and targets for intervention. Then, making maximum use of private or public sector partnerships, we will deliver only the intervention programs and services that are needed. For example, Measurement Canada is increasingly using its Accreditation Program for Meter Verification and Inspection to authorize private sector entities, accredited by Measurement Canada, to provide meter testing and inspection services. In turn, Measurement Canada's job becomes one of monitoring and auditing the performance of Accredited Meter Verifiers (AMVs) rather than the direct testing and inspection of meters.

Measurement Canada must balance establishing modern intervention techniques which are demanded by the stakeholders with maintaining the trust and confidence of marketplace participants, and without compromising Measurement Canada's legislative responsibilities. Establishing the appropriate role for Measurement Canada in the electricity trade sector is the overarching objective of this Trade Sector Review.

The Electricity Trade Sector Review represents a systematic attempt to review Measurement Canada's efforts related to the electricity sector (both what we do and how we do it) with a view to making adjustments which will improve equity and accuracy and, wherever possible, reduce the associated costs. We are approaching this Electricity Trade Sector Review with very open minds. For example, we believe that there could be new alternative service delivery mechanisms (in addition to Measurement Canada's Accreditation Program) which might provide creative solutions to achieving our goal of ensuring equity and accuracy and living within our resources.

In consultation with sector stakeholders, the Electricity Trade Sector Review Team is seeking to:

- < review our existing level of intervention (programs and services) in the electricity trade sector to see if there are any changes needed that fit within Measurement Canada's mandate;
- < recommend preferred alternate service delivery methods and incentives for delivery of the metrological support services that are required to achieve the appropriate level of

Measurement Canada intervention established

- < identify marketplace monitoring and reporting mechanisms, and the appropriate frequency of, periodic assessment of equity and accuracy in the trade sector;
- < prepare a strategy and action plan that acts upon the views of informed stakeholders and is acceptable to Measurement Canada including any recommended changes in legislation.

To initiate stakeholder dialogue and input on these decisions, we have prepared consultation questions (Appendix One and Appendix two).

Preconsultation Stage: Objectives and Method

Measurement Canada decided that it was critical to involve stakeholders early in this process. Between April and June of this year, the Electricity Trade Sector Review Team contacted a sample of electricity stakeholders during the design stage to incorporate their perspectives on both content and process of the consultation. This report entitled *What We Learned from Electricity Stakeholders during Preconsultation* is available on Measurement Canada's web site. This document describes the issues and ideas that helped form this Electricity Trade Sector Review Discussion Paper which is being distributed widely during the fall of 2000. Though the contents of the preconsultation report are to be considered preliminary and may not be representative of all stakeholders, it is useful to summarize the key points. During the preconsultation stage we were told that:

1. Marketplace confidence is high
2. Intervention is making a difference
3. Specifications development process requires innovation
4. Type approval and traceable calibrations are needed
5. Meter compliance rates are high
6. Enforcement policy and compliance results should be better publicized
7. Alternative service delivery innovation requires further study
8. Stakeholders want to collaborate if government is listening

Special Concern for Consumers

Most marketplace participants, particularly residential home-owners, do not even think about their electricity meter, much less know how accurate it is. They depend on their electricity supplier to ensure accurate measurement. At Measurement Canada, we recognize the need for protecting the public interest by intervening to ensure that electricity is being measured accurately and by providing a measurement dispute resolution service for both purchasers and sellers should they suspect that a measurement accuracy problem has occurred.

In the past, to ensure accuracy, Measurement Canada intervened directly by testing the accuracy of electricity meters using our own inspectors as well indirectly by accrediting private sector organizations to do this work on our behalf. As a means of ensuring accurate electricity metering, Measurement Canada announced in 1998 that it would exclusively use its Accreditation Program of auditing of Accredited Meter Verifiers to provide meter testing and inspection services, once a sufficient number of such organizations were accredited. This means that Measurement Canada now focuses on monitoring and enforcing the performance of Accredited Meter Verifiers rather than on direct testing and inspection of meters. Measurement Canada's rule making, monitoring and enforcement responsibilities and dispute resolution service have not changed (i.e. a Measurement Canada inspector tests each disputed meter and reports the findings to all parties).

During the preconsultation stage, it was important to develop an unbiased, preliminary understanding of how well the consumer is being served by the existing system of intervention and what is on the horizon. Consequently, Measurement Canada commissioned a research study from the Public Interest Advocacy Centre in Ottawa entitled *Canadian Consumer Issues in Accurate and Fair Electricity Metering*. This report is available on Measurement Canada's web site. Its main conclusions are:

1. Most marketplace participants confidence in the accuracy of their electricity meter is high based on the relatively few number of accuracy based meter complaints received each year by Accredited Meter Verifiers and Measurement Canada.
2. Purchasers of electricity will likely want to use new *time-of-use* or *interval meters*. This technology permits consumers to reduce their electricity consumption in times of high unit pricing and be rewarded by lower electricity bills. Measurement Canada plays an important role in ensuring that only reliable *time-of-use* meters and other new metering technology are introduced into the marketplace in timely fashion.
3. Many industrial and possibly commercial electricity purchasers may not be as dependant on Measurement Canada for protection as residential purchasers because they own their own electricity meters or use check meters under their control to monitor the accuracy of their seller's meter.
4. Publication of a Measurement Canada *Electricity and Gas Inspection Act* compliance and enforcement policy for the electricity sector could help everyone understand how the electricity metering system works and their marketplace responsibilities. This might

help to facilitate the creation of a voluntary code of practice by the electricity industry to explain how they will comply with Measurement Canada's policies.

Stakeholders We Hope to Hear From during this Consultation

In reviewing and confirming our appropriate level of intervention in the electricity marketplace, and in seeking innovative ways to deliver it, Measurement Canada solicits the informed views of stakeholders who have an interest, namely:

- ! Electricity purchasers including residential, commercial and industrial consumers and the associations which represent them
- ! Electricity sellers including wholesalers, retailers and sub-metering contractors and the associations which represent them
- ! Electricity meter service organizations either accredited already or those considering this step
- ! Electricity meter and measurement equipment manufacturers and dealers
- ! Other government agencies who provide marketplace, regulatory, or measurement related services in this business sector
- ! Any other individual or group who has a stake and wishes to be heard

Electricity Trade Sector Review Work Plan

We anticipate that notification to stakeholders of the availability of this discussion paper will be made through the Canada Gazette, by direct mail, press release and through trade journals (e.g., Electrical Business) by the end of November 2000.

