

KPMG

Final Report

***RECOMMENDED STRUCTURE FOR A
MARKETPLACE INTERVENTION MODEL FOR
TRADE MEASUREMENT***

Prepared for

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Introduction

Measurement Canada wishes to assess the extent to which intervention, to ensure equitable and accurate trade measurement of goods and services, is required in specific trade sectors in Canada. This intervention may range from periodically checking and confirming that existing metrological controls are adequate and appropriate to direct intervention by Measurement Canada to ensure device accuracy and enforce compliance requirements.

This report presents and defines a recommended model for screening trade-measurement dependent sectors, ranking them on a basis of apparent need for regulatory intervention, assessing the existing degree of metrological control within each sector, and determining the most appropriate level of intervention by Measurement Canada in each sector of the economy. This model, which we refer to as the marketplace intervention model, has undergone several rounds of review and development, drawing on inputs with Measurement Canada plus feedback from a sample of stakeholders in a number of measurement-dependent sectors.

First, we discuss the overall purpose of the model and its intended use. We then describe the structure of the recommended model and define each of the components, supported by an example of its application to several trade sectors.

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Overall Purpose Of The Marketplace Screening And Intervention Model

A. Background

Measurement Canada is a special operating agency of Industry Canada, created in August, 1996, with the mission to: “. . . *ensure equity and accuracy where goods and services are bought and sold on the basis of measurement, in order to contribute to a fair and competitive marketplace for Canadians*”. The organization is mandated to administer and enforce the *Weights and Measures Act* and the *Electricity and Gas Inspection Act*. It does this by providing services in six areas:

- **Establishment of rules and requirements for accurate and fair measurement** where goods and services are traded on the basis of measurement.
- **Calibration and certification of measurement standards** relating to mass, volume, pressure, temperature, length and electrical quantities, to ensure uniform measurement bases for domestic and international trade.
- **Approval of measuring devices** intended for trade use to check their compliance with legislated requirements for device accuracy over their commercial lives.
- **Inspections and certifications** of approved measuring devices in use, spanning weighing and measuring devices, gas and electricity meters, complex metering systems (e.g., for metering gas and electricity consumption in industrial plants), and commodity net quantity inspections.
- **Dispute resolutions** involving the investigation and arbitration of disputes between consumers and electricity and gas suppliers.
- **Accreditation** of private organizations and public utilities with approved quality assurance systems to inspect certain metering, dispensing, and weighing devices prior to trade use.

B. Questions to be addressed

Measurement Canada needs to focus its limited resources on those areas where the return to the Canadian taxpayer is greatest. Consequently, Measurement Canada is proposing to develop a model to help determine the most appropriate levels of intervention in each sector of the economy. Sectors that rely on trade measurement would be assessed and compared using a set of screening criteria and grouped according to their relative needs for intervention and the type of intervention activity that appears to be most appropriate. The outcomes from this analysis would then be used as a basis for consulting with sector stakeholders and reaching agreement as to the actual level of intervention that is both needed and affordable.

At the broadest level, the following issues need to be addressed:

- **Is intervention required in a particular trade sector?** This would depend on such factors as the importance of measurement as a basis for commercial transactions, the economic significance of the sector, the potential economic risk to individual buyers and sellers, and other criteria that are discussed further below.
- **Is intervention required in the trade sector beyond that currently provided?** This will depend on the level of intervention judged to be appropriate, the metrological controls that are currently in place, as well as the metrological mechanisms in place for ensuring that the controls are implemented.
- **What is the level of intervention required of Measurement Canada?** This will depend on the level of intervention judged to be necessary, and the extent to which Measurement Canada or other organizations are fulfilling these needs. If Measurement Canada is already intervening then a decision would be required as to whether to maintain, decrease or increase the current level of intervention activity. If Measurement Canada does not currently intervene in a particular sector, it will be necessary to decide if Measurement Canada should directly intervene, or whether some other organization should intervene on its behalf.

C. Purpose of the model

The focus of the model is to provide an objective basis for determining the level of intervention required in a particular sector. The question of which organization will be responsible for exercising oversight of metrological controls applicable to the sector will be addressed subsequent to the sector screening process, in consultation with sector stakeholders.

The overall purpose of the model is therefore to:

- **Determine which sectors to intervene in.** Traditionally, Measurement Canada has focused on specific sectors, such as electricity and gas, grain, transport, pulp and paper. The rationale for focusing on these sectors versus others is not clear. New sectors have emerged where there may be a greater need for measurement activities to be monitored. Measurement Canada needs to improve its ability to assess the impact of increasing/decreasing resources in any particular sector.
- **Focus resources on high priority sectors.** The model will help determine where resources would be spent on monitoring measurement activities, that is, those sectors where the need for intervention has been assessed to be highest and where metrological controls are insufficient.
- **Clarify Measurement Canada's role vis-à-vis all sectors.** The model will help clarify what role Measurement Canada should play vis-à-vis each sector of the marketplace, in light of the level of intervention required and the role(s) that may be played by industry groups and/or other regulatory agencies.

D. Guiding principles

Our initial interviews with selected Measurement Canada managers, and subsequent workshop to review the conceptual basis for the marketplace screening and intervention model, identified a number of guiding principles for the development and application of the model:

1. Ensure marketplace equity

The model should ensure marketplace equity. The model should indicate sectors where further intervention is required to provide for marketplace equity, and other sectors where less intervention is possible within a reasonable risk to marketplace equity.

2. Ensure that consumer interests are recognized and relative dependency considered

The interests of all stakeholders in a trade sector, including consumers, should be considered in the development of the model. Consultations carried out with respect to the model should ensure that all stakeholders have an opportunity to comment and provide feedback. Measurement Canada has a responsibility to ensure that the needs of consumers are reflected in the development and application of the model.

3. Develop partnerships where industry has capability

Measurement Canada should not become involved, beyond a minimal level of intervention, if other organizations or mechanisms are in place to monitor measurement activities and ensure

marketplace equity. Ideally, industry should play a lead role in monitoring its own measurement activities. Alternatively, provincial and municipal agencies may already have metrological controls in place, or be in a position to provide this service on a more cost-effective basis than Measurement Canada.

4. Apply one set of criteria to all sectors

All sectors would be rated against the same set of criteria. This is intended to ensure uniformity in comparing the levels of intervention required from one sector to another. Similarly, weights attached to each criterion to reflect their relative importance would be uniformly applied across all sectors.

5. Flexibility to change over time

The model must be sufficiently rigorous to allow for changes in the factors determining the level of intervention required, such as advances in technology, increased amount of self-regulation, or changes in the supply chain.

6. Measurement Canada has a role to play in all sectors

A key premise is that Measurement Canada should be prepared to intervene to ensure trade measurement is accurate and consistent within each sector. The actual role, or type of intervention, that it may pursue will be a function of such factors as:

- The ranking of the sectors by level of intervention required as assessed against the pre-determined criteria.
- The ability of industry groups, or other bodies, to ensure that the accuracy of trade measurement meets stakeholders' expectations.
- Costs to Measurement Canada and sector participants for alternative approaches to ensuring measurement accuracy and equity.
- Opportunities for harmonization of Measurement Canada's requirements with, and mutual recognition of, international measurement practices and requirements.

At the very minimum, Measurement Canada will play a role in monitoring and periodically assessing the appropriateness of the metrological controls that are in place in each trade sector. Depending on the outcomes from these two activities, other activities may be undertaken, either by Measurement Canada directly or through alternative service delivery arrangements, for example, accredited inspection organizations. The different combinations of intervention activity that may be undertaken by Measurement Canada are described further in Chapter IV of this report.

