



**26th ASIA-PACIFIC LEGAL
METROLOGY FORUM AND
WORKING GROUP MEETINGS**
6-8 November 2019, Ha Long City,
Quang Ninh Province, Viet Nam



Economy Report - 2019

Canada

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SECTION 1: Organization and Structure for Metrology

The main federal statutes governing legal metrology are the:

*Weights and Measures Act (R.S.C. 1985);
Electricity and Gas Inspection Act (R.S.C. 1985); and
Consumer Packaging and Labelling Act (R.S.C. 1985).*

The government bodies responsible for the application of these acts (all part of the Department of Innovation, Science and Economic Development Canada) update and publish the following regulations that have legal force:

*Weights and Measures Regulations (1974);
Electricity and Gas Inspection Regulations (1986); and
Consumer Packaging and Labelling Regulations (1985).*

Measurement Canada, an agency of the federal department of Innovation, Science and Economic Development Canada, has exclusive national responsibility and authority for legal metrology activities in Canada.

The agency is composed of several directorates, including the Engineering and Laboratory Services Directorate, Innovative Services Directorate, and Program Development Directorate.

The **Program Development Directorate** is composed of two divisions: the Weighing and Measuring Division and the Utility Metering Division. The Program Development Directorate is responsible for developing requirements and programs (this includes making legislative and regulatory amendments, developing specifications, and establishing approaches for marketplace monitoring) to minimize inaccurate measurement and inequity in the trade of goods and services on the basis of measurement. It also establishes metrological policies and procedures for the approval, verification, reverification, installation and use of measuring devices, and establishes enforcement policies and marketplace monitoring programs.

The **Engineering and Laboratory Services Directorate** assists in the development of specifications and procedures, and is responsible for the approval of prototype weighing and measuring machines as well as prototype electricity and gas meters and metering devices used in trade. It is also responsible for the calibration and certification of local measurement standards used by government and authorized service providers.

The **Innovative Services Directorate** is responsible for the development, implementation and review of alternative service delivery mechanisms. This includes the development of mutual recognition agreements with the United States (National Conference on Weights and Measures) which allows for the acceptance of test data to reduce the required testing of certain prototype devices. It is also responsible for industry accreditation and registration programs that delegate specified mandated inspection activities to private sector organizations (commonly known as authorized service providers) that meet Measurement Canada's requirements.

Measurement Canada fulfils its mandate through the following:

- implementation of a field inspection program carried out by inspection staff located in its three regions and ten districts across Canada;
- certification of measuring and test equipment;

- verification of the accuracy and appropriate usage of weighing and measuring devices used in trade;
- verification of the net quantity of commodities sold on the basis of measure;
- resolution of trade measurement complaints;
- inspection and verification of electricity and gas meter performance;
- periodic reverification of electricity and gas meter performance;
- on-site verifications of measuring systems.

The regions are also responsible for administering the accreditation and registration programs, including close monitoring of authorized service providers. Measurement Canada also investigates and arbitrates measurement disputes between the buyers and sellers of electricity and gas.

USE OF ALTERNATIVE SERVICE DELIVERY MECHANISMS

Alternative service delivery mechanisms are used for many inspection and certification activities traditionally performed by Measurement Canada.

Accreditation and registration programs for device inspections

Measurement Canada has two programs that permit other organizations to inspect and certify measuring devices under the authority of the *Weights and Measures Act* or the *Electricity and Gas Inspection Act*.

The Accreditation Program was launched in 1986 for electricity and gas organizations and was expanded in 1995 to include weights and measures organizations. An accredited organization must document, establish and maintain a quality management system that meets the requirements of Measurement Canada's accreditation standard S-A-01—Criteria for the Accreditation of Organizations to Perform Inspections Pursuant to the *Electricity and Gas Inspection Act* and the *Weights and Measures Act*. These requirements are modelled after the ISO 9001 standard. In addition, technicians in weights and measures accredited organizations must pass mandatory theoretical and practical evaluations.