We have established a small group of representative sector stakeholders called the Electricity Stakeholders Advisory Group to advise us on a range of issues throughout this consultation. One or more face- to-face meetings, conference calls and e-mail are being used to facilitate the workings of this group.

Measurement Canada is establishing a web-based feedback option on our web site at <http://mc.gc.ic.ca> which will house this Discussion Paper and the Consultation Questions. This user-friendly process will allow individuals to download the paper for review and respond on-line to the consultation questions. We will also receive comments from all stakeholders through direct mail or by e-mail to elecreview@ic.gc.ca .

Of necessity, Measurement Canada may conduct bilateral interviews from time to time with stakeholders who are unable to attend a face-to-face meetings described below but want more involvement than the web-based feedback process provides. These in-person or phone interviews are considered formal consultations and Measurement Canada will keep a record of the exchanges.

Measurement Canada is planning to hold a series of face-to-face consultations across Canada between November 2000 and January 2001. Depending on the number of interested participants, these consultations will involve single sector and/or multi sector groups. For example, registration numbers permitting, one meeting in a venue could comprise:

- < half-day meeting with electricity sellers and purchasers
- < half-day meeting with electricity associations, and
- < half-day focus group with non-government groups, such as residential consumer associations

The proposed venues are:

- < Atlantic
- < Quebec
- < Ontario (potentially two venues - the National Capital Region and Toronto)
- < Prairie/North
- < Pacific

We will summarize the input received at each of these venues and place this information on our web site. Upon completion of this phase we will assess if additional consultation is needed before we prepare a new document. This new document will describe our proposed level of intervention, service delivery methods, marketplace monitoring mechanisms and incentives needed and as well as any required changes to legislation that may be needed. After review and approval by Measurement Canada Senior Management we will distribute this document to stakeholders for comment.

We anticipate publishing a final strategy and implementation plan by June 2001.

Industry Description

Under Canada's Constitution Act, the electricity industry is regulated primarily on provincial lines. Electricity regulations, rate structures, publically owned utilities and the electrical industry in general, fall within provincial jurisdiction. It is important to emphasize, however, that accuracy of measurement is solely under federal jurisdiction.

The Canadian electrical industry is changing rapidly. The industry is currently in various stages of restructuring, which has opened the industry to increased competition in the areas of generation, transmission and distribution, as well as in supplying electricity to end-use consumers through brokers

or across provincial borders. The Canadian Electrical Association is a good source of information for those who are interested in learning more about the changing marketplace. It is important to emphasize that Measurement Canada, though not responsible for any aspects of these changes, remains committed to ensuring equity and accuracy in the marketplace as increased competition evolves.

The report, *Canadian Consumer Issues In Accurate and Fair Electricity Metering*, posted on Measurement Canada's web-site <http://mc.ic.gc.ca>, is a good source of information on electricity industry deregulation issues in the different provinces.

In 1997¹, the Canadian Electricity Industry employed approximately 80,000 people directly and listed assets totalling more than \$135 billion. Gross annual operating revenues were in excess of \$30 billion, which encompassed all generation, transmission and distribution of electricity in Canada. Approximately \$1.4 billion or 4.6 % of the industry's total sales revenue, came from export earnings.

Canada's electric power industry is currently made up of provincial Crown Corporations, investor-owned utilities, municipal utilities, industrial establishments, and private contractors. In most provinces the industry is highly integrated, with the majority of the generation, transmission and distribution provided (almost 90 %) by 16 dominant utilities. In addition, there are about 60 industrial establishments generating electricity mainly for their own use. There are more than 350 smaller utilities across Canada, of which about 85 % are located in Ontario.

Appendix Five contains a diagram showing the typical points at which electricity is metered in Canada. Various types of marketplace participants including generators, local distribution or wires companies and residential, commercial and industrial consumers are each connected to a transmission or distribution grid through a meter. Interprovincial and international transactions are metered at specific spots as well.

In Canada, there are presently 1,711 public and private electricity contractors registered with Measurement Canada to sell electricity. This total includes all public and private utilities, industrial establishments as well as any registered, private, electricity contractors such as trailer parks and property management companies.

Of the total electricity consumed in 1997, it is estimated that about 41 % was consumed in the industrial sector, 28 % in the residential sector, 23 % in the commercial sector, and 8% in others. All of these transactions are accomplished through Measurement Canada or Accredited Meter Verifier inspected and sealed meters applicable to installation specific criteria that are approved for metrology.

Measurement Canada's Accreditation Program has been steadily building momentum over the past few years. Today, approximately 87 % of all new and reverified electricity meters are inspected by

¹Electricity industry data is quoted from *Electric Power In Canada, 1997*, a publication of the Canadian Electricity Association

Accredited Meter Verifiers. It is expected that this number will approach 100 % by April 1, 2001.

There are currently 24 Accredited Electricity Meter Verifiers in Canada. This group comprises meter manufacturers, utilities, and meter service organizations. These accredited organizations are spread throughout Canada: Ontario has 9; Quebec has 5; the Atlantic Region has 2; the Prairies and Northern Region have 6; and, the Pacific Region has 2.

Two major Canadian electrical meter manufacturers (General Electric and Schlumberger) have been accredited by Measurement Canada to perform a substantial number of the initial in-factory verifications of their electricity meters. This list of accredited organizations and scope will expand in future we intend to also include the inspection of electricity metering installations.

Overview of the Meter Inspection Process

As technology changes, people discover new and innovative ways to meter electricity. Before any new model, method or technology can be used it must be subjected to a Measurement Canada approval process in order to maintain the high quality and integrity of meter readings. This prescriptive process challenges the meter's performance. Performance must be within tolerances in qualities such as repeatability, accuracy and stability over a range of load and atmospheric conditions. Once a meter has been tested it will either be rejected or receive a notice of approval (NOA) and number, assigned to the specific meter type or model. This information is to be displayed on the unit so all who use the device may verify that it is legal for use in trade. As well, the manufacturer of an approved meter must notify Measurement Canada of any proposed design changes that may affect an approved meter's performance so that our review and possible retesting can be carried out .

Once purchased, the owner will assign a unique identification number to the meter. It is displayed on the nameplate along with the other data required by the NOA. The device will then be tested by either a Measurement Canada inspector or an Accredited Meter Verifier. Upon verification the meter will then be sealed. This seal is placed on the meter so that all interested parties may have confidence in the information derived from the device's registers.

The owner of the device is required to initiate records for metering and billing. Each of these is specific to the meter and to the customer that the meter is monitoring and recording. These records are kept for the life of the device.