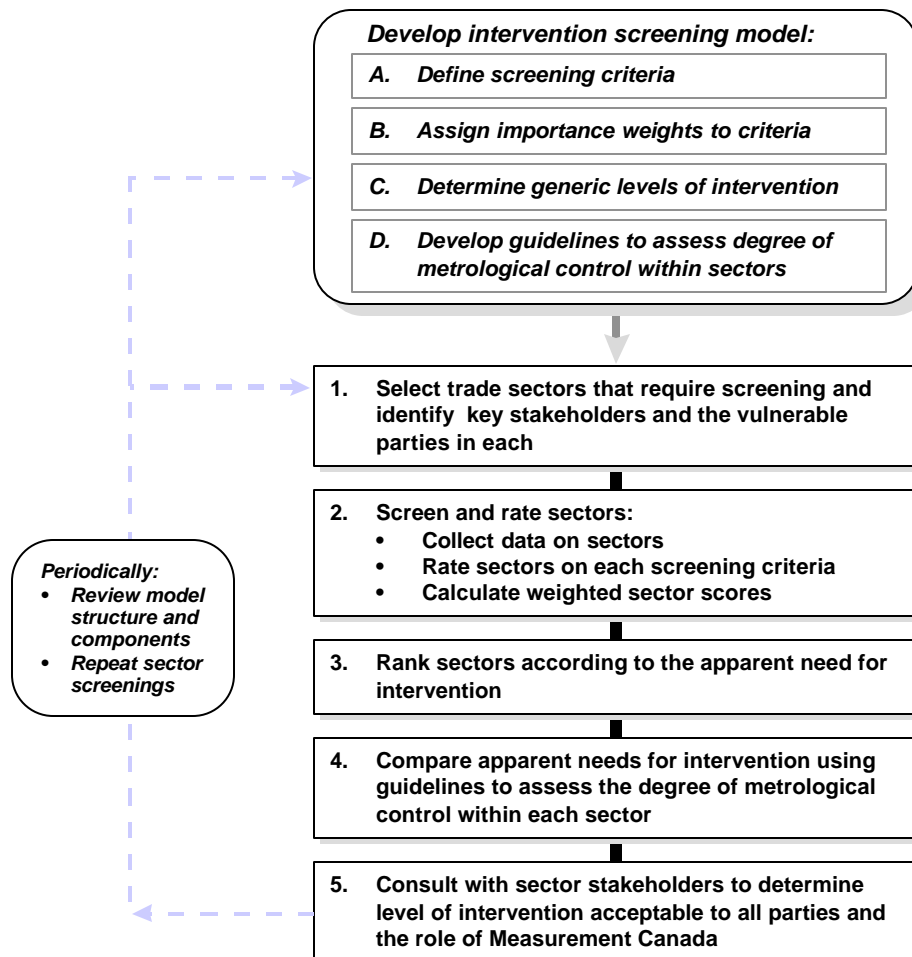
III

Anticipated Process For Applying The Model

A. Overview of conceptual model

The key elements of the model and steps in applying it are identified in Exhibit III-1.

Exhibit III-1
Key steps in applying the model



The main steps involved in the development and use of the model are as follows:

- **Develop the intervention screening model** — Four key elements are required for the model:
 1. *Screening criteria*, which can be used to measure and compare the characteristics of each sector that depends on trade measurement. This involves two steps:
 - Identifying relevant dimensions on which each sector can be assessed. By relevant, we mean such factors as: the extent to which transactions in the sector are dependent on measurement; the economic significance of each sector, in both overall terms and relative importance of measured products and services; and the potential risks associated with incorrect measurements.
 - The determination of a suitable basis for measuring sector characteristics, that is, choosing a way of “measuring” sector characteristics that provides a meaningful representation of the underlying dimension as well as providing a means of differentiating between sectors. This involves converting data on various sector performance characteristics into scores on rating scales that can be used to directly compare different sectors in a manageable fashion.
 2. *Importance weights for each criteria*. Some criteria may be considered to be more important in the comparisons of sectors than others. This means that importance weights, which increase (or decrease) the relative contribution of scores on each criteria, need to be assigned to each criteria. Scores for each sector can then be calculated by multiplying the scores on each criteria by their respective importance weights, and summing the outcomes to arrive at an overall score for each sector.
 3. *Generic levels of intervention*. As a general rule, the higher the score assigned to a sector the greater the need for metrological control within this sector. Sectors with similar scores can be expected to have somewhat similar needs as to the level, or extent, of intervention that may be necessary.
 4. *Guidelines to access degree of metrological control within sectors*. The actual characteristics of current intervention structures may vary between sectors, even though they may have similar scores on the screening criteria. Consequently, it is also necessary to assess the characteristics of existing control approaches and propose different combinations of generic intervention activities for each sector. These proposed levels of intervention will provide a starting point for Measurement Canada’s discussions with stakeholders concerning any possible changes in the level, or method, of intervention.

- **Select trade sectors that require screening and identify the vulnerable parties in each** — A master list of sectors that rely upon trade measurement needs to be compiled and maintained. Statistics Canada’s Standard Industrial Classification (SIC) codes, (or the North American Industry Classification System (NAICS) which will replace the SIC system), may provide a suitable basis for defining the various trade-dependent sectors. The structure of the SIC codes provides a commonly-used basis for defining industry sectors and collecting statistics on sector performance.

In developing the list, it will also be necessary to identify who is considered to be the vulnerable party in typical measurement-dependent transactions within the sectors of interest. For instance, in the grain elevators sector (SIC 471) grain farmers depend upon the accuracy of the weigh scales used by elevators and, as such, are the vulnerable parties when delivering their grain. More often, it is likely to be the buyer, not the supplier, who will be vulnerable, for example, when consumers rely on the vendor to ensure the accuracy of the trade measurements that underlie product sales.

- **Screen and rank sectors** — Data on the characteristics and performance of each of the selected sectors is collected and used to calculate scores on each of the criteria.
- **Rank sectors** — These criteria scores are then multiplied by their respective importance weights and summed to produce an overall sector score, which is then used to rank all of the sectors of interest.
- **Assess metrological controls within each sector** — The existing degree of metrological control will need to be compared to the levels suggested by the model, to identify sectors where controls appear to be out of line with that required (either too much or not enough).
- **Select sectors with greatest needs for changes in intervention levels** — Sectors with the greatest needs for changes in intervention levels will need to be identified and plans prepared to guide consultations with stakeholders and the development of new or modified approaches to intervention that are consistent with Measurement Canada’s mandate while being cognizant of stakeholders’ concerns. This activity should start with those sectors with the highest needs for intervention, as indicated by their sector scores, and the most marked mismatches between existing degrees of metrological control and apparent needs for intervention.
- **Consult with sector stakeholders to determine the most appropriate level of intervention** — Revised approaches to intervention will need to be developed in consultation with stakeholder organizations and representatives, which will include both suppliers and consumers as well as equipment manufacturers and others affected by the measurement transactions. Sectors with the greatest needs for changes in intervention levels will need to be identified and plans prepared to guide consultations with stakeholders leading to the development of new or modified approaches to intervention

that are consistent with Measurement Canada’s mandate and legislative requirements while being cognizant of stakeholders’ concerns.

B. Selection of sectors that are dependent on measurement

As a first step, we identified those sectors where a significant proportion of their trade activities appear to be dependent on measurement, based on the standard SIC codes. These sectors are listed in Exhibit III-2. Sectors where measurement is not considered to be an important consideration are listed in Exhibit III-3.

Exhibit III-2 Sectors dependent on trade measurement

<p>RESOURCE INDUSTRIES</p> <ul style="list-style-type: none"> 01 Agricultural industries 031 Fishing 041 Logging 051 Forestry services 06 Mining industries 07 Crude petroleum and natural gas 08 Quarry and sand pit industries 	<p>MANUFACTURING</p> <ul style="list-style-type: none"> 10 Food industries 11 Beverage 12 Tobacco products 15 Rubber products 16 Plastic products 17 Leather and allied products 18 Primary textile 19 Textile products 25 Wood industries 26 Furniture and fixture industries 27 Paper and allied products 28 Printing, publishing 29 Primary metal 302 Fabricated structural metal products industries 305 Wire and wire products industries 338 Communications and energy wire and cable industry 35 Non-metallic mineral products 36 Refined petroleum and coal products 37 Chemical and chemical products 392 Jewellery and precious metals 	<p>TRANSPORTATION STORAGE COMMUNICATIONS</p> <ul style="list-style-type: none"> 451-452 Air transport industries 453 Railway transport 454-455 Water transport industries 456 Truck transport 4581 Taxicab industry 4592 Freight forwarding industry 46 Pipeline transport industries 471 Grain elevator industry 479 Other storage and warehousing industries 482 Telecommunication carriers industry 484 Postal and courier service industries 	<p>WHOLESALE TRADE</p> <ul style="list-style-type: none"> 50 Farm products, wholesale 51 Petroleum products, wholesale 52 Food, beverage, drug and tobacco, wholesale 532 Dry goods, wholesale 56 Metals, hardware, plumbing, heating and building materials, wholesale 5741 Electrical wiring supplies & electrical construction material, wholesale 591 Waste materials, wholesale 592 Paper and paper products, wholesale 593 Agricultural supplies, wholesale 596 Jewellery and watches, wholesale 597 Industrial & household chemicals, wholesale 5993 Forest products, wholesale
<p>RETAIL TRADE</p> <ul style="list-style-type: none"> 60 Food, beverage & drug industries, retail 615 Fabric and yarn stores 623 Household furnishings stores 633 Gasoline service stations 64 General retail merchandising stores 6531 Hardware stores 656 Jewellery stores and watch and jewellery repair shops 691 Vending machine operators 92 Food and beverage service industries 9654 Boat rentals and marinas 992 Automobile and truck rental and leasing services 9991 Parking lots and parking garages 		<p>UTILITIES</p> <ul style="list-style-type: none"> 491 Electric power systems 492 Gas distribution systems 493 Water systems 499 Other utility industries 	
		<p>CONSTRUCTION</p> <ul style="list-style-type: none"> 4214 Excavation and grading 	