Organizations accredited by Measurement Canada are not limited in terms of the trade sectors to which they can offer their inspection services. An accredited organization can certify any device under the scope of its accreditation regardless of the sector in which the device is used. To ensure compliance, the quality management system established by an accredited organization is subject to an annual surveillance and product audit by Measurement Canada.

The Registration Program was launched for weights and measures organizations in April 2004. It also authorizes organizations to inspect and certify measuring devices under the authority of the *Weights and Measures Act*. Initially developed and implemented at the request of stakeholders in the downstream petroleum sector, the Registration Program has since been expanded to include other sectors of the economy. It is offered only following a consensus of the stakeholders of a given trade sector. The program scope is limited to the inspection of measurement equipment used in the trade sectors identified in the Registration Program Terms and Conditions, which also stipulate the requirements to be met by organizations seeking registration.

Registered organizations must have their technicians attend and successfully complete theoretical training provided by Measurement Canada. All potential recognized technicians must successfully pass theoretical and practical evaluations by Measurement Canada prior to becoming recognized. In addition, as there is no requirement for the implementation of a quality management system in the Registration Program, there is more frequent Measurement Canada monitoring of recognized technicians working for registered organizations than there is for recognized technicians working for accredited organizations.

Both these programs are open to organizations in Canada, the United States and Mexico.

Delegation of authority program

In May 2003, Measurement Canada launched a program permitting the calibration by other organizations of certain measuring apparatus and test equipment used under the *Electricity and Gas Inspection Act*. The present scope of this program applies to the calibration and recertification of electricity meter calibration consoles and the calibration and certification of pressure, temperature and dimensional standards used in the natural gas sector. Program requirements are established in C-D-01—Conditions for the Delegation of Authority for the Calibration and Certification of Measuring Apparatus and Test Equipment Pursuant to the *Electricity and Gas Inspection Act*.

Recognition of ISO 17025 laboratories

Measurement Canada offers two additional alternative service delivery mechanisms:

- **Standards calibrations:** Document RC-01—Conditions and Administrative Requirements for the Recognition Program of Calibration Results from CLAS Laboratories sets out the conditions and requirements to be met by ISO 17025 CLAS (Calibration Laboratory Assessment Service) laboratories to have their calibration results for mass and temperature standards recognized by Measurement Canada in order to be certified pursuant to the *Weights and Measures Act*. A CLAS laboratory is one that is certified by the National Research Council of Canada and accredited by the Standards Council of Canada.
- **Device approvals:** Document RT-01—Conditions and Administrative Requirements for the Recognition of Test Results from ISO 17025 Accredited Test Facilities, which permits the recognition of test results from facilities accredited under ISO 17025 for the testing of previously approved electricity meters, which have been modified and are being resubmitted for approval.

SECTION 2: Key Activities of 2018/19

Regulatory modernization

As part of a government wide initiative to modernize its regulatory regime, Measurement Canada has embarked upon an ambitious project to update its legislative and regulatory framework. Although this framework has served the organization and Canadians well for many years, it must be reviewed and renewed to respond to the current and future needs of Canadian industry and consumers. This project will take advantage of current government-wide opportunities to advance legislative and regulatory change and employ a small team to conduct a comprehensive review of the *Weights and Measures Act* and its regulations and the *Electricity and Gas Inspection Act* and its regulations.

Restructuring of service fees

In June 2017, the *Service Fees Act* received royal assent and replaced its predecessor the *User Fees Act*. The *Service Fees Act* creates two key new requirements for Measurement Canada's fees. The first is an annual increase to adjust for inflation by increasing fees by the annual change in the consumer price index. The second is a requirement to remit fees in proportion to the extent that Measurement Canada does not meet its service standards for services with fees (e.g. device approvals, inspections). To comply with the new *Service Fees Act* and Treasury Board Secretariat of Canada policy, Measurement Canada has raised its fees by 2.2% for 2019-20 and will begin issuing remissions in 2020-21.