Periodically, the meter is required to be removed from service for recertification. The meter will be returned to a meter shop to be tested and evaluated by either Measurement Canada or an Accredited Meter Verifier. This evaluation can be done in two distinct ways. One is by reverification and the other is by seal extension.

- < Reverification requires the meter to have the seal to be removed and then the meter to be cleaned, recalibrated and be reverified to start a new seal life.

- < Seal extension involves a number of meters of the same physical characteristics to be put together as a group. Next a representative sample, as per Measurement Canada specifications, will be chosen. The seal will not be broken. The meters will be tested and the results will be used to analyse the characteristics of the errors. Based on how the results compare to Measurement Canada specifications, Measurement Canada may extend the life of the existing intact seals for up to eight years.

At any time, during the life of the meter the readings or condition of the meter may be disputed by either the electricity seller or buyer. This process ensures that all parties are protected and assured of the ongoing quality of the readings used to derive the invoices.

Overview of Measurement Canada Programs, Services and Proposed Service Delivery Model and Program Directions

Measurement Canada currently provides a range of programs and services to meet its statutory obligations in the electricity trade sector. These programs and services are delivered through the following lines of business. More information is available on Measurement Canada’s website. A brief description of these programs and what service changes we are considering follow.

1. Establishing measurement rules and meter requirements

How we do this now	Service Change We Are Considering
<i>Measurement Canada</i> does most of this work with its own resources.	Making better use of stakeholders expertise and resources by involving them earlier and more extensively in creating new Specifications.

Measurement Canada administers and enforces the *Weights and Measures Act (WMA)* and *Regulations* and the *Electricity and Gas Inspection Act and Regulations*. Together, these instruments set out the rules for government intervention in commercial measurement plus the rights and responsibilities of marketplace participants (e.g., legal units of measurement, mandatory programs such as type approval, powers of inspectors, tolerances of devices, etc.)

Legislative rules, requirements and policies for measuring devices (including electricity meters and various electrical devices) are continually developed, evaluated and amended to ensure they are relevant and provide a positive environment for consumers and business growth in light of new technology or changing marketplace needs. Measurement Canada currently does all the development and evaluation of technical Specifications relating to design, composition, construction, performance, installation, use and testing of meters, metering installations and measuring apparatus in consultation with affected parties. As well after stakeholder consultation, we issue Bulletins to provide guidance and policy interpretation for Agency staff and other interested parties.

The *Electricity and Gas Inspection Act* and associated Regulations can only be amended through a complex process. Measurement Canada has more control over the creation of Specifications. Please refer to Appendix Four for the details of the processes used to for these activities.

2. Calibrating and certifying measurement standards, measuring apparatus and test equipment

How we do this now	Service Change We Are Considering
<i>Measurement Canada</i> performs most calibration and all certification work using its own resources.	Assessing, recognizing and monitoring the competency of private sector organizations to also conduct this work.

Measurement Canada maintains reference electricity measurement standards for use in trade (e.g. Radian multi-function power and energy standards) which are periodically calibrated by the National Research Council (NRC). We calibrate and certify measurement standards and measuring apparatus and test equipment (MATE) owned by Measurement Canada or by accredited organizations for use in meter testing. It is through this hierarchy of standards and calibration process that *traceability* of each individual item of MATE is maintained to NRC's national standards as required by the *Electricity and Gas Inspection Act*. In 1999/2000 our Calibration Services Laboratory in Ottawa calibrated and certified approximately 130 electricity standards owned by Measurement Canada and 30 owned by accredited organizations.

Calibration consoles or test boards are the physical apparatus that are used by accredited organizations for the comparison testing of meters. These must be calibrated to ensure that characteristics or errors of the console are not reflected as meter device errors. Calibration consoles used by Accredited Meter Verifiers are required to be calibrated and certified on a regular basis. The calibration consoles are in-situ tested and certified by Measurement Canada inspectors against S-E-01: Specifications for the Calibration, Certification and use of the Electricity Calibration consoles.

For more information on the alternate service delivery mechanisms being considered by Measurement Canada for conducting this work in future, please contact Carl Cotton, Intervention Strategies Division at (613) 946-7327 to request a copy of Measurement Canada's *Discussion Paper on the Use of Alternate Service Delivery for the Calibration and Certification of Standards*.

3. Evaluating and approving new measuring apparatus

How we do this now	Service Change We Are Considering
<i>Measurement Canada</i> uses its own resources for testing, evaluation and approval of new or modified measuring devices.	Assessing and recognizing the competency of other organizations to test prototype measuring devices and furnish us with the test results.

Prototype measuring devices intended for trade use are evaluated for compliance against LMB-EG-07: *Specification for Approval of Type of Electricity Meters, Instrument Transformers and Auxiliary Devices*, to ensure they are capable of measuring accurately under normal conditions of use and throughout their service lifetime. Usually prototype devices are submitted to a Measurement Canada lab where tests are performed. If compliance problems are found with the meter type, the manufacturer must make appropriate design changes to respect the requirements (eg. performance, marking, electrical and software requirements) before approval of twill be granted. Measurement Canada currently tests and evaluates all measuring devices at its Ottawa based Approval Services Laboratory. In 1999, there were 160 electricity type approval projects which resulted in issuing 147 new Notices of Approval (NOAs) or amendments of existing Notices of Approval.

4. Initial and reverification testing of meters and devices

How we do this now	Service Change We Are Considering
<i>Measurement Canada</i> accredits Accredited Meter Verifiers to initially and subsequently verify measuring devices.	Expanding the scope of our Accreditation Program to other sectors and exploring the feasibility of performing this work in partnership with other government or non-government organizations.

Approved measuring devices must be inspected (verified) before their use in trade is permitted and periodically reverified to ensure they are performing within the legal tolerances. An exception is metering transformers which are currently exempt from initial and subsequent verification. After measuring devices are put into use, they are inspected to ensure that they continue to measure accurately and are not used in a fraudulent manner. Measurement Canada tolerances have to be met at predetermined test points.

To monitor electrical metering accuracy as well as compliance to Measurement Canada standards over time, Measurement Canada and Accredited Meter Verifiers conduct a *seal extension* inspection of electrical meters. With this type of inspection, metering equipment is removed from its installed location and brought into a local utility or metering/repair operation on a scheduled basis. Through a statistical

sampling and testing methodology, the level of device compliance relative to an established standard is determined. Through these tests, Measurement Canada inspectors identify and categorize electrical metering devices and restrict or extend further multi-year use, based on test results.