Exhibit III-3

Sectors where trade measurement does not appear to be an important consideration

02 Service industries incidental to agriculture
032 Services incidental to fishing
033 Trapping
09 Service industries incidental to mineral extraction

24 Clothing industries
30 Fabricated metal products industries (excl. 302 - fabricated structural metal products, and 305 - wire and wire products)
31 Machinery industries
32 Transportation equipment industries
33 Electrical & electronic products (excl. 338 - communications and energy wire and cable industry)
39 Other manufacturing industries (excl. jewellery and precious metal industries)

40-44 Construction industries (excl. 4214 - excavation and grading))

457 Public passenger transit systems industries
4589 Other transportation industries
459 Other service industries incidental to transportation

48 Communication and other utility industries (excl. 482 - telecommunications carriers, and 484 - postal and courier service industries)

531 Apparel, wholesale
54 Household goods, wholesale
55 Motor vehicle, parts & accessories

57 Machinery, equipment & supplies, wholesale (excl. 5741 - electrical wiring supplies and electrical construction material, wholesale)
594 Toys, amusement and sporting goods, wholesale
595 Photographic equipment and musical instruments and supplies, wholesale
598 General merchandise, wholesale
599 Other products, wholesale (excl. 5993 - forest products wholesale)

61 Shoe, apparel, fabric & yarn industries, retail (excl. 615 - fabric and yarn stores)
62 Household furniture, appliances and furnishings industries, retail (excl. 623 - household furnishings stores)
63 Automotive vehicles, parts & accessories industries, sales and service (excl. 633 - gasoline service stations)
65 Other retail store industries (excl. 6531 - hardware stores, and 656 - jewellery stores and watch and jewellery repair stores)
692 Direct sellers

70-76 Finance and insurance industries
77 Business service industries

81-84 Government service industries
85 Educational service industries
86 Health and social service industries

91 Accommodation service industries
96-99 Other service industries (excl. 9654 - boat rentals and marinas, 992 - automobile and truck rental and leasing services, and 9991 - parking lots and parking garages)

IV

Recommended Structure Of The Model

This chapter presents our recommended structure for the marketplace screening and intervention model. Four aspects are considered:

- Definition of the criteria to be used to screen sectors dependent on trade measurement.
- Assignment of importance weights for each criterion, for use in calculating overall sector scores.
- Description of the proposed generic levels of intervention, and the structure of these levels of intervention.
- Description of key guidelines used to assess existing level of metrological control within sectors.

A. Criteria for establishing level of intervention

The set of criteria presented in the following sections are the outcome from an iterative development and testing process. Our initial set of screening criteria were developed in consultation with Measurement Canada officials and then tested with a cross-section of sector stakeholders. This testing was conducted in focus groups and personal and telephone interviews with representation of several regulated and unregulated trade sectors across Canada. The criteria were then modified to reflect findings from this testing.

Each of the screening criteria has three parts:

1. Definition of the criterion.
2. Description of the methodology to be used to arrive at a sector rating, using a five-point rating scale.
3. Importance weights to be assigned to the criterion, to reflect the fact that some criteria are judged to be more important than others when sector scores are calculated. These importance weights would be applied uniformly across all sectors.

Break points on the rating scales used with the criteria have been selected with the intent to obtain a broad distribution of ratings across the various levels on the scale and thus, to obtain a reasonable basis for differentiating between the various sectors. (In other words, to minimize the likelihood that most sectors will be concentrated at one point on the scale.) As part of the periodic review of the

model and its components, the distribution of data on the rating scales should be reviewed to determine if the break points need to be adjusted.

Some sectors may also have special characteristics that need to be considered as part of the process of determining an appropriate level of trade intervention. For example, some sectors are concentrated in particular regions of the country, and thus play a much greater role in that region's economy compared to their national significance. Other possible examples of special characteristics are discussed in Section 7, below.

1. Reliance on trade measurement as the basis for commercial transactions

a) Definition

Extent to which commercial transactions in a trade sector are dependent on reliable measurements and measurement devices.

b) Rating methodology

Sector rating would be based on the percentage of sector sales on purchases, in dollars, that are made on the basis of measurement.

A rating out of five is then assigned to the sector according to the following scale:

1. -- 20% or less of sector sales or purchases.
2. -- 21 - 40%
3. -- 41 - 60%
4. -- 61 - 80%
5. -- 81 - 100%

Statistics Canada data providing breakdowns of sales (usually presented as the value and/or volume of shipments, by type of commodity) and purchases is available for many sectors, but not all. In cases where data is not available it will be necessary to either determine if there are other sources (e.g., where an industry association compiles data for a sector) or make a subjective estimate. These subjective estimates can be checked, or tested, with people working in the industry or responsible for monitoring its performance (e.g., officials in Industry Canada's sector groups).

2. Economic significance of the sector in the Canadian economy

a) Definition

The relative size of the sector within the Canadian economy, based on the value of sales revenues.

When defining the sector it will be important to ensure that only one production and sales cycle is included – that is, the purchase of material and service inputs, their conversion into a new, or

different, product, and sale to a buyer – in order to avoid double counting. This concept underlies the definition and structure of the SIC system used by Statistics Canada.

b) Rating methodology

Sector ratings would be based on sales turnover or the value of shipments (which is a close approximation of sales for many sectors, particularly in manufacturing).

Sector ratings would be assigned according to the following scale:

1. -- \$1 billion or less in annual sales
2. -- \$1 - 5 billion
3. -- \$5 - 10 billion
4. -- \$10 - 15 billion
5. -- More than \$15 billion.

3. Potential economic risk to the vulnerable party in trade transactions in the sector

a) Definition

This criteria focuses on the potential economic risks associated with transactions within a given sector to the vulnerable parties. The intent is to obtain an indication of the significance of these transactions to the vulnerable party involved in the transaction.

b) Rating methodology

The proposed method for measuring potential economic risk is to measure the relative significance of the value of the measured product to the at-risk business entities or households.

In cases where the buyer is the vulnerable party the relative significance of the value of purchases in a given sector relative to buyers' total expenditures would be estimated. In cases where the seller is the vulnerable party, the relative significance of the value of their product sales to total revenues would be estimated.

Our proposed rating scale for this criterion is:

1. -- 10% or less of the vulnerable parties' transactions are in the sector (e.g., less than 10% of the total expenditures by buyers are accounted for by transactions in this sector).
2. -- 11 - 20%
3. -- 21 - 30%
4. -- 31 - 40%
5. -- Greater than 40%.

4. Dependency of the vulnerable party on the counter-party to ensure accurate measurement

a) Definition

This criterion addresses the balance of power between vendors and customers, in terms of their respective abilities to verify the accuracy of the measurement devices used to calculate product values. This ability depends on such factors as:

- Whether the product or service in question can actually be re-measured.
- The vulnerable party's knowledge and sophistication regarding trade measurement.
- Whether they have access to alternative sources to verify the measurement in question (e.g., do they have access to accurate scales of their own, or an independent third party, to weigh a product and the knowledge to interpret the resulting measurement information).
- Their relative bargaining or negotiating power in the purchase process.

In some sectors, both vendors and customers have relatively equal levels of measurement knowledge and technical expertise (typically in industry sectors characterized by small numbers of large buyers and sellers). In other sectors, however, there is more likely to be a mismatch between the parties to measurement transactions with the vulnerable party being dependent on the counter-party to ensure the accuracy of trade measurements. Additionally, marked variations in dependency can occur between different customer segments in some segments, e.g., electricity supply.

b) Rating methodology

As implied above, dependency is multidimensional in nature and, as such, cannot be readily measured using published statistical data. We recommend applying a series of screening questions measuring different determinants of dependency and assigning the overall sector rating based on the answer patterns.

The recommended screening questions are:

- 4.1 Are the vulnerable parties dependent on three or less counter-parties, within a typical geographic region?
- 4.2 Do the vulnerable parties face high switching costs if they change their business to another supplier, relative to the typical value of transactions? For example, would a switch require additional capital or operating costs; mean a significant disruption to their operations; a need to retrain people; a need to change production operations or materials handling systems; and so on.

[If the vulnerable party is not able to switch (i.e., where there is only one counter-party) this question would automatically be given 5 points.]