Maintenance of mandatory inspection and marketplace monitoring programs

In the past year, approximately 160,000 inspections were conducted through Measurement Canada's marketplace monitoring activities as well as mandatory periodic inspections in eight trade sectors: retail petroleum, retail food, dairy, downstream petroleum, fishing, forestry, and grain and field crops. Approximately 90% of these inspections were completed by authorized service providers.

Measurement Canada's priority is to maintain the mandatory periodic inspection program and ensure that measuring device owners are educated regarding their legal obligation to have their devices regularly inspected. This contributes to a fair, efficient and competitive marketplace by detecting and correcting measurement issues on a regular basis.

Authorized service providers for device inspections

Measurement Canada relies heavily on the use of alternative service delivery in order to fulfill its mandate. As of March 31, 2019, there were 227 organizations authorized by Measurement Canada to perform inspections of mass, volume, electricity and natural gas measuring devices. The majority of these organizations are located across Canada, but nine are located in the United States and Mexico. They are closely monitored and subject to audits and follow-up inspections.

Thermal energy meters

In 2017, Measurement Canada completed a consultation with stakeholders regarding the regulation of thermal energy meters.

Following this consultation, Measurement Canada developed requirements for the approval of thermal energy meters, based on the European standard CEN-EN 1434. The [Terms and Conditions for the Approval of Thermal Energy Meters](#) were posted on Measurement Canada's website in March 2018.

In April 2018, a pilot program for the approval of these meters was launched. Information on the pilot program is found in Measurement Canada [bulletin V-30—Pilot Program for the Approval of Thermal Energy Meters](#). Evaluation of meters submitted for approval under the pilot program is currently ongoing.

Measurement Canada has also established a schedule outlining when certain requirements related to thermal energy meters will be implemented and enforced. This is detailed in [bulletin V-31—Implementation of Thermal Energy Meter Requirements](#).

Next steps include developing initial inspection procedures and an alternate service delivery mechanism for this device type.

2018 OIML-RELATED ACTIVITIES**Electricity meters (OIML TC 12, R 46)**

Measurement Canada is in the process of updating the existing specifications for electricity meter approvals, in part to adopt R 46 requirements, but also to address various other legal metrology issues pertaining to the Canadian electricity marketplace. This includes investigating the impact of harmonic content on measured values.

Harmonic content is becoming increasingly prevalent with the use of consumer electronics and power saving appliances, and this is having an increasingly significant impact on accuracy and equity in electricity trade measurement. Traditionally, meters in Canada (and much of the world) have been assessed at sinusoidal conditions and consequently, differing meter designs and methodologies all produced similar measurement values. However, in real world conditions that include harmonic content, different meter designs may produce different measurement values.

TC 12 will determine how to best address this issue in a possible revision to R 46. Measurement Canada will lead the international working group developing the recommendations.

Requirements for software controlled measuring instruments (OIML TC 5, D 31)

Measurement Canada is reviewing its requirements related to metrological software. OIML TC 5/SC 2 is currently revising the D 31 requirements. Canada is participating in this revision process in order to ensure that Canadian requirements are in line with international practices.

OIML certification system (OIML-CS)

Measurement Canada signed on to the OIML-CS in 2018 and currently uses the following recommendations:

Recommendation	Measuring Instrument Category	Scheme
R 60:2000	Metrological regulation for load cells	A and MAA
R 75:2002	Heat meters	A
R 76:2006	Non-automatic weighing instruments	A and MAA

Test results from acceptable issuing participants collected under these recommendations are regarded as equivalent to those that would be obtained through testing carried out by Measurement Canada. Acceptance of these test results helps to reduce delays and costs. Measurement Canada plans to explore using other recommendations to ensure that Canadian requirements are in line with international practices.