In 1999, there were 357,063 meters processed in Canada. Approximately 87 % (309,752) of initial meter inspections and reverification inspections were done by Accredited Meter Verifiers. These entities are accredited by Measurement Canada under the existing accreditation program.

A recent survey done by Measurement Canada indicates that Accredited Meter Verifiers will increase their capacity to process meters in the near future and that they are willing to service all regions. Therefore, Measurement Canada, while continuing to play its oversight role, plans to have Accredited Meter Verifiers providing all verification and reverification services according to the following meter types and dates:

- < Single phase energy meters (electronic and mechanical): effective April 1, 2000.
- < Polyphase energy meters (electronic and mechanical): effective April 1, 2000.
- < Mechanical/Thermal demand meters: effective January 1, 2001.
- < Electronic demand meters: effective April 1, 2001

5. Inspecting meter installations

How we do this now	Service Change We Are Considering
<i>Measurement Canada</i> uses its own very limited resources to randomly inspect metering installations. Meter owners also do this to varying extents.	Making an initial inspection of each metering installation mandatory by a <i>Measurement Canada</i> accredited meter service organization.

Although the energy and demand registering devices on these services are verified, the metering installation itself is often never inspected by Measurement Canada or by an accredited body. Historically, Measurement Canada randomly inspected 2 % of the metering installations but this program has been cancelled due to resource limitations. Currently, Measurement Canada is considering making the initial inspection of all electricity metering installations mandatory because of the major impact that an undetected installation error can have on metering accuracy.

6. Investigating measurement disputes and complaints

How we do this now	Service Change We Are Considering
<i>Measurement Canada</i> uses its own staff and its own or Accredited Meter Verifier owned calibration consoles for investigating and testing meters to resolve disputes and complaints.	Providing more seamless service in liaison with provincial agencies and non-government organizations to consumers seeking information and recourse during electricity metering complaints.

Buyers and sellers of electricity who are dissatisfied with the results of their measurement transaction may request to have the matter investigated. This activity provides consumers and businesses with an avenue of recourse if they feel they have received inaccurate measurement. Utilities usually attempt to deal with measurement accuracy complaints through their customer service departments, but ultimately, complaints are often resolved through Measurement Canada's dispute investigation process. Measurement Canada is currently performing these dispute and complaint investigations and will continue to do so in the future. In 1999, there were approximately 1,708 electricity metering disputes processed by Measurement Canada.

7. Monitoring and enforcing compliance

How we do this now	Service Change We Are Considering
<i>Measurement Canada</i> uses its own resources to verify compliance rates and enforce rules.	Establishing a marketplace monitoring and enforcement policy and reporting mechanisms that meet the public's needs.

Measurement Canada conducts surveillance and product audits at Accredited Meter Verifier meter shops to ensure that correct meter testing procedures are being followed and that their mandatory quality assurance system is being maintained. By issuing a notice of non-compliance an Accredited Meter Verifier is requested to correct observed problem situations. In an extreme case, accreditation status could be revoked if an Accredited Meter Verifier fails to respond to a Measurement Canada directive in the time period stipulated.

Measurement Canada conducts in-situ audits at electricity contractor sites to ensure meter and billing record keeping is in accordance with the *Electricity and Gas Inspection Act* and that the use of unapproved, overdue or unsealed meters or the fraudulent use of meters is minimized. Penalties for non-compliance include fines and imprisonment however, prosecutions by Measurement Canada in this sector have never been conducted as using moral suasion is preferred.

National Compliance Data in the Electricity Sector

In 1999, Measurement Canada compiled compliance data on the quality of the measurement in the electricity trade sector from: inspections performed by Measurement Canada inspectors; inspections performed by Accredited Meter Verifiers; and, warranty repair files of both Canadian meter manufacturers. The data includes recent compliance levels for: meter shop inspections; energy meters in the field; new manufactured meters; metering installations; and, dispute resolution. In addition, Measurement Canada is collecting compliance data on multi-customer metering installations, small utilities' record keeping and the extent of use of unapproved or unsealed meters through a coordinated effort by Measurement Canada inspectors. This data is expected to be available in winter 2001.

Overall electricity meter compliance rates in Canada are relatively high, averaging roughly at more than 98 %. Furthermore, the compliance rates are very similar from one region to another and indicate a relative uniformity in the country. This suggests good performance of measurement in the electricity trade. There are, however, some small pockets which may require extra attention. Previous research by Measurement Canada indicated that some specific parts of the marketplace (e.g. small vendors, shopping centres, campgrounds, metering installations, etc.) do not have the same high level of compliance to Measurement Canada standards and requirements. Further research which will be performed for these specific areas is expected to be available later in 2001.

The following is a summary of the compliance data for domestic meters, complex meters, dispute resolution and the accreditation program.

1. Domestic Metering

Domestic metering refers to meters for residential use. This area of the business is clearly performing well. Residential metering currently has high overall compliance rates of 98.2 % based on 1999 inspection results. These compliance rates correlate with the information found in Measurement Canada disputes resolution files which indicate very few problems with the residential metering. The seal extension inspection compliance rates are 98.8 % for the large utilities and 93.9 % for the small utilities. Smaller utilities may have a bit more difficulty in meeting Measurement Canada's stringent requirements but the compliance rate indicates that the measurement is still very accurate.

2. Complex Metering

Complex metering refers to meters and any associated apparatus for commercial and industrial use. Complex meters currently have an overall high compliance rates of 97.5 %. This area of the business also is performing well.

A large part of the sales revenue generated by the electricity sector is from commercial and industrial customers where electricity services are provided through complex metering installations. Although the energy and demand registering devices on these services are verified by Accredited Meter Verifiers or

Measurement Canada inspectors, the metering installation itself (which encompasses the metering devices and the service specific wiring configurations) are often never inspected by Measurement Canada or an accredited body. Historically, Measurement Canada randomly inspected 2 % of the metering installations but this program has been limited by resource considerations. Measurement Canada is proposing making initial inspection of each electricity metering installation mandatory and using accredited organizations to conduct this work.

Although overall installation compliance rates appear to be relatively high at 98.7 %, this level of compliance may not be representative of all metering installations. Metering installation errors can result in large measurement inequities. Installation errors may go undetected for several years and when discovered, often require adjustments of several thousands of dollars. (More data are provided below in the next section on Dispute Resolution).

Measurement Canada anticipates that the future will remain positive due to leadership by the electricity industry. In 1999, the industry inspected more than 10,000 installations. Furthermore, some Accredited Meter Verifiers are moving to include installations under their Quality Assurance programs. In essence, the Accredited Meter Verifiers want better records of the inequities and they want to ensure that installations get inspected on a more regular basis. Currently, Measurement Canada is considering making electricity installation inspection mandatory.