- 4.3 Do the vulnerable parties have only limited knowledge and capabilities to verify the accuracy of the products/services that are exchanged, either using their own resources or a third-party source of assistance (other than Measurement Canada)?
- 4.4 Is there evidence that measurement accuracy is a significant concern to vulnerable parties in this sector?

Each question can be answered using the following answer categories and points:

Answer categories	Points per question
Yes, with an impact across <u>all</u> customer (or supplier) segments	5
Yes, but concentrated in <u>some</u> major customer (or supplier) segments only, or geographic regions	3
No, or only in a limited number of instances	1

The total number of points from all four questions would be divided by four to arrive at a rating score (ranging from 1 to 5).

5. Compliance rates

a) Definition

This criterion is concerned with the overall accuracy of measurement devices in use in a sector or the accuracy of commodity measurements in a sector.

b) Rating methodology

This criterion can be readily applied in those sectors where Measurement Canada directly intervenes and has a large pool of data on which to base the compliance calculations. Assessments would be based on Measurement Canada's definitions of compliance requirements or, in sectors where Measurement Canada has not developed suitable requirements, against international or industry standards.

In sectors where Measurement Canada relies on accredited third-party organizations to ensure measurement accuracy or where there is currently no intervention it may be necessary to undertake periodic inspections of a sample of devices that are in use, or to arrange to obtain the appropriate data from the accredited organizations.

Sector ratings would be assigned according to the following scale:

1. — 90% or better compliance rate of measurement devices or commodities over the previous two years.
2. — From 80% up to 90%
3. — From 70% up to 80%
4. — From 60% up to 70%
5. — Less than 60% or the compliance rate is unknown or there are no applicable compliance requirements.

6. Measurement consistency and device conformance with established standards

a) Definition

This criterion focuses on the extent to which devices in use conform to recognized standards for device design and performance. The standards in question may be those developed by Measurement Canada or by other recognized authorities in Canada or internationally.

b) Rating methodology

Ratings for sectors currently subject to regulation by Measurement Canada can be based on the data and knowledge possessed by Measurement Canada. In sectors that are not currently subject to regulation it will be necessary to make more subjective ratings based on a combination of knowledge possessed by Measurement Canada staff and contacts with sector representatives and suppliers of measurement devices.

Sector ratings would be assigned according to the following scale:

1. -- Overwhelming majority -- 75% or more -- of devices in use conform with Canadian metrology standards.
2. -- Overwhelming majority -- 75% or more -- of devices in use conform with metrology-related standards from other jurisdictions (e.g., International, U.S., Europe, provincial, municipal).
3. -- Overwhelming majority -- 75% or more -- of devices in use conform with standards developed and maintained by industry groups. (For example, American Water Works Association (AWWA) for water meters.)
4. -- Combination of industry-agreed standards and approved devices in use by some companies, and company-specific measurement approaches and methods that may not be consistent across the sector.
5. -- No formally recognized metrology-related standards for the overwhelming majority -- 75% or more -- of devices in use (i.e., reliant on company-specific measurement approaches and methods).

7. Other considerations

Special characteristics and features of individual sectors may need to be taken into account in the sector screening process and selection of proposed levels of intervention. These other considerations would be summarized in the final section of the worksheet for each sector (as shown in Exhibit IV-1) but would not be included in the determination of sector scores.

Examples of the types of special characteristics and issues that may need to be highlighted include:

- ***Customer confidence in the accuracy of measurement.*** The perceived confidence of customers in the accuracy and reliability of trade measurement devices used in a sector, versus actual accuracy, cannot be ignored. In many instances, perception becomes reality among customers, and their views as to the reliability of measurement may be shaped by factors that have less to do with device accuracy and more to do with their confidence in the selling organization.

This means that consideration also needs to be given to judgments as to the level of customer confidence, drawing on assessments of such information as trends in complaints received and/or the level of publicity given to measurement accuracy or importance in a particular sector.

- ***Regional variations in the economic significance of sectors.*** The economic significance of sectors may be high at a regional level but relatively low at the national level. Measurement Canada wishes to take a uniform, national approach to determining needs for intervention in trade measurement. However, in terms of making decisions about resource allocations at the regional level, it may also be necessary to take into account regional variations when intervention and resource allocation decisions are being considered.
- ***Regional variations in the consistency of measurement regulation.*** Third party regulation of measurement devices and trade measurement may vary significantly between provinces, depending on differences in approach or philosophy between provincial governments or self-regulating industry groups.
- ***Distinct variations between customer segments on various screening criteria.*** For example, differences in device conformance rates between large industrial customers and small residential customers in various utility sectors, or differences in customer dependency levels between wholesale and residential buyers of electricity.
- ***Identification of any third party organizations that currently regulate the accuracy of trade measurement in the sector or promote the use of consistent measurement practices throughout the sector.*** These groups may be provincial or municipal agencies, which may give rise to provincial or municipal differences in intervention and marketplace equity, or industry bodies recognized by the businesses operating in a particular sector.

B. Relative importance of the screening criteria

The criteria presented in Section A are not all equally important in the determination of an overall score for each sector. Based on our discussions with Measurement Canada managers, and consultations with selected sector stakeholders, we have assigned the importance weights shown in Exhibit IV-1 to the screening criteria.

Exhibit IV-1

Importance weightings for screening criteria

1.	Reliance on trade measurement as the basis for commercial transactions	20
2.	Economic significance of the sector in the Canadian economy	20
3.	Potential economic risk to the vulnerable party in trade transactions in the sector	20
4.	Dependency of the vulnerable party on the counter-party to ensure accurate measurement	20
5.	Compliance rates	10
6.	Measurement consistency and device conformance with established standards	<u>10</u>
		<u>100</u>

For each sector assessed, we will multiply the rating scores on each criterion by their respective importance weights and then sum them to produce an overall score (out of a maximum of 500). The end result from the sector screening process would then be a rank ordering of the sectors, based on their total weighted scores.

C. Data Collection

Data for the screening analysis will need to be collected from several sources:

- C Data series compiled by Statistics Canada and other government agencies.
- C Measurement Canada's own internal systems (e.g., data on compliance rates).
- C Possibly, data collected and published by industry groups.
- C Special purpose surveys commissioned by Measurement Canada (e.g., surveys of traceability or measurement accuracy in sectors where Measurement Canada does not currently intervene).

A pro forma worksheet for use in summarizing the information used to arrive at the sector ratings and weighted scores for each sector is presented in Exhibit IV-2.

Exhibit IV-3 provides an example of the output that may be obtained from the application of the screening criteria, focusing on a small number of sectors drawn from those that rely on trade

measurement. Appendix A presents the worksheets (from Exhibit IV-2) used to arrive at the various ratings.

Exhibit IV-2

Pro forma worksheet for sector assessments

Sector: Standard Industrial Classification Code: Corresponding Measurement Canada Code:
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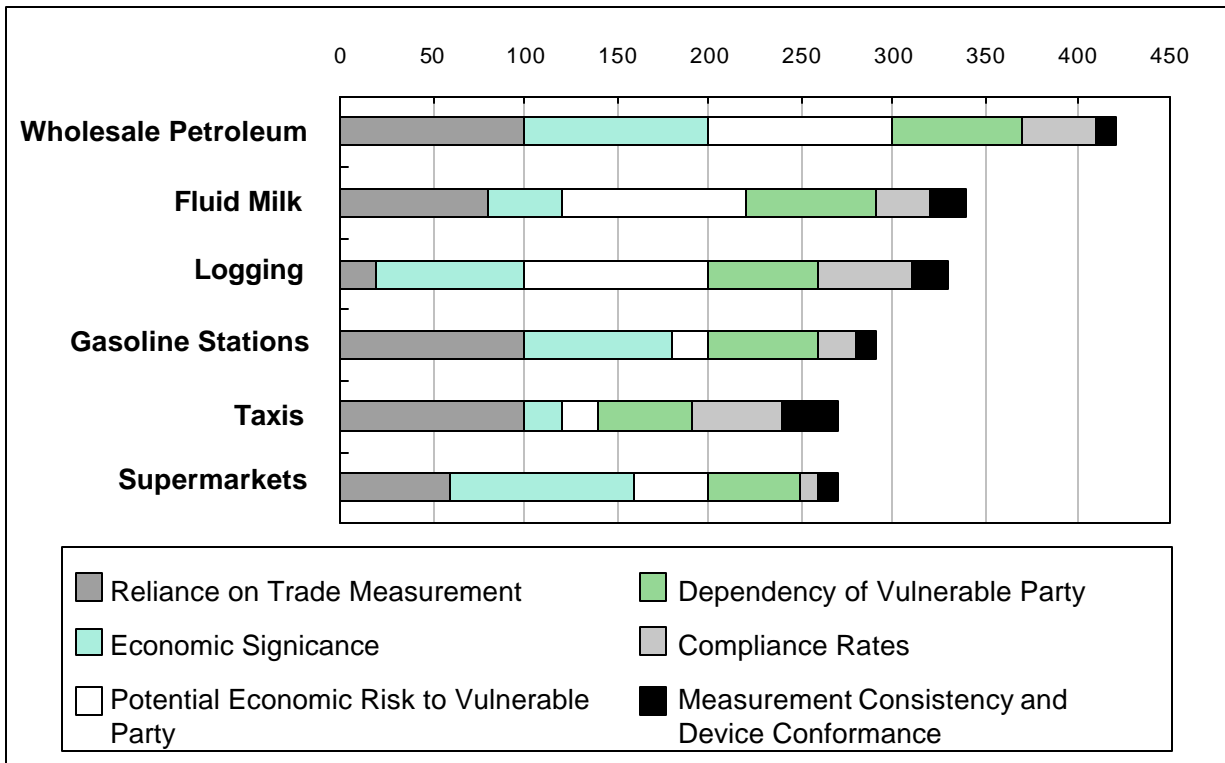
Vulnerable party/ies:

	Rating (Max: 5)	Weight	Score
1. Reliance on trade measurement as the basis for commercial transactions <i>Basis for measurement:</i> <i>Data analysis:</i> <i>Data source(s):</i>		20	
2. Economic significance of the sector in the Canadian economy <i>Basis for measurement:</i> <i>Data analysis:</i> <i>Data source(s):</i>		20	
1. Potential economic risk to the vulnerable party in trade transactions in the sector <i>Basis for measurement:</i> <i>Data analysis:</i> <i>Data source(s):</i>		20	
4. Dependency of the vulnerable party on the counter-party to ensure accurate measurement <i>Basis for measurement:</i> <i>Data analysis:</i> <i>Data source(s):</i>		20	
5. Compliance rates <i>Basis for measurement:</i> <i>Data analysis:</i> <i>Data source(s):</i>		10	
6. Measurement consistency and device conformance with established standards <i>Basis for measurement:</i> <i>Data analysis:</i> <i>Data source(s):</i>		10	
TOTAL SCORE		100	

Other Considerations:

Exhibit IV-3
Example – application of the sector screening criteria

Sector	Screening Criteria						Total Weighted Ratings Scores
	Reliance on Trade Measurement (20)	Economic Significance of Sector (20)	Potential Economic Risk to Vulnerable Party (20)	Dependency of Vulnerable Party (20)	Compliance Rates (10)	Measurement Consistency and Device Conformance (10)	
Logging Industry (SIC: 041)	1 20	4 80	5 100	3 60	5 50	2 20	330
Fluid Milk Industry (SIC: 1041)	4 80	2 40	5 100	3.5 70	3 30	2 20	340
Taxi Services (SIC: 4581)	5 100	1 20	1 20	2.5 50	5 50	3 30	270
Wholesale Petroleum (SIC: 5111)	5 100	5 100	5 100	3.5 70	4 40	1 10	420
Food Stores (groceries) (SIC: 6011)	3 60	5 100	2 40	2.5 50	1 10	1 10	270
Gasoline Stations (SIC: 633)	5 100	4 80	1 20	3 60	2 20	1 10	290



D. Generic levels of intervention

A third element in the sector screening process is the determination of the most appropriate level and type of intervention by Measurement Canada.

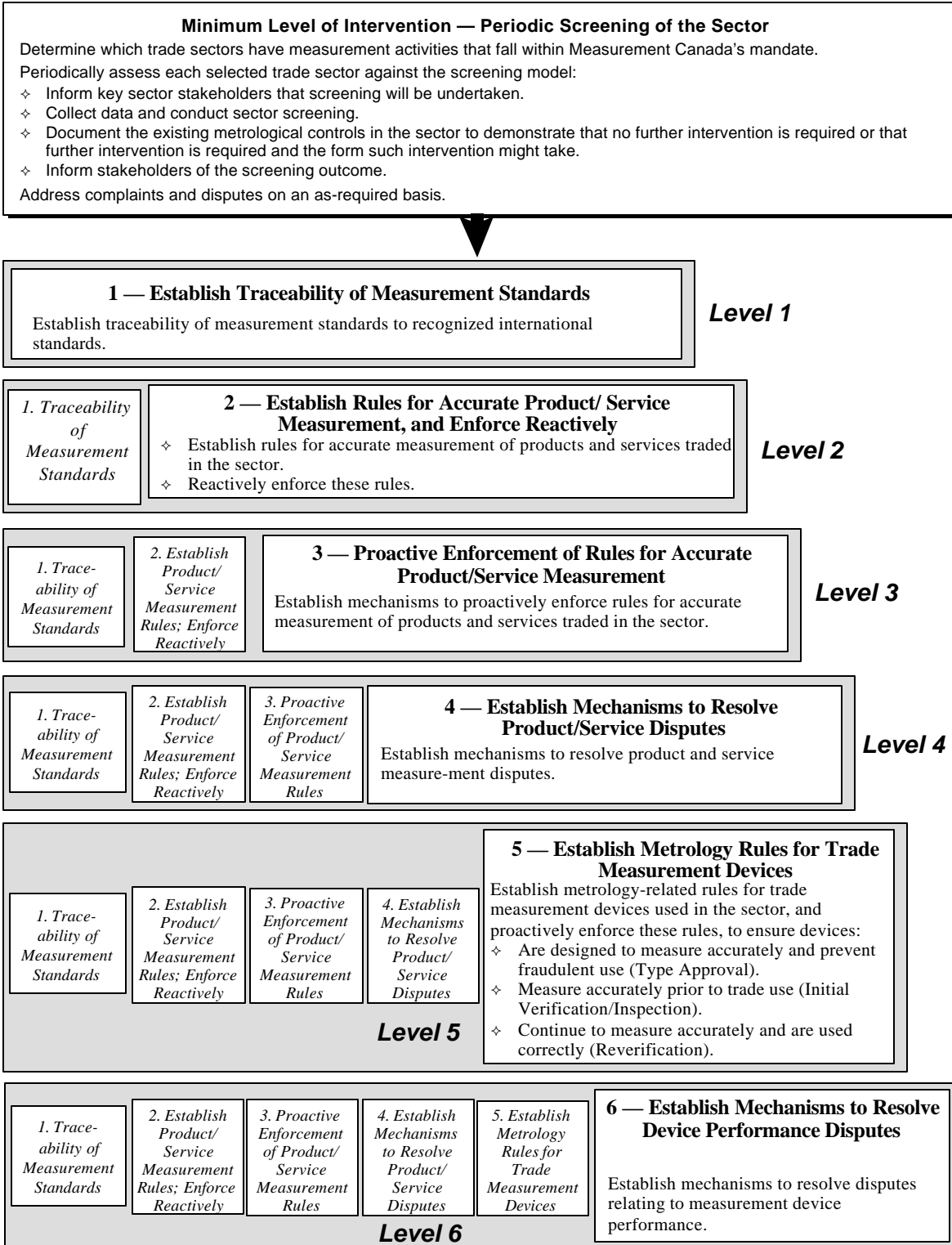
Exhibit IV-4 summarizes the recommended approach to “packaging” the varying types of intervention that Measurement Canada may undertake. These levels are presented in order of the amount of direct intervention that may be needed to ensure fair trade measurement.

A key characteristic of the approach is the cumulative nature of the intervention levels, whereby more fundamental requirements for accurate and reliable trade measurement are addressed first. For instance, if trade measurement is important in a sector – that is, it has a high score on the sector screening process – then, as a minimum, it is necessary that the measurement standards in use should be traceable to a recognized Canadian or international standard. Thereafter, depending on the characteristics of trade measurement use in that sector and the expressed needs of sector stakeholders, it may be necessary to ensure that either some or all of the following types of intervention are applied:

- Rules for fair product/service measurement are in place.
- These rules are enforced, either reactively or proactively.
- Rules for device performance are in place.
- These rules are enforced, either reactively or proactively.
- Redress mechanisms are established and enforced.