Measurement Canada has noted that measurement performance errors occur under certain conditions when harmonic distortion is present in the line. The present requirements for electricity meters do not address this, however, Measurement Canada is developing a new draft specification for electricity meters to provide criteria for assessing meters under distorted waveforms. Formal discussion with the electricity industry is expected to start next year.

3. Dispute Resolution

The available evidence indicates there are relatively few disputes between buyers and sellers of electricity and that measurement performance errors are due to incorrect installation of commercial and industrial metering devices or from errors in billing records.

In 1999, there were \$6.9 million of the refunds generated in resolution of disputes by Measurement Canada. Purchasers received \$1.6 million and vendors received \$5.3 million. This seems to be relatively insignificant given that the Canadian electricity industry, including the generation, transmission, and distribution of electricity, enjoyed gross annual operating revenues of over \$30 billion in 1997. It is important, however, to keep in mind that Measurement Canada is not involved in all disputes and many utilities simply decide to not charge the clients when an error is caused by their own organization or devices. Furthermore, in many cases, a mutual agreement between the two parties is adopted without Measurement Canada involvement.

Resolutions of most complaints are usually attempted by the customer service department of the

supplier but very often clients and vendors prefer to have Measurement Canada acts as an independent, third party for dispute resolution. The overwhelming majority of disputes are not caused by inaccurate metering. Of the 1,708 disputes processed by Measurement Canada in 1999, there were no problems found with the trade transaction in 1,439 of these.

4. Accreditation Program

In 1999, Measurement Canada presented a new Quality Assurance (QA) standard for the accreditation program named S-A-01. Accredited Meter Verifiers are still in a transition period that should be last until July 31, 2001. In 1999, in the electricity sector, 15 accreditation audits were performed by Measurement Canada auditors; 5 new accredited organisations joined the program; and, 6 significant expansions of scope have been granted. Measurement Canada also performed 12 surveillance audits to ensure Accredited Meter Verifiers continue to meet established standards of performance. There were 10 product audits conducted by Measurement Canada and no major deficiencies were found. Internal results obtained by Accredited Meter Verifiers are very similar to Measurement Canada conclusions.

During the different comprehensive system audits, no major non-conformance, indicating complete system failure, was raised. This indicates that this area of the business is performing well and that the Accredited Meter Verifiers continue to meet Measurement Canada standards of performance. In 1999, approximately 87 % of all new and reverified electricity meters have been inspected by Accredited Meter Verifiers. It is expected that this number will approach 100 % by April 1, 2001.

How to Contact the Electricity Trade Sector Review Team

Please see Appendices One and Two for our Industry and Consumer Stakeholder Initial Consultation Questions respectively.

For additional information and to respond to our questions on line, you are invited to visit our web site at <http://mc.ic.gc.ca/> under Trade Sector Review - Electricity or contact the ESTR team by email to elecreview@ic.gc.ca or by telephone or fax directly as follows:

Dave Morgan
Team Leader, Ottawa, Ontario
Voice (613) 952-0661, Facsimile (613) 952-1736

Luc Tessier
Sherbrooke, Quebec
Voice (819) 564-5737, Facsimile (819) 564-5541

Luc Van Overberghe
London, Ontario

Voice (519) 680-3815, Facsimile (519) 680-7759

Marjolaine Beaudry

Administrative Services

Ottawa, Ontario

Voice (613) 954-8128, Facsimile (613) 952-1736

Appendix One

Industry Stakeholder Initial Consultation Questions

Context

Measurement Canada, an agency of Industry Canada, has the sole public mandate to:

Ensure equity and accuracy where goods and services are bought or sold on the basis of measurement, in order to contribute to a fair and competitive marketplace for Canadians.

To accomplish our mission and mandate and live within our resources, we intend to intervene in a trade sector only to the extent necessary in accordance with the informed views of sector stakeholders. The consideration and integration of discussions and views from informed stakeholders are an important part of our decision-making process.

In deciding our appropriate intervention level, we pay particular attention to the expressed needs of the informed vulnerable parties (those not in control of the meter) whose need for consumer protection must be adequately addressed. We also give preferred weighting to the views of those stakeholders who are directly involved in the trade transaction.

In addition to what we do in a sector, we have decided that the way we will deliver our intervention programs and services will follow the model outlined in the following table.

Measurement Canada's Service Delivery Model

Intervention Program or Service	By whom/method
- establishing rules and requirements	Measurement Canada directly
- standards calibration	Using alternative service delivery methods
- prototype device approvals	Using alternative service delivery methods
- meter inspections	Using alternative service delivery methods
- installation inspections	Using alternative service delivery methods
- resolving complaints and disputes	Measurement Canada directly
- monitoring the marketplace and taking action to ensure appropriate levels of compliance	Measurement Canada directly

Measurement Canada is committed to retaining delivery of the following core elements of our programs and services:

- 1) Establishing measurement rules and meter requirements
- 2) Investigating measurement disputes and complaints
- 3) Accrediting organizations to provide meter services
- 4) Monitoring and enforcing compliance.

Thus, in this context we are asking you two basic questions:

- 1) What changes to our existing intervention at the program level is warranted in your view?
- 2) How might we deliver the services you need from us in innovative and cost effective ways?

Important Notice on Privacy and Access to Information

Measurement Canada is committed to respecting the personal privacy of individuals who provide personal information to us by any means. All information of a personal nature you do provide is protected under the Privacy Act.

Since the inception of the Access to Information Act, we cannot guarantee total confidentiality. However, please be assured that sensitive business information can be protected under the provisions of section 20 of the Access to Information Act. Any information collected by this questionnaire which qualifies for protection under section 20 of the Act, will be treated in a confidential manner.

Industry Stakeholder Questionnaire

The questions which follow, represent the initial questions for industry stakeholders of greatest importance to us in making the decisions described above. So that we may correlate all responses, please indicate your affiliation by checking off all applicable boxes below:

I am or represent a:

- Electricity generator or transmission company
- Electricity wholesaler
- Electricity retailer
- Industrial electricity purchaser
- Commercial or institutional electricity purchaser
- Residential electricity purchaser
- Electricity meter service organization
- Electricity meter or equipment manufacturer or dealer
- Industry, consumer or other association or non-government organization

9 Other government department, ministry or agency

9 Other stakeholder

Industry Stakeholder Initial Consultation Questions

1. Under the provisions of the *Electricity and Gas Inspection Act*, Measurement Canada ensures accurate and fair electricity metering in a number of areas:

- ¹establishing measurement rules and meter requirements
- ¹investigating measurement disputes and complaints
- ¹accrediting organizations to provide meter services
- ¹monitoring and enforcing compliance, and
- conducting:
 - calibration and certification of measurement standards and test equipment
 - testing, evaluation and approval of new measuring devices
 - initial verification (testing) of measuring devices
 - periodic reverification of measuring devices
 - inspection of metering installations (currently under a temporary dispensation)
 - registration of electricity sellers (contractors)

(¹) Core elements of our programs and services

a) In your opinion, are any of these areas required under law (except for Accreditation which is a voluntary program) no longer necessary? If yes, please indicate which one(s) and provide a rationale.

b) Are there any other areas in which Measurement Canada should be ensuring accurate and fair electricity metering?

2. Independent of the delivery methods, Measurement Canada is committed to ensuring accuracy and fairness.

a) What types of information (indicators) would you need to be kept apprised of the accuracy and fairness in electricity metering?

b) How would you like to receive/access this information?

3. Measurement Canada will continue to deliver the core elements as listed above (¹), directly. In the other areas, we are looking for alternative and innovative methods that will ensure continued accuracy and fairness at minimum cost. The areas directly affected are:

1. Calibration and certification of measurement standards and test equipment

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2. Testing, evaluation and approval of new measuring devices
 3. Initial verification (testing) of measuring devices
 4. Periodic reverification of measuring devices
 5. Inspection of metering installations (currently under a temporary dispensation)
 6. Registration of electricity sellers (contractors)
- a) How else could these services, or parts of them, be delivered effectively and economically?
- b) What incentives or market mechanisms would help bring about timely implementation of these new service delivery methods?
- c) What role(s) should Measurement Canada undertake to ensure accuracy and fairness in each area?
4. Whether we deliver the service/program directly, or whether we adopt alternative methods, how could Measurement Canada improve its effectiveness and efficiency in each of the areas?
5. In developing and adopting new ways of delivering services, we will need to address a number of issues internally and with those who will participate in the delivery. From your perspective, what are the key issues and how do you recommend we address them?
6. How frequently should Measurement Canada conduct formal trade sector reviews in the Electricity Sector, such as this one, in the future?
7. Other comments:
8. Are there any last comments you have that you request Measurement Canada not to share with other stakeholders?
9. Would you like a followup phone call from the ETSR Team to discuss your comments?
- 9 Yes
- 9 No

Date: _____

Your name, organization and phone number (optional only):

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Appendix Two

Consumers Stakeholder Initial Consultation Questions

Context

Measurement Canada, an agency of Industry Canada, has the sole public mandate to:

Ensure equity and accuracy where goods and services are bought or sold on the basis of measurement, in order to contribute to a fair and competitive marketplace for Canadians.

To accomplish our mission and mandate and live within our resources, we intend to intervene in a trade sector only to the extent necessary in accordance with the informed views of sector stakeholders. The consideration and integration of discussions and views from informed stakeholders are an important part of our decision-making process.

In deciding our appropriate intervention level, we pay particular attention to the expressed needs of the informed vulnerable parties (those not in control of the meter) whose need for consumer protection must be adequately addressed. We also give preferred weighting to the views of those stakeholders who are directly involved in the trade transaction.

In addition to what we do in a sector, we have decided that the way we will deliver our intervention programs and services will follow the model outlined in the following table.

Measurement Canada's Service Delivery Model

Intervention Program or Service	By whom/method
- establishing rules and requirements	Measurement Canada directly
- standards calibration	Using alternative service delivery methods
- prototype device approvals	Using alternative service delivery methods
- meter inspections	Using alternative service delivery methods
- installation inspections	Using alternative service delivery methods
- resolving complaints and disputes	Measurement Canada directly
- monitoring the marketplace and taking action to ensure appropriate levels of compliance	Measurement Canada directly

Measurement Canada is committed to retaining delivery of the following core elements of our programs and services:

- 1) Establishing measurement rules and meter requirements
- 2) Investigating measurement disputes and complaints
- 3) Accrediting organizations to provide meter services
- 4) Monitoring and enforcing compliance.

Thus, in this context we are asking you two basic questions:

- 1) What changes to our existing intervention at the program level is warranted in your view?
- 2) How might we deliver the services you need from us in innovative and cost effective ways?

Important Notice on Privacy and Access to Information

Measurement Canada is committed to respecting the personal privacy of individuals who provide personal information to us by any means. All information of a personal nature you do provide is protected under the Privacy Act.

Since the inception of the Access to Information Act, we cannot guarantee total confidentiality. However, please be assured that sensitive business information can be protected under the provisions of section 20 of the Access to Information Act. Any information collected by this questionnaire which qualifies for protection under section 20 of the Act, will be treated in a confidential manner.

Consumers Stakeholder initial Consultation Questions

The questions which follow, represent the initial questions for consumer stakeholders of greatest importance to us in making the decisions described above. So that we may correlate all responses, please indicate your affiliation by checking off all applicable boxes below:

I am or represent a:

- Industrial electricity purchaser
- Commercial or institutional electricity purchaser
- Residential electricity purchaser
- Electricity meter service organization
- Consumer association or non-government organization
- Other government department, ministry or agency
- Other stakeholder

1. Under the provisions of the *Electricity and Gas Inspection Act*, Measurement Canada ensures accurate and fair electricity metering in a number of areas:

- ¹establishing measurement rules and meter requirements
- ¹investigating measurement disputes and complaints
- ¹accrediting organizations to provide meter services
- ¹monitoring and enforcing compliance, and
- conducting:
 - calibration and certification of measurement standards and test equipment
 - testing, evaluation and approval of new measuring devices
 - initial verification (testing) of measuring devices
 - periodic reverification of measuring devices
 - inspection of metering installations (currently under a temporary dispensation)
 - meter records and registration of electricity sellers (contractors)

(¹) Core elements of our programs and services

a) In your opinion, are these all still needed? Is a comprehensive program still necessary? Please indicate how these impact on your confidence in your electricity bill.

b) Do you have any other concerns related to this?

2. Measurement Canada is committed to ensuring accuracy and fairness.

a) What types of information (indicators) would you need to maintain or increase your confidence in electricity metering?

b) How would you like to receive/access this information?