Exhibit IV-4

Potential levels of intervention

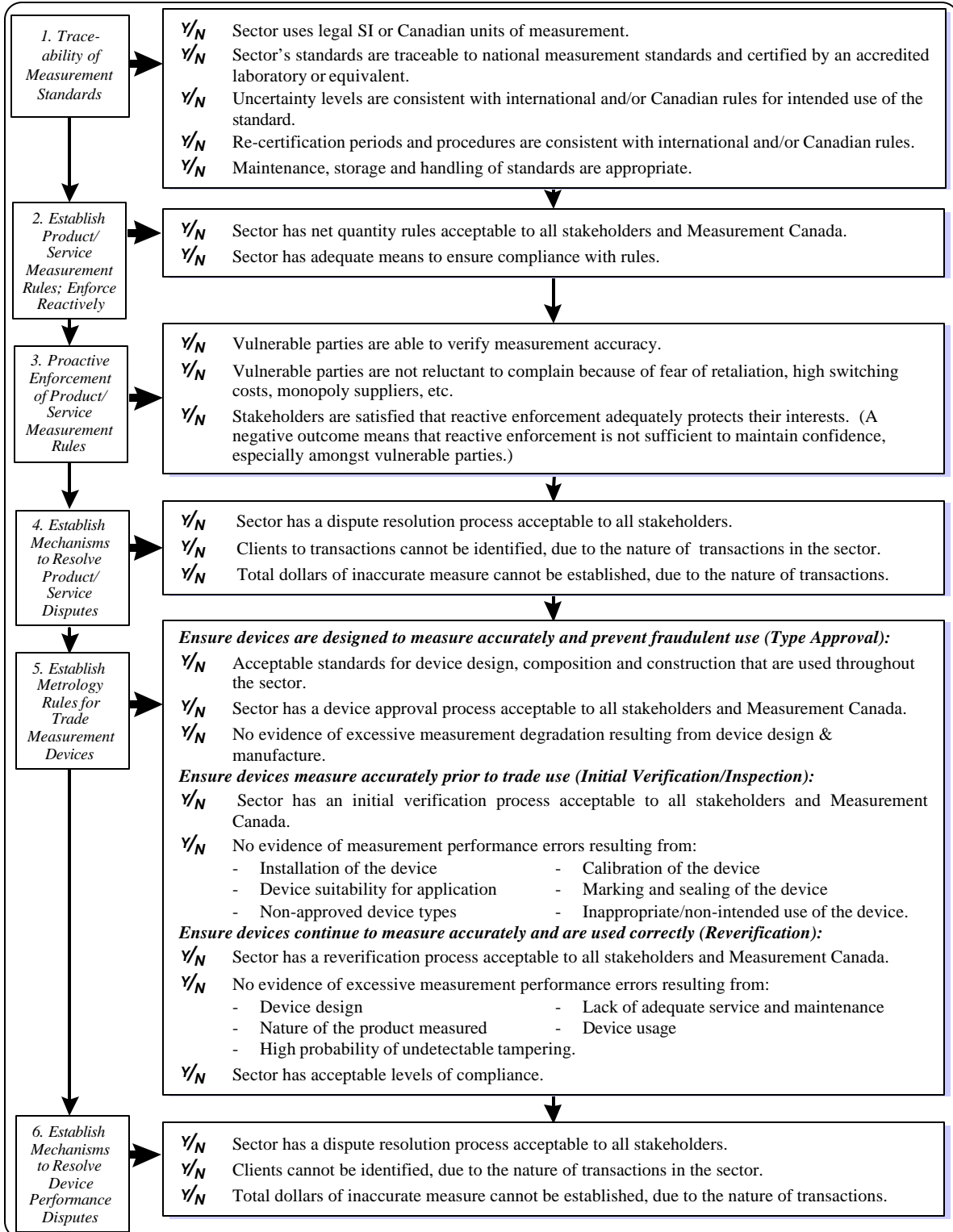


E. Guidelines to assess metrological control within sectors

The appropriate level of intervention within any sector depends on the outcome of the sector screening, rating and ranking process, the existing degree of metrological control within the sectors, the characteristics of trade in the sector, and the stakeholders perceived needs for measurement equity and third party monitoring and/or intervention.

Exhibit IV-5 summarizes the key criteria that Measurement Canada proposes to use for determining the existing degree of metrological control and formulating proposals for the appropriate level, or form, of intervention in the sector. The key guidelines presented in Exhibit IV-5 have been presented in the form of a series of “*yes/no*” check lists to facilitate this process. As part of this process, information on the characteristics of current trade intervention activities within sectors will need to be collected to enable current controls to be compared to these guidelines.

Exhibit IV-5 Criteria to assess current levels of intervention



F. Stakeholder consultation to determine what level of intervention is acceptable

The suggested levels of intervention identified in the previous step should be viewed as a starting point for consultations with sector stakeholders, not as a structured prescription for Measurement Canada action. Feedback on the preliminary version of the model from a sample of sector stakeholders consulted during the summer of 1997 showed consistent support for the use of the marketplace screening and intervention model as an aid for resource planning but not as a substitute for consultation with stakeholders.

The question of *who* would undertake the intervention activities (e.g., Measurement Canada, industry groups, accredited measurement compliance organizations, other levels of government, etc.) would be resolved in sector-specific negotiations between Measurement Canada and industry and customer groups. The output from the intervention model – that is, the combination of the sector rankings and analysis of intervention characteristics – will provide the initial focus for such negotiations.

Finally, once negotiations are complete, the applicable statutes and/or regulations may need revision to support the level of intervention judged to be appropriate.

Appendix

***Worksheets Demonstrating the Application of the
Screening Criteria***

Sector: Logging Industry

Standard Industrial Classification Code: 041 (In future, NAICS Canada code: 113311 - Logging (except Contract))

Corresponding Measurement Canada Code: 0702

Vulnerable party/ies: Independent logging contractors supplying logs to mills

	Rating (Max: 5)	Weight	Score
1. Reliance on trade measurement as the basis for commercial transactions <i>Basis for measurement:</i> Payments to independent logging contractors, measured as a percentage of total spending on materials and supplies, fuel and electricity, & salaries and wages. <i>Data analysis:</i> In 1994 payments to independent contractors by industry establishments were \$1230.7 million (excluding payments by small establishments not reporting data) – 15.3% of the total spending of \$8033.2 million. Rating category: 1 – 20% or less of expenditures. <i>Data source(s):</i> Statistics Canada publication # 25-201-XPB, <i>Logging Industry, 1994</i>	1	20	20
2. Economic significance of the sector in the Canadian economy <i>Basis for measurement:</i> Value of shipments of goods of own manufacture in 1994. <i>Data analysis:</i> 1994 value: \$10,144.8 million. Rating category: 4 – \$10,001-15,000 million. <i>Data source(s):</i> Statistics Canada publication # 25-201-XPB, <i>Logging Industry, 1994</i>	4	20	80
3. Potential economic risk to the vulnerable party in trade transactions in the sector <i>Basis for measurement:</i> Subjective estimate of the proportion of logging contractors' incomes that is dependent on payments for logs. <i>Data analysis:</i> Rating category: 5 – Greater than 40% (subjective estimate) <i>Data source(s):</i> No data available.	5	20	100
4. Dependency of the vulnerable party on the counter-party to ensure accurate measurement <i>Basis for measurement:</i> Subjective application of screening questions. <i>Data analysis:</i> Vulnerable parties dependent on 3 or less counter-parties within the same geographic region? – “Yes” across all geographic regions – 5. Vulnerable parties face high switching costs? – “Yes” in some instances (depending on proximity) – 3. Vulnerable parties have limited capability to verify accuracy of measurements? – “No” – 1. Evidence that measurement accuracy is a concern to vulnerable parties? – “Yes”, (concentrated in B.C., but may also be a concern in other provinces) – 3. Rating: $(5+3+1+3)/4 = 3$ <i>Data source(s):</i> Subjective assessment based on interview with Central Interior Logging Association (B.C.)	3	20	60
5. Compliance rates among devices in use <i>Basis for measurement:</i> Measurement Canada data on compliance rates for 1995-1996. <i>Data analysis:</i> Compliance rate – devices in use: 57.9%. Rating: 5 – <60%. <i>Data source(s):</i> STARS, <i>Establishment Type Compliance Report</i> , for inspection types 3,4,5,6 & 9)	5	10	50
6. Measurement consistency and device conformance with established standards <i>Basis for measurement:</i> Subjective rating, based on judgements by Measurement Canada of the extent to which consistent measurement methods are used within sectors and devices in use conform with recognized Canadian, international or industry-agreed metrology standards. <i>Data analysis:</i> Ratings by 4 Measurement Canada staff – 1, 1, 1 and 1. Average rating: 1.75, rounded to 2. <i>Data source(s):</i> Subjective ratings made by Measurement Canada.	2	10	20
TOTAL SCORE	20		330

Other Considerations:

Sector: Fluid Milk Industry

Standard Industrial Classification Code: 1041 (In future, NAICS Canada code: 311511 - Fluid Milk Manufacturing)