3. Measurement Canada will continue to deliver “core elements” while seeking alternative and innovative methods that will ensure continued accuracy and fairness at minimum. The areas directly affected are:

1. Calibration and certification of measurement standards and test equipment
2. Testing, evaluation and approval of new measuring devices
3. Initial verification (testing) of measuring devices
4. Periodic reverification of measuring devices
5. Inspection of metering installations (currently under a temporary dispensation)
6. Meter records and registration of electricity sellers (contractors)

a) How could these services be delivered effectively and economically?

b) What would be the fastest way to get companies to deliver these services?

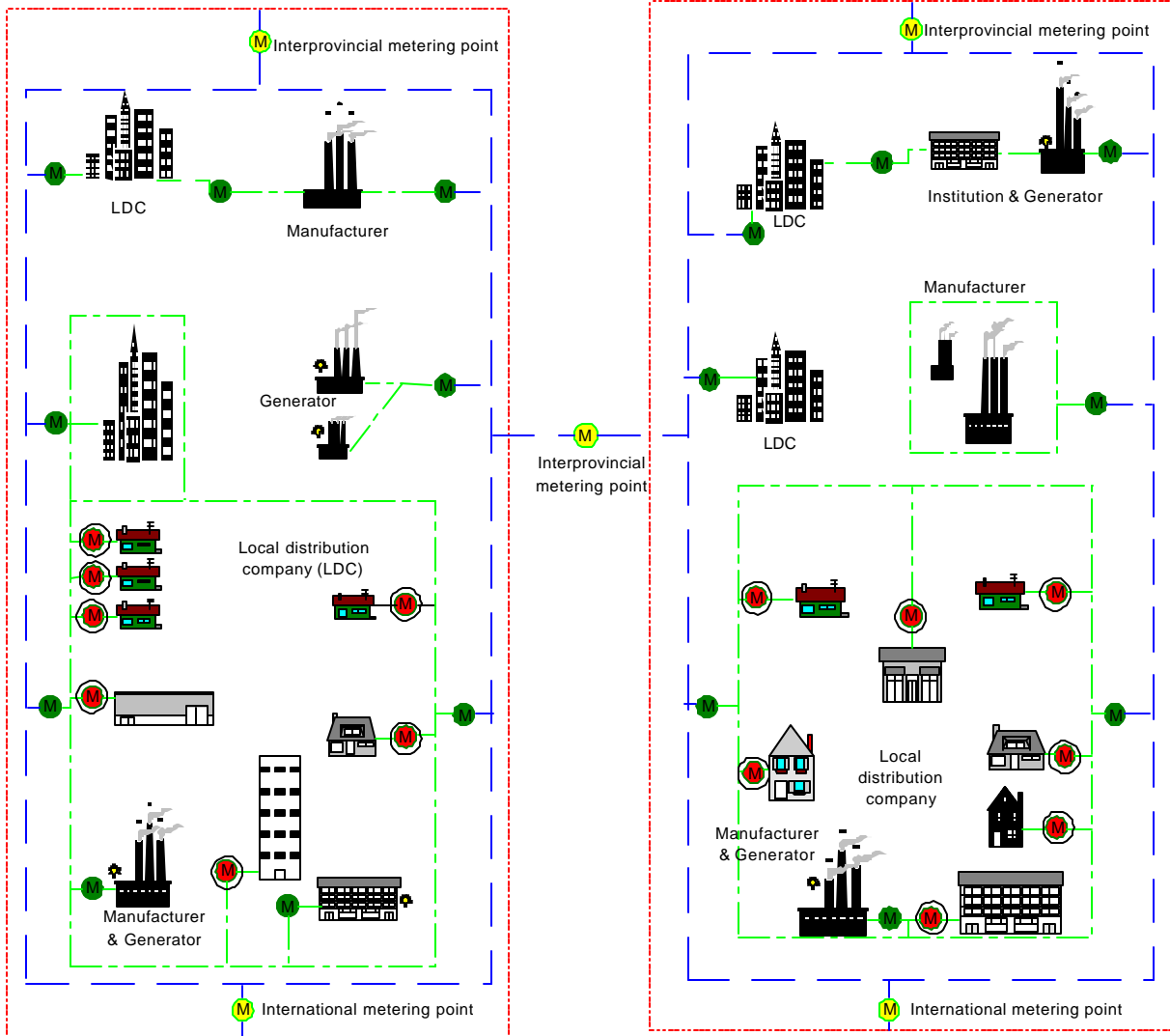
c) What role(s) should Measurement Canada undertake to ensure accuracy and fairness in each area?

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4. How can Measurement Canada improve its effectiveness and efficiency in each of the areas?
5. If the decision is made to have other organizations provide services what are your assumptions?
What are your expectations?
6. When should Measurement Canada conduct this type of trade sector review again?
7. What other expectations or concerns do you have regarding electricity trade measurement within Canada?
8. Would you like a followup phone call from the ETSR Team to discuss your comments?
 Yes No

Date: _____

Your name and phone number (optional only):



Within Canada metering (M) of electricity takes place at various points. Within the provincially (---) regulated transmission grids (---) to the municipal and private (---) distribution grids. international / interprovincial & interterritorial (M) metering also takes place, this is known as the wholesale (M, M) market compared to the typical household or business (M) metering. Generators of electricity (G) meter (M) and sell to either the transmission (---) or distribution (---) grid.

Appendix 2: Electricity Metering Points within Canada

Appendix Four

Processes to Amend the Electricity and Gas Inspection Act and Regulations and to Create Specifications

Amending Legislation

The *Electricity and Gas Inspection Act* can only be amended through a complex process that requires stakeholder, Cabinet, Parliamentary and Senate support and approval. Changing the *Electricity and Gas Inspection Act* in a substantive way is a rare occurrence and would likely take several years to complete.

Amending Regulations

The *Electricity and Gas Inspection Act Regulations* can be revised following a nine-stage approval process that includes submission to stakeholders, the Justice Department, Industry Canada, the Privy Council Office, the Special Committee of Council and the Governor in Council. It is later reviewed by the Joint Committee for the Scrutiny of Regulations.

To revise a regulation, after consultation with affected parties, Measurement Canada drafts a new or amended regulation on the basis of marketplace or program administration need. After internal legal review, a regulatory impact assessment notice is prepared to inform Industry Canada, Justice Department, Privy Council, Senior Committee Council and Governor in Council personnel of the proposed regulatory changes. Early public notice is given by pre-publishing the draft regulation in the *Canada Gazette Part I* for at least 30 days. Depending on the comments received, the draft regulation is withdrawn or amended and re-submitted to the Justice Department, Industry Canada, the Privy Council Office, the Senior Committee Council and the Governor in Council. Following approval by the Senior Committee Council, the draft regulation is then published in the *Gazette Part II* for at least 30 days, after which it becomes law. Cycle time depends on nature, complexity and sensitivity of regulations, as well as the time spent in the regulatory process. This cycle time can exceed two years.

Amending Specifications

Specifications under the *Electricity and Gas Inspection Act*, unlike regulations, are directly approved by Measurement Canada and are not required to go through the federal regulatory process. Measurement Canada prepares a draft specification identifying how new or existing meter technology is to be tested, verified and sealed. Stakeholders are involved in the development of the draft specification. Once developed, the draft specification is sent to industry stakeholders for their comments. The draft specification is then reviewed in light of stakeholder comments. The final specifications are approved by the Director (i.e. President) of Measurement Canada and then distributed and published on the Measurement Canada website. Cycle time depends on nature,

complexity and sensitivity of the specifications and can take from six months to three years.

Although the legal process of creating or changing Specifications is simpler, the decision making process regarding the rules and requirements in adopting new measuring technology into the marketplace is difficult with respect to balancing the interests of all stakeholders.

Appendix Five

Glossary of Terms

Accreditation Program

An ASD program to recognize the competence of and enforce the performance of through auditing, of Accredited Meter Verifier's (AMVs) to test and inspect measuring devices and installations on *Measurement Canada's* behalf. Today, approximately 87 % of all new and reverified electricity meters are inspected by Accredited Meter Verifiers.

Accuracy

Refers to the closeness of agreement of the measurement result of a meter under test with the true value as indicated by a certified calibration console.

Alternate service delivery mechanism (ASD)

Is a creative and dynamic process of public sector restructuring that improves the delivery of services to clients.

Appropriate level of intervention

This will be the amount and level of intervention in the electrical trade sector of *Measurement Canada*, with the *Electricity and Gas Inspection Act* as the basis but does not necessarily mean *Measurement Canada* delivering the services.

Approval process

The testing, evaluation and regulatory granting of approval for commercial use of a particular model or series of models (the type) of electricity meter including any accessory device which may have an effect on the accuracy of measurement. The *Electricity and Gas Inspection Act* requires that all devices used for the sale of electricity in Canada be subjected to this process to ensure that only meters capable of measuring electricity accurately reach the marketplace. Once a meter type has been tested it will either be rejected or receive a Notice of Approval and approval number assigned to the specific meter type or model

Calibration console

The physical apparatus that is used by Accredited Meter Verifiers for the comparison testing of meters. Must be calibrated and certified on a regular basis. The calibration console is in-situ tested and certified by *Measurement Canada* inspectors against *Measurement Canada* Specification S-E-01.

Complex meters

Meters for commercial and industrial use, including wires and associated devices.

Canadian Forum for Trade Measurement (CFTM)

An annual face-to-face forum for discussing specific technical issues between *Measurement Canada* and industry and other stakeholders.

Dispute resolution service

Buyers and sellers of electricity who are dissatisfied with the results of their measurement transaction and suspect a problem with the performance of the meter may request to have the matter investigated by *Measurement Canada*. Our inspector tests the disputed meter and reports the findings to all parties. *Measurement Canada* currently performs these dispute and complaint investigations and will continue to do so in the future.

Domestic metering

Refers to meters for residential use.

Electricity and Gas Inspection Act (EGIA)

Sets out the rights and obligations of electricity sellers (contractors) and purchasers and Accredited Meter Verifiers as well as the powers and duties of the Minister of Industry with respect to the electricity trade. *Measurement Canada* administers and enforces the EGIA which applies broadly to any type of measuring apparatus and accessories used for the selling and purchasing energy.

Electricity Stakeholders Advisory Group (ESAG)

A small group of representative sector stakeholders which has been assembled to advise *Measurement Canada* on a suitable stakeholder process throughout this consultation.

Electricity Trade Sector

Refers to the area of trade of electricity for the purposes of this paper.

Harmonic distortion

Measurement errors may occur under certain conditions when this condition is present in the electricity supply. The present requirements for electricity meters do not address this. *Measurement Canada* is developing a new draft specification for electricity meters to provide criteria for assessing meters under distorted waveforms.

Intervention

The degree to which *Measurement Canada* involves itself in a given business sector or marketplace in terms of mandatory metrological programs, policies and requirements to ensure measurement accuracy and equity is achieved.

LMB-EG-07: *Measurement Canada* Specification for Approval of Type

Prototype measuring devices intended for trade use are evaluated for compliance against the criteria specified in this document.

Measurement Canada's Marketplace Intervention Model

A decision making model that *Measurement Canada* uses to assess the relative potential need for intervention based on criteria developed in consultation with stakeholders and outlined in the report prepared by the firm KPMG entitled *Recommended Structure for a Marketplace Intervention Model for Trade Measurement*.

Measurement Canada's web site

Is located on the Internet at <http://mc.gc.ic.ca>

Metering installation

Encompasses the metering devices and service specific wiring configurations.

Preconsultation stage

A round of informal bi-lateral interviews the Electricity Trade Sector Review Team conducted between April and June 2000 to develop an unbiased preliminary understanding of how well *Measurement Canada*'s clients are being served by the existing system of intervention and what issues they wish to discuss further.

Quality management system

An organizational approach to management which is centred on quality, based on participation of all its members and which aims to achieve a long-term success through customer satisfaction and benefits to all members of the organization and to society.

Reverification

Periodically, each meter has its seal removed, is cleaned, recalibrated and reverified to start a new seal period life.

S-E-01:

Specifications for the Calibration, Certification and Use Electricity Calibration Consoles.

Seal extension

Involves extending the period of in-situ use of a specific group of meters of the same physical characteristics based on test results of a representative sample from the group. Based on the results, the seal life of the group may be extended for up to another eight years before another.

Trade Sector Review

A decision making process, to review in consultation with informed stakeholders, the appropriateness of our existing level of intervention in a sector. The result is a strategy and implementation plan outlining how *Measurement Canada* will work with the sector stakeholders on an ongoing basis into the future, to ensure equity and accuracy is achieved in a fair, cost-effective and transparent manner.

Transparent *Measurement Canada* decision making

The goal of *Measurement Canada* to facilitate and administer it's mandate through a process

of rational and sound reasoning that is understood by all stakeholders.

Vulnerable party

An electricity purchaser who relies solely on a meter that is owned and/or maintained by another party for the purposes of determining the quantity of electricity consumed.