Corresponding Measurement Canada Code: 0114

Vulnerable party/ies: Dairy farmers supplying milk to processing plants

	Rating (Max: 5)	Weight	Score
1. Reliance on trade measurement as the basis for commercial transactions <i>Basis for measurement:</i> Purchases of “milk and cream, not concentrated nor containing added sugar or other sweetening matter” (goods classification code: 04.01), measured as a percentage of total spending on materials and supplies, fuel and electricity, & salaries and wages. <i>Data analysis:</i> In 1994, purchases of milk and cream were \$1,864.7 million – 65.3% of the total spending of \$2,855.0 million. Rating category: 4 – 61-80% or less of expenditures. <i>Data source(s):</i> Statistics Canada pub. # 32-250-XPB, <i>Food Industries, 1994</i> .	4	20	80
2. Economic significance of the sector in the Canadian economy <i>Basis for measurement:</i> Value of shipments of goods of own manufacture in 1994. <i>Data analysis:</i> 1994 value: \$3,395.2 million. Rating category: 2 – \$10,01-5,000 million. <i>Data source(s):</i> Statistics Canada pub. # 32-250-XPB, <i>Food Industries, 1994</i>	2	20	40
3. Potential economic risk to the vulnerable party in trade transactions in the sector <i>Basis for measurement:</i> Proportion of dairy farmers’ incomes accounted for by the sale of milk and cream. <i>Data analysis:</i> Average revenue per farm from sales of dairy products (including subsidies) was \$139,142 in 1994, which represented 78.2% of the average farm’s revenues from farm operations, of \$177,594. Rating: 5 – Greater than 40%. <i>Data source(s):</i> Agriculture and Agri-Food Canada, <i>An Economic Overview of Farm Incomes, by Farm Type, Canada, 1994</i> .	5	20	100
4. Dependency of the vulnerable party on the counter-party to ensure accurate measurement <i>Basis for measurement:</i> Subjective application of screening questions. <i>Data analysis:</i> Vulnerable parties dependent on 3 or less counter-parties within the same geographic region? – “Yes, across all regions” – 5. Vulnerable parties face high switching costs? – “Yes, but probably varies by region/location” – 3. Vulnerable parties have limited capability to verify accuracy of measurements? – No evidence available, assume “Yes, in some regions” – 3. Evidence that measurement accuracy is a concern to vulnerable parties? – No evidence available, assume “Yes, in some regions” – 3 Rating: $(5+3+3)/4 = 3.5$ <i>Data source(s):</i> Subjective assessment.	3.5	20	70
5. Compliance rates among devices in use <i>Basis for measurement:</i> Measurement Canada data on compliance rates for 1995-1996. <i>Data analysis:</i> Compliance rate – devices in use: 77.1%. Rating: 3 – From 70% up to 80%. <i>Data source(s):</i> STARS, <i>Establishment Type Compliance Report</i> , for inspection types 3,4,5,6 & 9)	3	10	30
6. Measurement consistency and device conformance with established standards <i>Basis for measurement:</i> Subjective rating, based on judgements by Measurement Canada of the extent to which consistent measurement methods are used within sectors and devices in use conform with recognized Canadian, international or industry-agreed metrology standards. <i>Data analysis:</i> Ratings by 4 Measurement Canada staff – 1, 1,1-2,3. Average rating: 1.625, rounded to 2. <i>Data source(s):</i> Subjective ratings made by Measurement Canada.	2	10	20
TOTAL SCORE	19.5		340

Other Considerations:

Sector: Taxicab industry			
<i>Standard Industrial Classification Code:</i> 4581 (In future, NAICS Canada code: 485310 Taxi Service)			
<i>Corresponding Measurement Canada Code:</i> (None assigned)			
Vulnerable party/ies: Passengers			
	Rating (Max: 5)	Weight	Score
1. Reliance on trade measurement as the basis for commercial transactions <i>Basis for measurement:</i> Percentage of sales by operators that are dependent on measurement (i.e., metered). <i>Data analysis:</i> Operators charges are typically based on a combination of time-based and fixed price charges. Some regions have fixed price (zone-based) fares. No published data available on the composition of revenues – our subjective estimate is that over 80% of revenues would be time-based. Rating: 5 – 81 - 100%. <i>Data source(s):</i> (None available)	5	20	100
2. Economic significance of the sector in the Canadian economy <i>Basis for measurement:</i> Estimated total operating revenues. <i>Data analysis:</i> 1990 Household Expenditure Survey found that average spending on taxis in those households that used taxis during the survey period was \$130; 36.2% of households used taxis. Estimated number of households in 1990 was 9.624 million, giving total annual revenues of \$436 million. (Note: revenue figure excludes business payments for taxis but also overstates the proportion of households using taxis given that the survey data was from households in metropolitan areas). Rating category: 1 – \$1,000 million or less. <i>Data source(s):</i> Statistics Canada pub. # 62-554, <i>Family Expenditures in Canada, 1990</i>	1	20	20
3. Potential economic risk to the vulnerable party in trade transactions in the sector <i>Basis for measurement:</i> Proportion of total current household expenditures accounted for by payments for taxi services. <i>Data analysis:</i> Average annual current expenditure for all households was \$33,095, in 1990. Average annual spending on taxis by the 36.2% of households using taxis was \$130. Assuming these households also had average annual current expenditures of \$33,095 the proportion of spending that was at risk was 0.4%. Rating: 1 – 10% or less of total expenditures. <i>Data source(s):</i> Statistics Canada publication # 62-555, <i>Family Expenditure in Canada, 1990</i> .	1	20	20
4. Dependency of the vulnerable party on the counter-party to ensure accurate measurement <i>Basis for measurement:</i> Subjective application of screening questions. <i>Data analysis:</i> Vulnerable parties dependent on 3 or less counter-parties within the same geographic region? – “No” – 1. Vulnerable parties face high switching costs? – “No” – 1. Vulnerable parties have limited capability to verify accuracy of measurements? – “Yes, across all regions” – 5. Evidence that measurement accuracy is a concern to vulnerable parties? – “Yes, in some regions and/or customer segments” – 3. Rating: $(1+1+5+3)/4 = 2.5$ <i>Data source(s):</i> Subjective assessment.	2.5	20	50
5. Compliance rates among devices in use <i>Basis for measurement:</i> No data available, default rating applied. <i>Data analysis:</i> Default rating: 5 – Less than 60% or no applicable compliance requirements developed by Measurement Canada. <i>Data source(s):</i> No data on compliance rates available.	5	10	50
6. Measurement consistency and device conformance with established standards <i>Basis for measurement:</i> Subjective rating, based on judgements by Measurement Canada of the extent to which consistent measurement methods are used within sectors and devices in use conform with recognized Canadian, international or industry-agreed metrology standards. <i>Data analysis:</i> Ratings by 4 Measurement Canada staff – 3, 2, 3 and 3. Average rating: 2.75, rounded to 3. <i>Data source(s):</i> Subjective ratings made by Measurement Canada.	3	10	30
TOTAL SCORE	17.5		270

Other Considerations:

Sector: Petroleum products, wholesale

Standard Industrial Classification Code: 5111 (In future, NAICS Canada code: 412110 - Petroleum Product Wholesaler-Distributors; 454310 - Fuel Dealers)

Corresponding Measurement Canada Code: 0208

Vulnerable party/ies: Gasoline service station operators

	Rating (Max: 5)	Weight	Score
<p>1. Reliance on trade measurement as the basis for commercial transactions <i>Basis for measurement:</i> Sales of goods purchased for resale on own account, measured as a percentage of total operating revenue. <i>Data analysis:</i> In 1993, sales of goods purchased for resale on own account were \$31,802 million – 99.2% of the total operating revenues of \$32,048 million. Rating category: 5 – 81-100% or less of sector sales. <i>Data source(s):</i> Statistics Canada pub. # 63-236, <i>Wholesaling and Retailing in Canada, 1993.</i></p>	5	20	100
<p>2. Economic significance of the sector in the Canadian economy <i>Basis for measurement:</i> Value of operating revenues in 1993. <i>Data analysis:</i> 1993 value: \$32,048 million. Rating category: 5 – > \$15,000 million. <i>Data source(s):</i> Statistics Canada pub. # 63-236, <i>Wholesaling and Retailing in Canada, 1993</i></p>	5	20	100
<p>3. Potential economic risk to the vulnerable party in trade transactions in the sector <i>Basis for measurement:</i> Proportion of retail gasoline station operators’ total expenditures accounted for by gasoline purchases. <i>Data analysis:</i> Estimated average sales of petroleum products to retailer gasoline stations was \$10,397 million in 1993. Operating expenses (COGS, employee earnings and other operating expenses (excluding depreciation)) for gasoline service stations totalled \$13,614 million in 1993, giving a proportion of 76.4%. Rating: 5 - Greater than 40%. <i>Data source(s):</i> Statistics Canada pub. # 63-236, <i>Wholesaling and Retailing in Canada, 1993.</i></p>	5	20	100
<p>4. Dependency of the vulnerable party on the counter-party to ensure accurate measurement <i>Basis for measurement:</i> Subjective application of screening questions. <i>Data analysis:</i> Vulnerable parties dependent on 3 or less counter-parties within the same geographic region? – Assume “Yes” – 5. Vulnerable parties face high switching costs? – “No” – 1. Vulnerable parties have limited capability to verify accuracy of measurements? – No evidence available, assume “Yes, in some regions” – 3. Evidence that measurement accuracy is a concern to vulnerable parties? – “Yes” – 5. Rating: $(5+1+3+5)/4 = 3.5$ <i>Data source(s):</i> Subjective assessment.</p>	3.5	20	70
<p>5. Compliance rates among devices in use <i>Basis for measurement:</i> Measurement Canada data on compliance rates for 1995-1996. <i>Data analysis:</i> Compliance rate – devices in use: 67.5%. Rating: 4 – From 60% up to 70%. <i>Data source(s):</i> STARS, <i>Establishment Type Compliance Report</i>, for inspection types 3,4,5,6 & 9)</p>	4	10	40
<p>6. Measurement consistency and device conformance with established standards <i>Basis for measurement:</i> Subjective rating, based on judgements by Measurement Canada of the extent to which consistent measurement methods are used within sectors and devices in use conform with recognized Canadian, international or industry-agreed metrology standards. <i>Data analysis:</i> Ratings by 4 Measurement Canada staff – 2-3, 1,1,1. Average rating: 1.375, rounded to 1. <i>Data source(s):</i> Subjective ratings made by Measurement Canada.</p>	1	10	10
TOTAL SCORE	23.5		420

Other Considerations:

Sector: Food (groceries) stores
<i>Standard Industrial Classification Code:</i> 6011 (In future, NAICS Canada code: 445110 - Supermarkets and other Grocery (except Convenience) Stores)
<i>Corresponding Measurement Canada Code:</i> 0101
Vulnerable party/ies: Grocery products consumers

	Rating (Max: 5)	Weight	Score
1. Reliance on trade measurement as the basis for commercial transactions <i>Basis for measurement:</i> Average spending on food products typically packaged and sold by weight at the point of purchase – meat (excluding canned), fish and marine products (excluding canned), cheese, fresh fruit, and fresh vegetables, as a percentage of total spending. <i>Data analysis:</i> Average food expenditure per family in Canada was \$75.94/week in 1992 (food purchased from stores; local and day trip), of which \$60.91 (80.2%) was spent in supermarkets. \$33.82 (44.5%) of the \$75.94 was spent on the above food products. Rating: 3 – 41 - 60%. <i>Data source(s):</i> Statistics Canada pub. # 62-554, <i>Family Food Expenditure in Canada, 1992.</i>	3	20	60
2. Economic significance of the sector in the Canadian economy <i>Basis for measurement:</i> Total operating revenues – supermarkets and grocery stores. <i>Data analysis:</i> 1993 value: \$47,773 million. Rating category: 5 – More than \$15,000 mil. <i>Data source(s):</i> Statistics Canada publication # 63-236, <i>Wholesaling and Retailing in Canada</i>	5	20	100
3. Potential economic risk to the vulnerable party in trade transactions in the sector <i>Basis for measurement:</i> Proportion of total current household expenditures accounted for by food products. <i>Data analysis:</i> Average annual household spending on food products was \$4,165 in 1990 out of total current expenditures of \$33,095, (i.e., 12.6%). Rating: 2 – 11 - 20% of total expenditures. <i>Data source(s):</i> Statistics Canada publication # 62-555, <i>Family Expenditure in Canada, 1990.</i>	2	20	40
4. Dependency of the vulnerable party on the counter-party to ensure accurate measurement <i>Basis for measurement:</i> Subjective application of screening questions. <i>Data analysis:</i> Vulnerable parties dependent on 3 or less counter-parties within the same geographic region? – “No” – 1. Vulnerable parties face high switching costs? – “No” – 1. Vulnerable parties have limited capability to verify accuracy of measurements? – “Yes, across all regions” – 5. Evidence that measurement accuracy is a concern to vulnerable parties? – “Yes, in some regions and/or customer segments” – 3. Rating: (1+1+5+3)/4 = 2.5 <i>Data source(s):</i> Subjective assessment.	2.5	20	50
5. Compliance rates among devices in use <i>Basis for measurement:</i> Measurement Canada data on compliance rates for 1995-1996. <i>Data analysis:</i> Compliance rate – devices in use: 86.3%. Rating: 1 – 90% or better. <i>Data source(s):</i> Source: STARS, Establishment Type Compliance Report, for inspection types 3,4,5,6 & 9)	1	10	10
6. Measurement consistency and device conformance with established standards <i>Basis for measurement:</i> Subjective rating, based on judgements by Measurement Canada of the extent to which consistent measurement methods are used within sectors and devices in use conform with recognized Canadian, international or industry-agreed metrology standards. <i>Data analysis:</i> Ratings by 4 Measurement Canada staff – 1, 1, 1 and 1. Average rating: 1. <i>Data source(s):</i> Subjective ratings made by Measurement Canada.	1	10	10
TOTAL SCORE	13.5		250

Other Considerations:

Sector: Gasoline service stations

Standard Industrial Classification Code: 633 (In future, NAICS Canada codes: 447110 - Gasoline Stations with Convenience Stores; 447190 - Other Gasoline Stations; or 811199 - All Other Automotive Repair and Maintenance)
Corresponding Measurement Canada Code: 0201

Vulnerable party/ies: Retail buyers of gasoline

	Rating (Max: 5)	Weight	Score
1. Reliance on trade measurement as the basis for commercial transactions <i>Basis for measurement:</i> Subjective estimate, given that sales breakdowns are not available, preventing calculation of the significance of measurement-dependent product sales – gasoline and some food products by stations with attached convenience stores. <i>Data analysis:</i> Rating: 5 – 81 - 100% of sales measurement dependent (estimated). <i>Data source(s):</i> No data breakdowns available.	5	20	100
2. Economic significance of the sector in the Canadian economy <i>Basis for measurement:</i> Total operating revenues, 1993 <i>Data analysis:</i> 1993 value: \$14,451 million. Rating category: 4 – \$10,001-15,000 million. <i>Data source(s):</i> Statistics Canada publication # 63-236, <i>Wholesaling and Retailing in Canada</i>	4	20	80
3. Potential economic risk to the vulnerable party in trade transactions in the sector <i>Basis for measurement:</i> Proportion of total current household expenditures accounted for by gasoline purchases. <i>Data analysis:</i> Average household spending on gasoline in 1990, for households reporting expenditures on this product, was \$1432 – 4.3% of the average total current expenditure for all households. Rating category: 1 – 10% or less of total expenditures. <i>Data source(s):</i> Statistics Canada publication # 62-555, <i>Family Expenditure in Canada</i>	1	20	20
4. Dependency of the vulnerable party on the counter-party to ensure accurate measurement <i>Basis for measurement:</i> Subjective application of screening questions. <i>Data analysis:</i> Vulnerable parties dependent on 3 or less counter-parties within the same geographic region? – “No” – 1. Vulnerable parties face high switching costs? – “No” – 1. Vulnerable parties have limited capability to verify accuracy of measurements – “Yes, across all regions” – 5. Evidence that measurement accuracy is a concern to vulnerable parties? – “Yes, across all regions” – 5. Rating: $(1+1+5+5)/4 = 3$ <i>Data source(s):</i> Subjective assessment.	3	20	60
5. Compliance rates among devices in use <i>Basis for measurement:</i> Measurement Canada data on compliance rates for 1995-1996. <i>Data analysis:</i> Compliance rate – devices in use: 81.1%. Rating: 2 – From 80% up to 90%. <i>Data source(s):</i> STARS, <i>Establishment Type Compliance Report</i> , for inspection types 3,4,5,6 & 9)	2	10	20
6. Measurement consistency and device conformance with established standards <i>Basis for measurement:</i> Subjective rating, based on judgements by Measurement Canada of the extent to which consistent measurement methods are used within sectors and devices in use conform with recognized Canadian, international or industry-agreed metrology standards. <i>Data analysis:</i> Ratings by 4 Measurement Canada staff – 1, 1, 1 and 1. Average rating: 1. <i>Data source(s):</i> Subjective ratings made by Measurement Canada.	1	10	10
TOTAL SCORE	16		290

Other Considerations: