

Submitted by Email

February 10, 2023

British Columbia Securities Commission
Alberta Securities Commission
Financial and Consumer Affairs Authority of Saskatchewan
Manitoba Securities Commission
Ontario Securities Commission
Autorité des marchés financiers
Financial and Consumer Services Commission, New Brunswick
Superintendent of Securities, Department of Justice and Public Safety, Prince Edward Island
Nova Scotia Securities Commission
Office of the Superintendent of Securities, Service NL
Northwest Territories Office of the Superintendent of Securities
Office of the Yukon Superintendent of Securities
Nunavut Securities Office

Ontario Securities Commission
20 Queen Street West
19th Floor, Box 55
Toronto, Ontario M5H 3S8

Via Email: comments@osc.gov.on.ca

Dear Sirs / Mesdames:

Re: CSA Notice and Request for Comment – CSA Consultation Paper 21-403 *Access to Real-Time Market Data* (“Consultation Paper”)

The Investment Industry Association of Canada (IIAC) appreciates the opportunity to comment on the above-noted Consultation Paper.

The IIAC is the national association representing investment firms that provide products and services to Canadian retail and institutional investors. The IIAC represents financial services firms, and registration categories, of every size and type, operating in Canadian and global capital markets. The IIAC represents members that manufacture and distribute a variety of securities including mutual funds and other managed equity and fixed income funds and provide a diverse array of portfolio management, advisory

and non-advisory services. IIAC members trade in debt and equity on all marketplaces, provide carrying broker services and underwrite issuers in public and private markets.

Enclosed, please find our response to the Consultation Paper.

Should the CSA have any questions regarding this submission, please feel free to contact us.

Sincerely,

"Laura Paglia"

Laura Paglia
President and Chief Executive Officer
Investment Industry Association of Canada

"Liz Ng"

Liz Ng
Director, Legal
Investment Industry Association of Canada

Response to CSA Consultation
Paper 21-403 *Access to Real-
Time Market Data*

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I. Introduction

The Investment Industry Association of Canada (IIAC) is the national association representing investment firms that provide security-based products and services to Canadian retail and institutional investors. The IIAC's member firms, and the clients they service, comprise most consumers of market data in Canada.

Timely, accurate, affordable, and accessible sources of market data, for all market data participants, is critical to both consumers and regulators. In efforts to ensure that retail and institutional investors are not inadvertently disadvantaged by a narrow view, the IIAC has taken a holistic view of market data, including but not limited to real-time market data ("RTMD"), in response to CSA Consultation Paper 21-403 *Access to Real-Time Market Data* (the "Consultation Paper").

This response is a balanced assembly of content and comments from subject matter experts.¹ It carefully considers challenges surrounding market data and their origins. These include issues such as:

- exchange migration from member-owned to public for-profit;
- competitive constraints to market data origination costs, such as index listing requirements and regulatory protections;
- unshared benefits from innovation, modernization and economies of scale; and,
- incomplete or inefficient delivery systems.

This response also proposes solutions to the current Canadian market data ecosystem from the perspective of different market consumers such as

- an independent regulated source of consolidated data;
- cost-based pricing, with downward fee adjustment and greater fee transparency; and,
- modernized procedures which include the uncoupling of index listings with exchange reporting requirements.

The IIAC appreciates this opportunity to improve the critical contribution that market data makes to the issuer, intermediary and investor participants of capital markets. More equitable and affordable offerings can be available to all market participants by addressing matters such as exchange source practices and fees and the wider process costs of distributing, accessing, managing, and administering market data. This response details the what and the how.

II. Summary of Findings and Recommendations

A. Summary of Findings

i. Market data costs have not benefitted from competitive pressures or technology price and performance improvements

Market data costs bear little relationship to the cost to provide market data services. As an example, the Consultation Paper states market data revenue "has grown at a CAGR of 3.2 percent over the 13-year

¹ The IIAC acknowledges and thanks the following subject matter experts for their contributions to this response: Jerry Beniuk, Alan Hutton, Dave Lauer, and R. "Tee" Williams. Please see Appendix 6 for their bios.

period”² from 2006 to 2019, or more than 50 percent. These cost increases show no signs of easing, as the TMX recently indicated that they are “aiming for two-thirds of annual revenue to be recurring, such as ... data subscriptions ... up from roughly 50 percent today” and that “[t]he company plans to expand its market data business faster than it has in the past.”³

ii. Consistent increases in exchange revenues are not commensurate with advances in technology.

The consideration of market data as the intellectual property of exchanges and the requirement of index members to be listed on a specific exchange limit the breadth and depth of competition.

As Copenhagen Economics found, “the cost of transmitting 1 Mbps is today around 1/20th of the cost in 2008.”⁴ The growth in market data costs is the result of increasing fragmentation combined with dominant pricing power by exchanges, while professional market consumers seek to meet regulatory obligations of best execution and Order Protection Rule (OPR).

iii. Canada is not unique in its challenges with market data

Canada is not unique in trying to address inefficiencies and inequalities that have developed over many decades. The issues raised in the Consultation Paper, especially in Sections 6.2 and 6.3 regarding costs, complexity and data availability, have parallels to other markets globally⁵.

B. Key Recommendations

Our key recommendations are as follows:

i. An independent, regulated information processor and consolidator of market data

The lack of an independent, regulated information processor and consolidator who operates within a cost recovery model is one of the fundamental drivers of cost and complexity in Canada. There is no viable, regulated alternative to contracting directly with each stock exchange. This ensures that Canadian market data costs remain elevated relative to global levels. An independent, regulated consolidation solution is therefore recommended.⁶ The focus of this response is primarily on a future technical information processor (“TIP”) that is providing a consolidated market data feed. Many of the same considerations should apply to both proprietary feeds and connectivity charges.

This forms part of a revised market data infrastructure where each functional role (i.e. the TIP, the administrative agent, and the financial agent) has an oversight committee to approve specific actions and add input from the constituencies the committee members represent. These committee members should have specific experience in their respective specialties. The infrastructure is subject to an oversight

² CSA Consultation Paper 21-403 Access to Real-Time Market Data, (November 10, 2022) at 22, online <<https://www.osc.ca/en/securities-law/instruments-rules-policies/21-403/csa-consultation-paper-21-403-access-real-time-market-data>> (“Consultation Paper” thereafter).

³ Berkow, Jameson, “TMX Group sets ambitious goals for expansion, data revenue”, *Globe and Mail*, February 8, 2023, available at: <https://www.theglobeandmail.com/business/article-tsx-tmx-global-expansion-data-revenue/>.

⁴ Pricing of Market Data, Copenhagen Economics (November 28, 2018), available at <https://copenhageneconomics.com/wp-content/uploads/2021/12/pricing-of-market-data.pdf> (“Copenhagen Economics Report” thereafter).

⁵ Funds Europe, “Market data costs must be addressed, associations warn”, January 17, 2023, available at: <https://www.funds-europe.com/news/market-data-costs-must-be-addressed-associations-warn>.

⁶ The U.S. Congress, in drafting the Securities Acts Amendments of 1975, declared that a consolidated market data system would “form the heart of the national market system”⁶.

committee which includes senior representatives from market data consumers and regulators, with market data providers comprising the minority.⁷

ii. Cost Methodology Comprised of Actual Costs and Only Reasonable, Defensible Margins

Fees should be adjusted downward. A transition towards unbundling market data costs and reevaluating fees based on actual costs to provide services would dramatically reduce the cost of RTMD in Canada.

This should be applied equally, whether or not the market data consumer is a Canadian resident and with an enhanced process for regulatory review and approval.

Appendix 3 contains further details regarding recommended changes in fee construction.

iii. Fee Transparency

Higher levels of uniform disclosure would be extremely beneficial to both regulators and market data consumers.

iv. Operational Procedures That Reduce Market Data Total Cost of Usage.

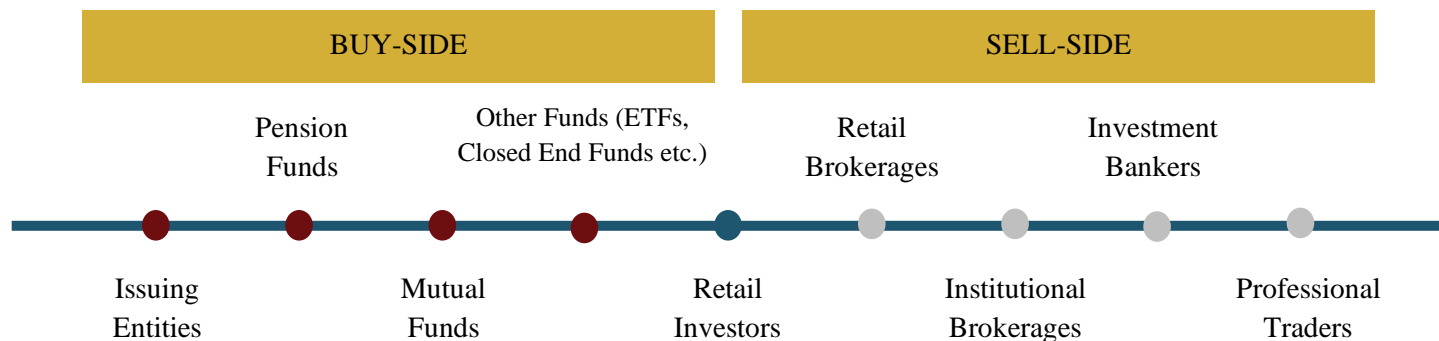
Several market data administrative requirements are based on dated notions of how market data must be processed and used. They add costs and lack transparency. Appendix 3 details activities in the market data process that contribute to market data costs with proposed resolutions. This includes recommendations for amendments to the process to ensure inclusion of any firm listed in Canada, regardless of which exchange the firms is listed on, in an index.

An implementation plan is recommended in Appendix 4.

III. Market Considerations

a. The Market Data Consumers Considered

The illustration below sets out the consumers of market data considered in this response:



IV. Market Data Considered

This response broadly defines “market data” as all data created by or collected by a regulated financial entity within Canada with the purpose of distribution or redistribution to consumers of market data, whether the data is licensed, distributed or redistributed directly to consumers or through vendors, for a fee or free.

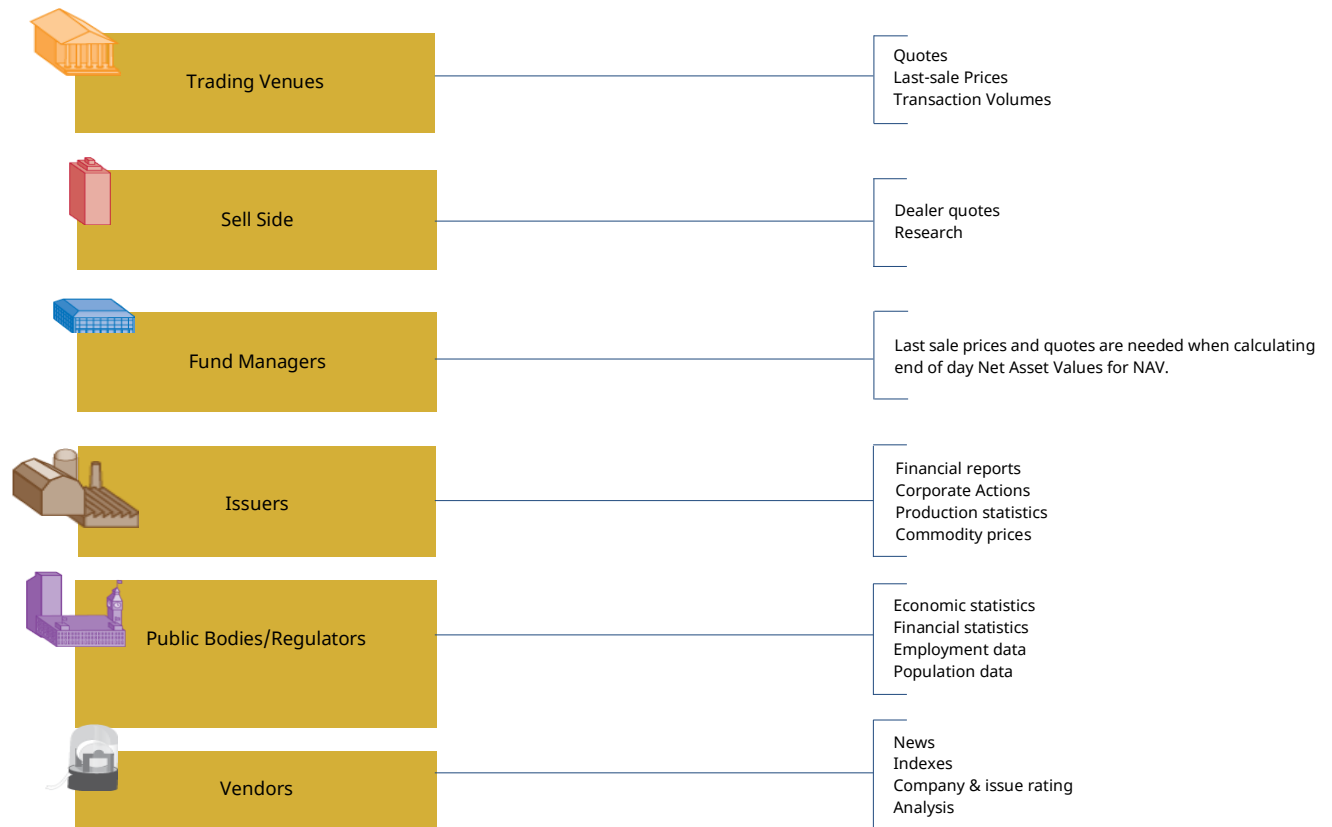
⁷ This avoids governance issues in other jurisdictions, e.g., U.S. SIP Committee.

This includes but is not limited to quote and last-sale data, bid and ask prices, volume of trades and last trade of trading session.

The categories of data included in this response are: ⁸

- Low latency data
- Consolidated RTMD (normal latency data)
- Static data
- Derivations of RTMD
- Official Prices⁹
- Indexes
- Supporting data from the markets
- Capital changes and other periodically updated information
- Electronic and print news services

The illustration below sets out the variety of market data uses in Canada and the source for each type.



⁸ See Appendix 1 for more detailed description.

⁹ It is acknowledged that NI 81-106 *Investment Fund Disclosure*, section 14 provides a calculation for Net Asset Value. Fund managers are provided with sufficient latitude to price differently when warranted.

V. Unmet Needs of Market Data Consumers

Market data consumers share similar needs. They require:

- Access to comprehensive, high-quality market data¹⁰ with acceptable latency.
- Reasonable costs subject to market forces.
- Cost-effective and efficient systems to process, track and manage data.

These needs are currently not being met due to:

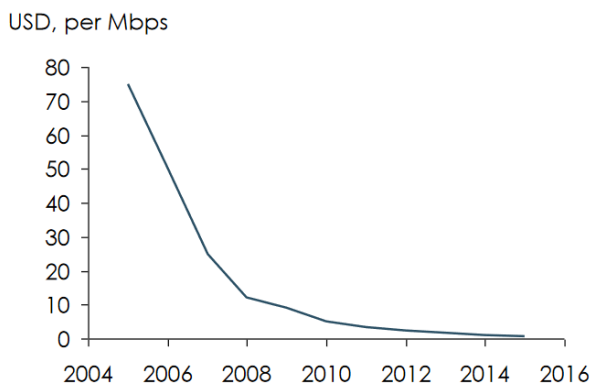
- High and continuously increasing costs to consume data.
- High market data revenue subsidizing lower trading costs, making it more difficult for smaller players to compete with the larger exchanges.
- Imposed contractual terms as between exchanges and consumers.
- Complicated legal arrangements, market data policies and fee schedules.
- Audit procedures.

i. Reasonable costs subject to market forces

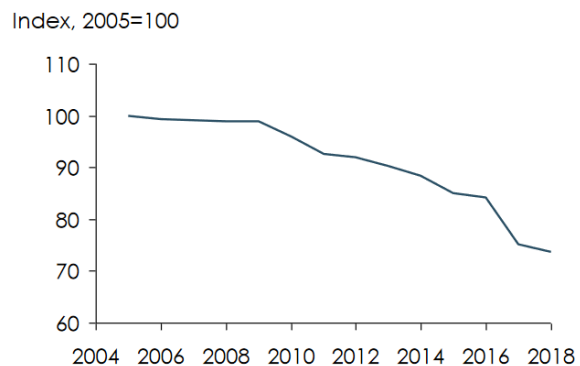
The current market for market data is non-competitive, which has reduced innovation and modernization. Canadian market data costs have continued to increase despite the economies of scale and the improvements in technology. Instead of seeing market data cost curves that look like competitive data transmission industries as depicted below¹¹:

Costs of data transfer have declined

Internet transit price in US



Price index for mobile services in US



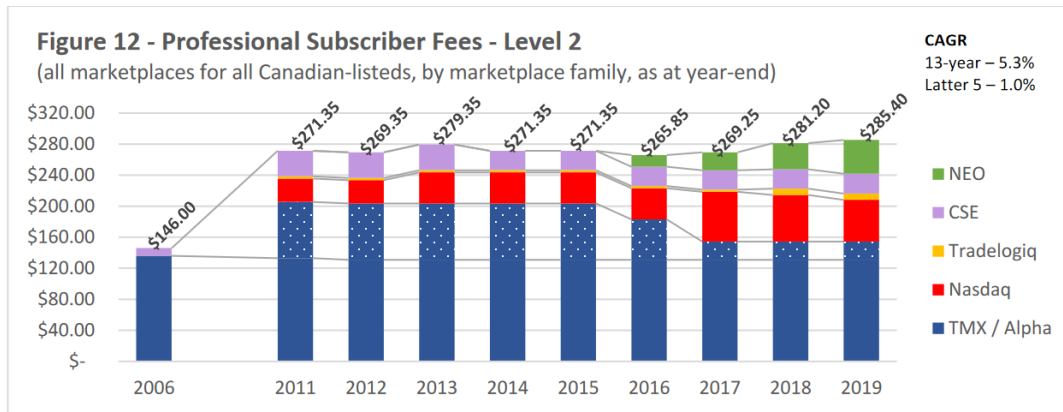
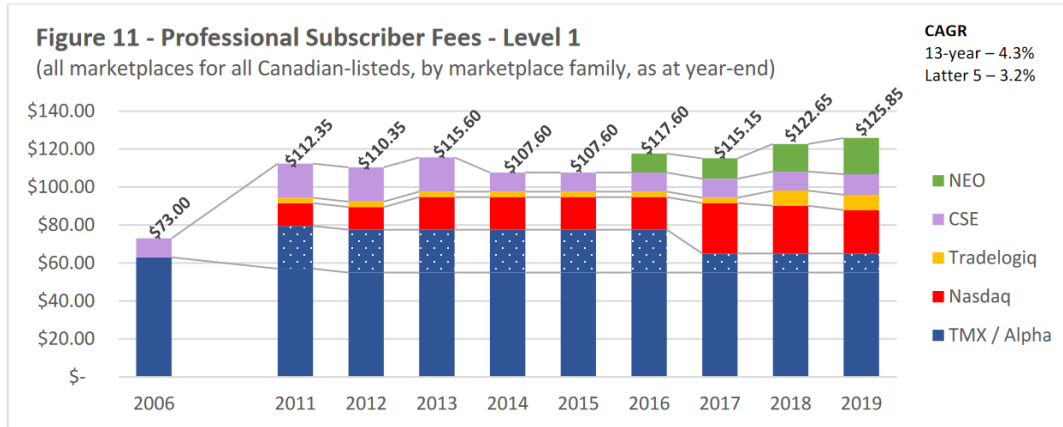
Note: Internet transit price is based on minimal internet package available.

Source: DrPeering.net and U.S. Bureau of Labor Statistics

¹⁰ We have not been made aware of concern regarding the accuracy of data reported.

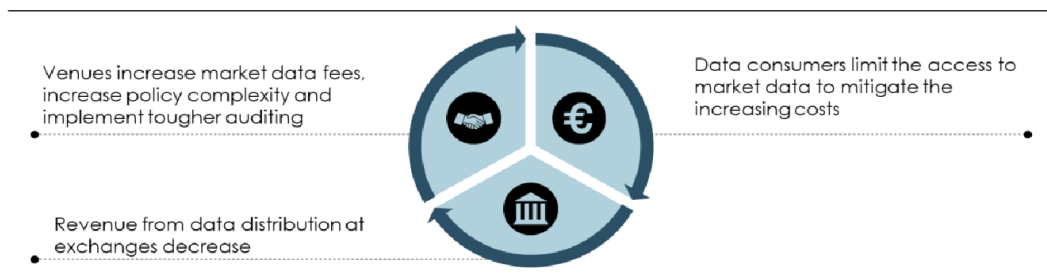
¹¹ Copenhagen Economics Report, *supra* note 4 at 19.

Market data cost curves that have been continuously increased in the aggregate¹²:



Costs are bundled, burdened by inefficient processes, complex policies and audits.¹³ Copenhagen Economics has termed this the “vicious circle of increasing market data fees”.¹⁴

Vicious circle of increasing market data fees



¹² Consultation Paper, *supra* note 2 at 25.

¹³ While challenges with audits remain, we note the efforts made such as TMX Datalinx Xpress. Waters Technology stated: “While the early feedback is positive, will others follow suit?” (Bowie, Max, “Due North: Inside TMX Group’s Bold Data Audit Overhaul”, *Waters Technology*, November 21, 2019 available at: <https://www.waterstechnology.com/operations/4676661/due-north-inside-tmx-groups-bold-data-audit-overhaul>) The response has been no.

¹⁴ Copenhagen Economics Report, *supra* note 4 at 29.

Investors Exchange (IEX) launched a national securities exchange in the U.S. in September 2016. They published¹⁵ a detailed accounting of their costs to provide market data and compared those costs with what U.S. exchanges charge for the same market data and connectivity services. IEX found that:

- U.S. exchanges were marking up their market data fees from between 331% and 4,891% as compared to IEX’s calculated costs to provide equivalent market data feeds;¹⁶
- U.S. exchanges were marking up their physical connectivity fees from between 2,136% and 4,277% as compared to IEX’s calculated costs to provide equivalent connectivity;¹⁷ and
- U.S. exchanges were marking up their logical connectivity fees from between 201% and 1,814% as compared to IEX’s calculated costs to provide equivalent connectivity.¹⁸

IEX has stated that these markups “give strong support to industry complaints that the power of exchanges to set prices for these products and services is unfair, unreasonable, and not subject to competitive forces. In addition, the fact that exchanges are granted a quasi-monopoly in providing these services further justifies additional scrutiny to the prices charged for them.”¹⁹

Exchanges have a control position over the data they provide. They also maintain discretion over the fees they charge without the appropriate mandated transparency or disclosure. They are for-profit companies, that nonetheless benefit from a regulatorily protected position within markets. The exchanges’ fee discretion²⁰ has significant economic and market quality impacts, “if the equilibrium price of market data is high, which directly lowers traders’ incentives to acquire price information, the amount of fundamental information produced decreases as well, thereby further harming price informativeness relative to an economy without differential access. This, in turn, increases both the cost of capital and return volatility, and it typically lowers liquidity.”^{21,22}

ii. Acceptable Latency

With respect to latency, consumers require that the information they receive be “fast enough”. The definition of what is “fast enough” is different amongst consumer groups. Our markets have long relied on an antiquated standard that defines RTMD as anything more recent than 15 minutes. This standard should be revised to reflect the different latency requirements of various consumers. Speed should further be addressed by improving processes that add cost but no value to the consumer group.

¹⁵ The Cost Of Exchange Services: Disclosing the Cost Of Offering Market Data and Connectivity as a National Securities Exchange (2019), available at <https://iextrading.com/docs/The%20Cost%20of%20Exchange%20Services.pdf>.

¹⁶ *Ibid.* at 19.

¹⁷ *Ibid.* at 25.

¹⁸ *Ibid.* at 32.

¹⁹ *Ibid.* at 34.

²⁰ While the DFM has constrained the growth in some market data costs, others continue to increase with no end in sight.

²¹ Easley, D., O’Hara, M., & Yang, L. (2016). Differential Access to Price Information in Financial Markets. *Journal of Financial and Quantitative Analysis*, 51(4), 1071-1110. doi:10.1017/S0022109016000491.

²² When consumers of market data are driven away due to costs or complexity, it creates a two-tiered market. This dynamic is especially apparent in the Consultation Paper’s analysis of listing market versus market-wide Time Weighted Average Size gap at 34 – this gap widens significantly as order size increases, especially for equities. Investors who do not see a complete picture of the market miss out on a significant amount of liquidity and operate under a mistaken belief as to the size of an order the market can reasonably absorb.

iii. Cost Effective and Efficient Systems.

Currently, best execution and OPR requirements contribute to the need to connect to and pay for market data from multiple venues. Yet, market data is not interchangeable across venues. Execution quality disclosure requires enhancements to allow evaluation of venues that are not connected.

VI. Global Issues

In Canada, as in Europe, the U.K., the U.S., and many countries in the Asia-Pacific region²³, there are growing concerns about the costs for market data. Each jurisdiction is at a different stage in terms of proposals and implementations. Through ESMA, the E.U. has issued substantive guidance to reform market data costs and auditing,²⁴ though the U.K. has not moved beyond proposals.²⁵

In the U.S., the SEC also issued guidance in 2019²⁶ regarding SRO rule filings relating to fees. The SEC went on to adopt the Market Data Infrastructure Rule in 2020.²⁷ The Nasdaq and the New York Stock Exchange (NYSE) have also initiated litigation against the SEC which was ultimately decided in the SEC's favour.²⁸

The ESMA Guidance focused on "Provision of market data on the basis of cost"²⁹ and includes recommendations for:

- "clear and documented cost accounting methodologies for setting the price of market data"
- "both direct market data offerings (i.e. market data fees) as well as indirect services necessary for accessing market data offerings, such as connectivity fees or necessary soft- or hardware required to use and access the market data."
- [consideration of] "whether a margin is included and how that margin has been determined".

²³ European Fund and Asset Management Association (EFAMA); International Council of Securities Associations (ICSA); Managed Funds Association (MFA); Global Memo Market Data Costs "Background and Global Principles for Market Data Costs;" (June 2020), *available at*:

<https://www.efama.org/sites/default/files/publications/20%2006%20Joint%20associations%20Global%20Memo%20on%20Market%20Data%20Costs.pdf>;

Securities Industry and Financial Markets Association (SIFMA); File No. 4-729: SIFMA Comment Letter on Market Data (January 13, 2020), *available at*: <https://www.sec.gov/comments/4-729/4729-6678493-203560.pdf>;

Managed Funds Association (MFA); Petition for Rulemaking Regarding Market Data Fees and Request for Guidance on Market Data Licensing Practices; Investor Access to Market Data (August 22, 2018), *available at*: <https://www.sec.gov/rules/petitions/2018/petn4-728.pdf>;

Research Office, Legislative Counsel Secretariat of Hong King, "Information Note: Comparison of Market Data Fees in Selected Stock Exchanges" (January 13, 2021), *available at*: <https://www.legco.gov.hk/research-publications/english/2021in01-comparison-of-market-data-fees-in-selected-stock-exchanges-20210113-e.pdf>.

²⁴ Final Report: Guidelines on the MiFID/MiFIR obligations on market data (June 1, 2021), *available at* https://www.esma.europa.eu/sites/default/files/library/esma70-156-4305_final_report_mifid_ii_mifir_obligations_on_market_data.pdf ("ESMA Guidance" thereafter).

²⁵ Stafford, Philip, "UK financial watchdog to review cost of market data", *Financial Times*, January 11, 2022, *available at*: <https://www.ft.com/content/8489f630-a22f-40ad-b3e3-0400abd48e93>.

²⁶ Staff Guidance on SRO Rule Filings Relating to Fees (May 21, 2019), *available at* <https://www.sec.gov/tm/staff-guidance-sro-rule-filings-fees>.

²⁷ Securities Exchange Act Release No. 90610 (Dec. 9, 2020), 86 FR 18596 (Apr. 9, 2021), *available at* <https://www.sec.gov/rules/final/2020/34-90610.pdf> ("MDI Adopting Release" thereafter).

²⁸ *See*: Nasdaq Stock Mkt. LLC v. SEC, 2022 BL 178200, D.C. Cir., No. 21-01100 consolidated with Nos. 21-01101 and 21-01102, 5/24/22 ("US Exchange Lawsuit" thereafter).

²⁹ ESMA Guidance, *supra* note 24 at 51.

In addition, ESMA agreed that market data providers could use their own cost accounting methodology, but that it was important to “standardis[e] the terms used in order to enable market data consumers to better understand and compare the costs disclosed by market data providers.”³⁰

Despite the aforementioned, resolution of global market data concerns has not been achieved due to three major flaws in methodology:

1. The issues are not framed in sufficient breadth to solve problems affecting all consumers of market data. Often, a subset of consumers, usually professional traders, are the most vocal proponent for change, which, in turn, narrows the focus of the review.³¹
2. Market data improvements and market fairness reforms are considered together, rather than separately. Markets have not historically treated retail investors and institutional traders equally. This is due in part to consumer needs. For example, strategies such as arbitrage that require low latency data are only profitable at a large scale. Similarly, most of the strategies that work well for retail investors do not benefit from small short-term price differences. Now that most orders execute electronically, the measure of the disparity that has always existed has begun to be measurable for all investors.

It is recommended that rather than building a market data infrastructure that treats all consumers equally, a more effective approach is to have a consolidator provide a full picture of the market at acceptable latency for most and still allow exchanges to sell proprietary feeds for those that need them.

3. The focus has been “source market data fees” rather than addressing the reasons market data is expensive. While exchange fees are the primary cost of market data, the total cost of market data to the consumer must be accounted for as well.

VII. Canadian Concerns

Canada faces significant weaknesses in the commercial market data process, most of which have been faced in various forms by other jurisdictions globally. These weaknesses are identified as follows:

- No complete, regulated, consolidated feed;³²
- An antiquated 15-minute standard for delayed data;
- Complex market data policies and auditing practices;³³
- No material public oversight of market data fee levels and increases; and,
- No standard-setting body to reduce operational and data management complexity.

³⁰ *Ibid.* at 11.

³¹ In the U.S., the MDI Adopting Release was to take effect in 2022 (See “SEC Adopts Rules to Modernize Key Market Infrastructure Responsible for Collecting, Consolidating, and Disseminating Equity Market Data” (Dec. 9, 2020) *available at*: <https://www.sec.gov/news/press-release/2020-311>), but a lawsuit by Nasdaq and the NYSE blocked implementation (See US Exchange Lawsuit, *supra* note 28). In Europe, attempts to create a consolidated tape are challenging (See Eckett, Tom, “Consolidated tape in Europe years away despite EU push”, ETF Stream, January 2022, *available at*: <https://www.etfstream.com/features/consolidated-tape-in-europe-years-away-despite-eu-push/>) because the major participants have been unable to develop a consensus around any plan (See Smith, Annabel, “Battle lines are drawn over European consolidated tape plans”, The Trade, May 30, 2022, *available at*: <https://www.thetradenews.com/battle-lines-are-drawn-over-european-consolidated-tape-plans/>)

³² It is recognized that a partial consolidation of data may satisfy many market data consumers, though concerns remain regarding inadequate view of market liquidity.

³³ It is also recognized that an audit process must continue to ensure that accurate market data is produced for downstream use.

In the current system, each trading venue delivers data to the Toronto Stock Exchange (TSX), where any interested consumer can choose the feeds it wishes. This creates several problems:

- i) Because the data from each venue is logically independent (i.e. not commingled), it is difficult and error-prone to compute an official price for each Canadian-listed company daily as needed by fund managers and for fund or portfolio valuation.³⁴
- ii) There is no public, regulated source of an official national best bid and offer (“NBBO”) to better assure all traders and investors of a means to route individual orders to the venue most likely to provide the best execution price at any moment absent a direct contractual relationship with each individual exchange. Retail investors are disadvantaged by fewer tools and less visibility of liquidity across venues.
- iii) There is no appropriate mechanism to ensure adequate capacity with sufficient “headroom”.³⁵

VIII. Recommendations

i. An Independent, Regulated Source of Consolidated Data.

A *logical consolidator* where quotes and trades from all venues are commingled (*quotes, volumes and prices*) in a single feed should be created. This logical consolidator model should employ a single *technical information processor (TIP)* subject to regulatory oversight.

The logical consolidator should consolidate all meaningful data from existing RTMD feeds – this would include auction and imbalance messages, odd lots and some depth-of-book data.³⁶ The commingled feed must be licensed to ensure that consumers make informed investment, routing and execution decisions.

The consolidator of RTMD would provide good quality data at normal latency and lower ‘reasonable’ cost – this would address the needs of most consumer groups. Only consumers focused on proprietary trading or algorithmic order routing require low latency data that is not slowed by consolidation.

³⁴ See footnote 7.

³⁵ We acknowledge that TMXIP is governed by a Governance Committee comprised of each of the Canadian marketplaces, who meet on a quarterly basis and discuss, among other things, bandwidth and capacity for the information processor operations. There is no public disclosure or visibility into this oversight. Canada should adopt similar transparency standards as the U.S. NMS (SIP)_Plan, with monthly latency and capacity reports.

³⁶ The MDI Adopting Release sets out new standards for U.S. consolidators that should be the minimum standards for any consolidation in Canada, *see* MDI Adopting Release, *supra* note 27 at 23.

In the U.S, a Securities Information Processor (“SIP”) model³⁷ consolidates data, provides an NBBO, has minimal consolidation latency³⁸ and ample headroom³⁹ which addresses the needs of the vast majority of consumers.⁴⁰

Both the exclusive consolidator along with proprietary exchange feeds should be subject to the principle that “the fees of market data should be based on the costs of producing and disseminating the data and may include a reasonable margin.”⁴¹ This is also similar to how the SEC has approached this question, “[T]he fees charged by a monopolistic provider (such as the exclusive processors of market information) need to be tied to some type of cost-based standard in order to preclude excessive profits if fees are too high or underfunding or subsidization if fees are too low.”⁴²

An alternative, though to-date unsuccessful, model is competing consolidators.⁴³

Unfortunately, U.S. exchanges are responsible for infrastructure and fee-setting while also selling proprietary feeds that compete directly with the SIP. To ensure independent oversight that is responsive to both producer and consumer requirements, various functions should be split up into:

- An information processor to plan, build and maintain technology systems.
- An administrative agent to manage administrative infrastructure, entitlements, and capacity planning; and
- A financial agent to set and collect fees, and to allocate revenue back to producers.

These entities should report to an oversight committee with representatives from regulators, marketplaces, and the spectrum of consumers. Appendix 2 details these recommendations.

ii. Cost-Based Pricing

There are two primary components to a cost-based pricing model, which seek to unbundle market data costs:

- Cost Methodology

The methodology for determining the costs to provide market data and connectivity services is affected by various cost factors, such as hardware, personnel, infrastructure and operational costs, in addition to various other expenses that market data providers may face. These costs should be subject only to reasonable, defensible margins.

³⁷ That is not to say that there have not been problems in the U.S. with the cost, performance and governance of the SIP. Performance issues have been addressed over time through improved technology, while cost and governance remain industry-wide concerns in the U.S.

³⁸ The average and median consolidation latency of the CTA feed in Q4 2022 was 18 microseconds, while that of the UTP feed was 13 microseconds. See https://www.ctaplan.com/publicdocs/ctaplan/CTAPLAN_Processor_Metrics_4Q2022.pdf and https://utpplan.com/DOC/UTP_Website_Statistics_Q4-2022-December.pdf.

³⁹ Since 2018, the UTP plan has had, at worst, 6.4x the capacity needed for peak messaging volumes, and the CTA plan has had, at worst, 3.4x the capacity needed ; *Ibid*.

⁴⁰ This is not to say that the SIP has been widely adopted for some groups of consumers, such as retail traders and investors. Each major exchange family in the U.S. offers its own top of book feed available for a monthly cost of \$1 per non-professional display user, as opposed to the SIP monthly cost of \$3 per non-professional display user. This was one of the concerns that the MDI Adopting Release (*supra* note 27) set out to address.

⁴¹ ESMA Guidance, *supra* note 24 at 7.

⁴² MDI Adopting Release, *supra* note 27 at 354, footnote 1158.

⁴³ No knowledge of successful model.

- Transparency

Cost calculations, including margins, should be articulated clearly and transparently by market data providers to consumers.

Cost Methodology

The Copenhagen Economics Report recommended a Long Run Incremental Cost (LRIC+) benchmark⁴⁴, which has two compelling features:

- i) It is based on long-run average costs, which allows for investments and capital costs to be included; and,
- ii) By focusing on incremental costs, it is able to disentangle costs related to market data from costs related to other services that might be considered “joint costs.”

ESMA has taken a more ‘hands-off’ approach, allowing market data producers to formulate their own cost accounting methodology.⁴⁵

While market data fees are subject to regulatory approval in Canada, the process requires enhancement. A full review of fee levels and a redesign of market data pricing are recommended.

Fees should be adjusted downward. A transition towards reevaluating fees based on actual costs to provide services would dramatically reduce the cost of RTMD in Canada. Further, fees can distinguish amongst consumer types (e.g., non-professional vs. professional and display vs non-display) provided that “prices in general are set in a way which means that the revenue on market data for the trading venues do not exceed costs”⁴⁶ aside from a reasonable margin.

Cost methodology should be applied equally, whether or not the market data consumer is a Canadian resident. Our goal should be to attract as much participation and liquidity to Canadian markets as possible, and the uneven application of market data fees creates further confusion and acts as a disincentive to international participation in Canadian markets.⁴⁷

Appendix 3 contains further details regarding recommended changes in fee construction.

Fee Transparency

In Europe, ESMA has created a two-tiered disclosure requirement. Market data providers are required to have detailed internal cost accounting methodologies that are subject to scrutiny by the appropriate national competent authority. Besides this detailed regulatory review requirement, these providers are also required to publish a detailed explanation of their cost accounting methodology according to a template. While ESMA was swayed by the arguments of market data providers that detailed cost accounting disclosures would be “commercially sensitive,”⁴⁸ IEX provided a full public report of their costs to provide market data

⁴⁴ Copenhagen Economics Report, *supra* note 4 at 42.

⁴⁵ ESMA Guidance, *supra* note 24 at 10.

⁴⁶ Copenhagen Economics Report, *supra* note 4 at 44.

⁴⁷ For example, the TSX charges different data rates inside and outside of Canada. Level 1 data is significantly more expensive for those outside of Canada after accounting for the USDCAD exchange rate.

⁴⁸ ESMA Guidance, *supra* note 24 at 32.

and connectivity services. We are not aware of any exchange in Canada that has published a similar report as IEX's.

In Canada, a detailed cost accounting should, at the minimum, be disclosed to regulators. In addition, market data providers should be required to publish a summary of their costs based on a standardized template and a detailed explanation of their cost accounting methodology. A public disclosure requirement modeled after the detailed IEX disclosures should be considered.

This level of transparency and disclosure would be extremely beneficial to both regulators and market data consumers.

iii. Operational Procedures that Reduce Market Data Total Cost of Usage

The industry has become an incredibly complex provider of services, with many products divided between two major usage methods, generally referred to as *display* (the original displays) and *non-display* (data that is digitally processed for multi-purposes).

The *concept of licensing for use* creates a complicated process of administering market data usage. Generally, to gain access to market data under a license, the user or *licensee* agrees to track the individuals or applications that are entitled, or have access to the data⁴⁹, to report monthly on the number of individuals or applications with that access, to be charged for access, and to be willing to be audited by the content owner or vendor.

The process used to produce, enhance, and correct price and quote information, distribute market data for use and then collect revenues as payment for usage has inefficiencies that add to costs. Concerns regarding fees paid may assume that it is fees that cause market data costs to be excessive. Rather, it is a combination of unchallenged pricing as well as the market data total cost of usage ("MDTCU"), that together drive ever increasing costs to consumers of market data.

MDTCU has the following elements:

a) Fees Charged and the Pricing Process

A significant component of MDTCU comes from how fees charged for market data services are formulated.

Recommendations for enhancement to the tools used to formulate fees are set out in Appendix 3.

b) Market Data Direct Costs

Market data direct costs refer to direct costs that involve bringing data from the source to the place where it is used and making any changes required. It also includes the administrative obligations incurred in the licensing process.

c) Friction

The following items correspond to the steps from the decision to license a new service until it is terminated. Each step is burdened by unnecessary friction (described in economics as the often-hidden costs of process inefficiencies that add no value):

- Data Acquisition
- Data Preparation

⁴⁹ In most cases the user must have technology that records access, and that can be audited by the content owner or vendor.

- Data Maintenance
- Invoicing
- Payment
- Service Termination

Significant costs paid by consumers may be saved by reducing redundant process steps and simplifying activities.

Appendix 3 recommends specific changes to market data processes, designed to lower overall costs significantly including fee transparency.

IX. Conclusion

Regulators can greatly assist to improve the timeliness, accuracy, affordability, and accessibility of market data appropriate for all consumers of market data. Consolidation of sources into a single independent feed subject to regulatory oversight, a cost methodology comprised of actual costs with reasonable margins, transparency of the source-to-use cost elements, and enhancements to the market data process to eliminate inefficiencies and ensure fulsome index reporting are among the solutions proposed.

The IIAC appreciates this opportunity to comment on market data costs and respectfully submits the details above, the appendices attached, and the specific recommendations to improve the Canadian capital markets.

Appendix 1: Categories of Market Data Considered

i. Low latency data

Low latency data means the assembly of market data from all sources which is then transmitted to where it is used with the expectation that timeliness and accuracy is paramount. The process of consolidating and commingling data necessarily adds latency to message transmission and is not suitable for low latency consumers.

ii. Consolidated Real-time Market Data: RTMD or Normal latency data

Low latency data, comprised of quote and last sale messages, which is consolidated from all sources into one feed as per consumer contract. This satisfies the requirements of most market data consumers⁵⁰ outside of those who require low latency data, such as high-frequency trading firms and broker smart order routers.

iii. Static Data

Static data must have the same content as RTMD. Unless static data is sourced from the official RTMD feed, static data may be different.

For a variety of purposes, real-time information may not be needed. For example, for data analysis, historical data sets are used. For customer reporting such as monthly statements, official prices are used.

Delayed information should be readily available, and its content should be identical to RTMD. Our recommendation is to adopt a similar standard as IEX and modernize the definition of delayed data to be data available after 15 milliseconds. For the sake of clarity, this should mean that after 15 milliseconds, data would no longer be considered RTMD and should be made freely available, as explained in the IEX Fee Schedule.⁵¹

iv. Derivations Created by RTMD

Another primary reason for expanding the definition of market data is to ensure that derivations of RTMD are presented in a consistent and comparable form. If the official feed is commingled in a defined way, then the information is used directly for trading consistently, but also the measures used to evaluate market conditions are used directly and consistently. The most important forms or market measures that need consistency include the following:

Official Prices

Canada needs an agreed-upon official end-of-day price for funds and other portfolios to state their valuations, particularly for mutual funds that trade, as principals, based on a closing net asset value.

Indexes

If index calculations are based on data from a commingled, consolidated feed that is used for trading, then investors can be sure that the market measures are consistent.

⁵⁰ See SIP performance metrics in footnote 38.

⁵¹ See IEX Exchange Fee Schedule, Market Data Fees Definitions: ““Delayed” means IEX market data that is accessed, used, or distributed at least fifteen (15) milliseconds after it was made available by the Exchange.” Available at: <https://www.iexexchange.io/resources/trading/fee-schedule>.

A national best bid and offer

A consistent calculation of the NBBO needs to be computed from a single, regulated source to inform best execution.

Supporting data from the markets

Information that supports market trading is a form of market data.

Corporate actions, capital changes, and other periodically updated information

Corporate actions are any activities a company engages in that might have an impact on a company's instruments or of which investors in the markets should be informed. Capital changes are any corporate actions that directly affect the value of traded instruments. Periodically updated information includes events such as dividends and interest payments that trigger actions by investors or potential investors.

v. **Electronic and Print News Services**

Print news services are the oldest general access method for market data available to the general public and retail investors. The more recent development of general access web services like Google Finance and Yahoo! Finance, and chat services like Reddit have become immensely popular sources of market data.

Appendix 2: Recommended Market Data Infrastructure

i. Recommended Process

The process for creating a commingled feed in which data from all trading venues are combined by the TIP results in a more involved process than currently exists, where data from each trading venue is kept logically separate.

In particular, the commingled feed requires a new feed, which will be licensed and invoiced independently of the contributing venues. The resulting revenue must be allocated among the contributing venues using a transparent allocation methodology. The U.S. NMS (SIP) Plan provides an example.⁵²

The Consultation Paper suggests a new TIP+ model with additional administrative and regulatory responsibilities. Recommendations for such a model are set out below:

Roles, Operators, and Responsibilities in Proposed Infrastructure

Role	Technical Information Processor	Administrative Agent	Financial Agent	Regulatory Oversight
Oversight of Role	Technical Committee	Administrative Committee	Financial Committee	Committee of Committees
Operators	“New Independent Agent”	“New Independent Agent”	“New Independent Agent”	New SRO + ⁵³ Representatives of CSA + Trading Venues + Consumers
Responsibilities	Develop and maintain: <ul style="list-style-type: none"> • Technical infrastructure • Consolidation algorithm • Entitlements database • Capacity methodology 	Develop and maintain: <ul style="list-style-type: none"> • Administrative infrastructure • Consolidation algorithm • Administer entitlements • Administer capacity planning 	Develop and maintain: <ul style="list-style-type: none"> • Pricing and fees • Billing infrastructure • Revenue allocation methodology • Collect and allocate market data revenues 	Develop and maintain: <ul style="list-style-type: none"> • Oversight process

⁵² The U.S. NMS (SIP) Plan has several challenges, beyond the scope of this submission.

⁵³ CSA members oversee marketplaces. They have also delegated marketplace oversight to the New SRO.

ii. Roles and Responsibilities

The following roles must be performed to facilitate a revised market data infrastructure as outlined in the above table and described below:

A. Roles

- Technical Information Processor (TIP)

It is agreed, in principle, that the definition of a TIP should be one that “serves a purely consolidation and distribution function but does not play an administrative role.”

Consolidation requires bringing data from all sources to a single location, where it can be accessed by vendors, and potentially large users for redistribution. Currently, the data from different contributing trading venues is not being consolidated or commingled through an independent, regulated process. It is difficult and error-prone to create an official price for the entire market for each trading day or a nation-wide best bid and offer, also known as an NBBO.

Secondly, when data is commingled, it is logical to license the commingled feed rather than the contributing feeds independently. This would require the role of financial agent defined below.

Thirdly, there is currently no transparent capacity planning activity that involves the contributing trading venues and protects consolidated data from interruption when problems occur. Conflicts of interest can arise due to the lack of true independence and may result in unintended negative consequences.

- Administrative Agent

The separation of the administrative agent role from technical activities, even if both are performed by the same entity is recommended. The administrative agent should handle daily operations, address capacity planning, as well as establish triage procedures in the event of problems.

Through skilled staff, the administrative agent must monitor and plan for adequate system capacity. It is unlikely that the administrative agent would conduct periodic capacity planning activities; however, it should be responsible for selecting and approving the methodology and choosing the entity to conduct the process.

- Financial Agent

If data is commingled in a consolidated feed, then that data should be licensed as a single feed. This necessitates both licensing and financial administration to include fee-setting, billing, accounts receivable administration, and a mechanism for allocating incoming revenues among content-contributing trading venues.

The financial agent should perform a broader administrative and invoicing role.

B. Operators

In order to avoid conflict of interest concerns, it is strongly recommended that the operators be organized as a separate entity, with independence ensured through governance. The separate, independent entity performing each role should be responsible to the oversight committee to which it reports.

There are three types of operating groups that could perform the tasks required by the market data infrastructure:

Exchange technical group

The TSX currently acts as the TIP in Canada. The proposed role is different from the current consolidation obligations of the TSX. The new role that will involve commingling data from all Canadian trading venues requires that the information processor be totally independent of its role as the processor for one of those trading venues. The technology group at the TSX, as the processor for the dominant, publicly traded exchange in Canada, creates an inevitable conflict with its role as the Canadian market data TIP. The resolution is to create a separate, independent entity that acts as the TIP and functions within the market data infrastructure.

Vendor

Like the TSX, market data vendors are technically well suited for the role of market data TIP. However, like an exchange, a vendor also gives rise to conflicts of interest concerns, that may be addressed by the governance of an independent entity.

New FinTech Agent

In the last decade, multiple new financial technology firms have been created to assume many of the tasks associated with technical processes in the trading markets.

C. Oversight

Each functional role (i.e. the TIP, the administrative agent, and the financial agent) needs an oversight committee to approve specific actions and add input from the constituencies the committee members represent. These committee members should have specific experience in their respective specialties.

The whole infrastructure requires its own oversight committee. This high-level committee may include some, or all of the constituent committees (i.e. a “committee of committees”) and should have senior representatives from consumers and regulators, with market data providers comprising the minority.⁵⁴

⁵⁴ This avoids governance issues in other jurisdictions e.g., US SIP Committee

Appendix 3: Recommendations for Specific Changes to the Market Data Process

Several market data administrative requirements are based on dated notions of how market data must be processed and used. They add costs and lack transparency. This Appendix details activities in the market data process that contribute to market data costs with proposed resolutions.

A. General Changes in Procedure

1. Fees Charged and the Pricing Process

Large exchanges may limit commercial firms that are constituents of key indices moving their listing to competitive exchanges by tie-in agreements with the index's owner (i.e. The index agreement with the large exchange states that in order to get any listings from the large exchange, the index must only include listings from that exchange).

Vendors may create technical barriers to make it difficult for users to switch to other suppliers' proprietary instrument identifiers, proprietary data-feed formats, and Application Programming Interfaces ("APIs") with proprietary formats. For large consumer firms, this usually means consumers must take information from competitive vendors, much of which is redundant.

Recommendation: Any index advertised in a similar fashion to "measur[ing] the performance of various segments of the Canadian equity markets"⁵⁵ must take commingled, consolidated data from the new TIP, and allow for the inclusion of any firm listed in Canada, regardless of which exchange that firm is listed on. All data from the new TIP should include a standard identifier. If vendors choose to add their own proprietary identifier, it should be in addition to the standard. The TIP would publish data in a standard, open format. This means that consumer firms could begin to adopt technical standards so that market data will flow through the industry using a series of standards that can make bespoke feed handlers and APIs unnecessary.

2. Fee Transparency

Fee transparency should be mandated for marketplaces and vendors, the latter of whom can and should be subject to regulatory oversight.⁵⁶ Market data fees and terms must be simplified, and open to review and debate. While most marketplaces and vendors publish fees on their websites, there is no way to correlate posted fee tables to invoices.

Recommendation: To promote transparency and simplicity, a series of measures relating invoice amounts to usage categories may be implemented so that values firm-to-firm are comparable. Each exchange and each vendor should publish on a website to be maintained in a centralized location, the price for each service offered per unit of count and usage category for every consumer firm. While not disclosing the actual amount of any invoice, it will allow consumers to verify that their costs are comparable to similar entities.

⁵⁵ S&P/TSX Canadian Indices Methodology (January 2023), available at <https://www.spglobal.com/spdji/en/documents/methodologies/methodology-sp-tsx-canadian-indices.pdf>

⁵⁶ For example, and with reference to the *Securities Act*, R.S.O. 1990, c. S. 5, s 21(5)(5) allows the Commission to make any decision, in the public interest, with respect to the manner in which a recognized exchange carries on business. This should include its contractual terms with vendors, which may in turn impose certain obligations on them. Amendments should also be made so that market vendors are clearly included as market participants and/or information processors. Authority may also be delegated to the New SRO.

3. Entitlements

Entitlements refer to an administrative procedure in which all information licensed for use can be tracked to a user or an application with an auditable start date and, in some cases, an end date. Currently, entitlements are most frequently controlled by consumers on technology platforms⁵⁷ provided by vendors. Each vendor uses its own platform. If the consumer uses services on closed networks (i.e. the vendor provides data, the distribution network and any necessary applications) then the vendor usually operates the entitlement system. If the consumer uses services internally within their own data distribution platform, then the consumer usually operates the entitlement system and reports back to the vendor, subject to audit.

Recommendation: The most efficient way for market data to be licensed is for data consumers to license directly with the administrative agent described in Appendix 2, to entitle both individuals and applications to receive market data. The administrative agent would maintain an entitlements system that would certify what information each user (individual or application) is entitled to receive and at what cost. Any vendor offering services to the consumer firm would access the entitlements status⁵⁸ in the system and provide the information to the requesting employee, customer, or application.

Each data consumer, on behalf of their individual users and applications, would request information using each user's unique identifier and assigned usage category. One mechanism for making these requests exists in the inventory control systems that link to entitlement systems. The administrative agent would develop a web-based front-end for entitling those consumers that do not have an inventory control system.

4. Multiple Instances, Single User

Users receiving information through multiple vendors can be charged multiple times for the same information from a single producer coming from more than one vendor, known as Multiple Instances, Single User ("MISU")⁵⁹. Since each vendor entitles the data, neither vendor has any way of knowing the data is also entitled by the other vendor. As a result, the user's firm is charged twice for the same data. This is a common problem with no easy current solution due to the lack of a centralized administrative agent.

Recommendation: Recommendations for the administrative agent corrects the MISU situations. The agent would entitle each consumer for any vendor, and double invoicing would be eliminated.

5. Units of count

Market data pricing is based on a concept known as the unit of count, which refers to how market data is counted and priced as well as to how the unit is to be applied in vendor and exchange contracts. Initially, the unit of count was the display device. As the types of services have multiplied and divided between display usage and non-display usage, the numbers and types of units of count have mushroomed with little effort at coordination.

Recommendation: A standardization of the numbers and types of units of count is recommended.

⁵⁷ The best-known entitlements technology tool is provided by Refinitiv and is known as Data Access Control System (DACS).

⁵⁸ The entitlement status indicates whether an individual or application is "entitled" (i.e. able to receive data from the consolidator), or "not entitled" (i.e. not able to receive data).

⁵⁹ MISU is a term coined by the NYSE to describe a highly manual attempt to counter user dissatisfaction. Users of NYSE data, if they feel they are being double charged, are asked to pay both fees and submit physical documentation to support their claim. If NYSE agrees with the documentation, they will refund one of the fees. Most users believe this process is too time consuming to have real value.

To standardize units of count, both individual IDs and application IDs that enable market data usage to be tracked to where it the market data is employed need be developed. Most of these IDs currently exist in various forms, either as client identifiers for surveillance purposes⁶⁰ or as internal firm IDs for authentication and auditing purposes. These IDs would need to be made unique to each content owner and vendor. By coordinating and standardizing these identifiers, the administration of licenses is simplified. It is also possible for multiple entities in the process to refer to users (individuals or applications) unambiguously and without confusion.

This initiative parallels industry initiatives such as the legal entity identifier (“LEI”).⁶¹

6. Usage Categories

Market data pricing is predicated on value. Value in the sense of how consumers value the data and services they license — is the data critical to the work the consumers do? But value is also the sense of consumers’ elasticity of demand —if a data owner or vendor raises prices, will most consumers continue to pay the higher price, or will significant numbers of consumers cease to employ the data or service?

Recommendation: To address these questions, a standard set of usage categories may be used by content owners, vendors, and consumer firms, based on job responsibilities. Content owners and vendors use these categories for pricing groups and to develop categories of service offerings to get the maximum revenues. Consumer firms use the categories to construct permissible offering categories for employees to control service costs. This standard will create benefits for all parties and reduce costs.

Preliminary categories for individuals and applications that are used for defining product categories might include⁶²:

- **Professional**
 - Sell-side traders, market makers, and proprietary trading.
 - Buy-side traders and retail brokers.
 - Investment bankers, investment research, and risk management.
 - Operations personnel.
- **Non-professional**
 - Retail customers, websites, and the general public.
- **Applications (non-display usage)**
 - Trading.
 - Risk management.
 - Customer reporting.
 - Operations.

⁶⁰ The New SRO requires client identifiers on “each order for a listed security that is sent to a marketplace” and “each reportable trade in a debt security” for market surveillance purposes *see* <https://www.iroc.ca/members/client-identifiers>.

⁶¹ The LEI was developed in the aftermath of the collapse of Lehman Brothers. When Lehman collapsed, its counterparties suddenly discovered that it was impossible to identify each of the subsidiaries of the collapsed firm. Having similarly unambiguous identifiers for individuals and applications makes pricing fairer and administration simpler.

⁶² This list is in approximate order (top = high, bottom = low) from those most able (most willing) to pay high prices for premium services to those least willing to pay.

7. Vendors Billing for Exchanges

Exchanges enlist vendors to handle reporting and invoicing to avoid the administrative overhead of tracking entitlements and invoicing for usage. This service results in administrative fees that range from 7% to 15% of gross market data charges.

Recommendation: For RTMD and its derivatives, the financial agent would invoice for all exchanges with the capability to perform similar functions for other types of data.

8. Event Notification

These are often sent by email, and there is no comprehensive way for consumer firms to know that they have seen all the emails or that they have responded effectively. There are providers of manually updated databases with some of the messages that subscribers can access, but participation is voluntary.

Recommendation: The TIP should develop a series of standardized messages, managed by the administrative agent. If implemented, all industry participants could develop applications to capture alerts electronically and respond to them programmatically. It is recognized that this will have implementation challenges.

B. Minimizing Direct Costs

Direct costs are unavoidable expenses that are incurred in using data that a consumer has licensed that may nonetheless be minimized.

1. Data Acquisition

Every data source transmits data in what, for most, is a unique format. These formats evolved over time by happenstance. Vendors convert data from each of these sources they distribute into their own proprietary format that the vendor uses to make the information available to their customers. Larger vendors publish information in the form of an API that they may make open source, but if the user takes data from more than one vendor, the user must accommodate two or more incompatible APIs. The consumer firm typically has a software application running on a server known as a “feed handler”. The feed handler converts each vendor format into whatever format is required within the firm. If the user firm is a large organization, it likely employs an enterprise infrastructure that, in turn, has at least one internal messaging software format. Some infrastructures employ one message format for incoming information and another to send data within the firm to the point where it is to be displayed or processed. This repetitive message reformatting process is a good example of friction. It is also a major cause of unnecessary latency. Moreover, message formats constantly change as upstream data sources adapt to changing messaging needs.

Recommendation: A standard messaging protocol for the output feed from consolidation is proposed. A number of candidate standards exist, each with strengths and weaknesses. The most common weakness is that there is no cohesive support. Standards are either the outgrowth of industry committees or *de facto* standards usually created by dominant vendors.

2. Data Preparation

The preparation of data that is brought into an entity is a part of a growing activity referred to as enterprise data management (EDM). Major financial organizations now seek to ensure that all data within the entity (an enterprise) is managed effectively. In particular, the goal is to ensure that every piece of data is

maintained in such a way that the data only exists once, and it is not possible for two instances of the same data to be in conflict. This is referred to as data governance.⁶³

Recommendation: The Technical Committee, in co-operation with industry firms, would have responsibility for determining the communication protocol for the TIP.

3. Data Maintenance

Once data has been introduced into an entity, it must be constantly updated and maintained. The impacts of corporate actions such as stock splits or bond calls ripple throughout internal systems. For entitlements, users frequently subscribe to new data or cease to need data they previously used.

Recommendation: The process described in the Entitlements section above will help to streamline data management. Significant cost and latency reductions could also be realized by applying the same concepts that are currently being implemented in trade settlement known as Straight-Through Processing (STP).

4. Reporting

Currently, the output of reports from the entitlements systems is the input to vendors and content owners for most users that do not use closed vendor systems. However, each vendor typically generates separate reporting for those users with inventory controls systems.

Recommendation: If Event Notification messages are used to continuously update entitlements, then the idea of periodic (usually monthly) reporting is not required. Using Event Notification messages, the administrative agent could maintain entitlements by individual or application and instruct the financial agent to invoice for usage whenever is agreed with consumers.

5. Invoicing

Invoicing is currently required of every entity that provides separate data or services for users, unless, as noted above, content owners use vendors as their processing agent. This results in significant redundancy in activities, or inflated charges.

Recommendation: As previously noted, the financial agent would bill for consolidated data. It could also act as invoicing agent for other data sources or for vendors interested in delegating their processing responsibilities.

6. Payment

Currently, consumer firms must pay each invoice independently.

Recommendation: The financial agent, as it invoices for usage, can receive payments. One of the major responsibilities will be to allocate consolidated revenues among the participating trading venues in the system. If it invoices and collects for other entities, the revenues would be passed through, less a processing fee. A single payment to the financial agent replaces multiple current payments.

7. Service Termination

The major complication with service termination typically occurs if a consumer switches vendors and data sources continue to be used.

Recommendation: If all data comes from the TIP infrastructure, termination is not a problem. The infrastructure continues to invoice even if the vendor changes.

⁶³ See <https://edmcouncil.org/>.

Appendix 4: Implementation Plan for A New Market Data Infrastructure

1. Establish a committee to oversee implementation of a New Market Data Infrastructure. (the “Implementation Oversight Committee”).

Committee comprised of:

- i) Regulators (representatives of the CSA and New SRO)
- ii) Exchanges
- iii) Vendors
- iv) Consumers
- v) Other market data experts

By: March 31, 2023

2. The Implementation Oversight committee to review and confirm working groups and work streams for each working group.

Recommended working groups and streams as follows:

- i) The Oversight of the New Market Data Infrastructure Working Group
 - Define required functionality and reporting structure
 - Discussions with CSA and new SRO
 - Draft mandate (functional specification)
- ii) TIP Working Group
 - Define required functionality
 - Define consolidation
 - Discussion with technology experts
 - Draft Mandate (functional specification)
- iii) Administrative Agent Working Group
 - Define required functionality including entitlements
 - Discussion with administrative experts
 - Draft Mandate (functional specification)
- iv) Financial Agent Working Group
 - Define required functionality including revenue allocation
 - Discussion with Exchanges
 - Draft Mandate (functional specification)

By: June 30, 2023

3. Implementation Oversight Committee staffs working groups with appropriate representatives from 1(i) through 1(v) above.

By: August 1, 2023

4. Working groups to advise the Implementation Oversight Committee of Proposed Timelines for Full Implementation.

By: August 31, 2023

Appendix 5: Responses to Questions Posed

Proposal	Enhance transparency of any RTMD related fee proposals by requiring marketplaces, as part of the regulatory review and approval process, to publish proposed changes when they are filed for approval
Question 1:	Please identify any potential unintended consequences at the industry, marketplace, or firm level if we pursue this option.
Response	Public review and comment must be included in all fee proposals for dissemination of market data with acknowledgement that market data belong to the market participant and is being captured by exchanges and vendors for distribution. This is standard practice in the U.S. and EU and should be adopted.
Question 2:	Would this approach satisfy the need for more transparency in relation to proposed fee changes and their review process? If yes, please indicate what benefits this approach would offer. If no, please explain why and whether other requirements should be considered.
Response	The process must be meaningful and reflect cost-based pricing principles.
Proposal	Retain external assistance to review the DFM and its relevance in the context of domestic and international developments in equity markets. This should include an examination of reference points that could be used by Staff to allocate the share of fees chargeable by marketplaces under the DFM. The fee ranges assigned to each marketplace should be made transparent.
Question 3:	What are your concerns, if any, with continuing to use the DFM? If the DFM were to continue to be used, what changes are necessary?
Response	The DFM would be unnecessary with cost-based pricing.
Question 4:	Is the application of the DFM appropriate for both senior and venture market data?
Responses	If a cost-based pricing model is not adopted, then the DFM should be applied to most market data fees including senior and venture market data.
Question 5:	Should the application of the DFM be extended beyond subscriber fees? For example, should the DFM be applied to non-display and distribution fees (whether internal and/or external distribution fees) given the potential challenges noted above?
Response	If a cost-based pricing model is not adopted, then the DFM should be applied to most market data fees.
Question 6:	What are the potential benefits or risks of making the fee ranges calculated under the DFM transparent? Should there be greater transparency of other inputs to the DFM (e.g., reference points or key input metrics)? If so, please comment on the potential benefits and risks.
Response	No material risks to making the DFM fee ranges public have been identified.
Question 7:	Should we consider adopting a methodology for non-professional subscriber fees? If yes, what should be factored into such a methodology? If not, why not?
Response	Yes, as per enclosed recommendations.
	An industry group would assist to standardize key terms and definitions for access to and use of RTMD between marketplaces and market participants.

Question 8:	Should standardized key terms and definitions, such as professional and non-professional users, be developed for the access to, receipt, distribution, and use of RTMD products? If yes, please explain what the benefits of such an approach would be. If not, please explain why not.
Response	Yes, this would help to simplify market data policies and make terms more readily understandable and comparable across offerings.
Question 9:	What other key terms and definitions should be standardized? What factors or industry legacy issues should be considered in standardizing such terms?
Response	The 15-minute standard for delayed data is a legacy anachronism. A 15-millisecond standard would be far more appropriate given the advances in technology.
Question 10:	Would this approach help address market participants' concerns with respect to the administrative burden related to the access to and use of consolidated RTMD? Please explain your answer.
Response	As per response to Question 8.
Question 11:	What would be the unintended consequences, if any, of standardizing these types of key RTMD terms and definitions?
Response	None have been identified.
Proposal	Leverage the current IP model by introducing a TIP+ Model
Question 12:	Would caps on fees charged by marketplaces for their RTMD consumed through the consolidated TIP products affect the consumption and use of consolidated RTMD? If so, how? If not, why not, and are there alternatives that should be considered?
Response	Yes – lower fees and a simpler, streamlined administrative interface/procedure would result in significant adoption of a consolidated TIP product, provided that the consolidation is done in a modern, high-performance way.
Question 13:	Under this approach, do you believe data vendors would begin to offer TIP-based products and pass cost savings on to the end user? If not, what drivers would be necessary to encourage this? Do you envision any potential unintended consequences under this approach?
Response	Yes, based on the U.S. experience. The primary risk to widespread adoption would be fees that are too high, or underinvestment in consolidation technology. That is why it is critical that governance of the TIP be comprised of committees that are majority independent from any firm that provides competing market data offerings.
Question 14	What means of establishing caps and what factors for establishing cap levels should be considered?
Response	Levels should be based on the costs to exchanges to offer market data and connectivity. as explained in detail in our response.
Proposal	Introduce a new model for data consolidation through an Admin IP.
Question 15:	What are your views on the appropriateness of an Admin IP model for Canada? What would be the key benefits and challenges and how could any challenges be addressed?
Response	An Admin IP could introduce significant efficiency if its responsibilities are sufficiently defined.

Question 16:	What are the unintended consequences or risks that should be considered?
Response	As detailed in our response to Question 18, conflicts-of-interest in IP governance are a concern, as demonstrated in the U.S.
Question 17:	Are there any other key responsibilities that should be considered for an Admin IP model?
Response	Please see our enclosed response.
Question 18:	What governance model could be introduced that would be fair and help overcome conflicts such that the Admin IP could achieve its regulatory obligations?
Response	As the U.S. has shown, a governance model where exchanges have authority to set the fees of a consolidator, and to set technical direction, is an intractable conflict of interest when those same exchanges offer competing proprietary products. It is critical that any governance model include a majority of non-exchange representatives, especially for any function involved in fee-setting or the technical aspects of consolidation and distribution.
Proposal	Single vs. Multiple TIPs under an Admin IP Model
Question 19:	Based on the size and scale of the Canadian market, should the CSA consider allowing for multiple TIPs to operate under the Admin IP approach?
Response	No.
Question 20:	Alternatively, should there only be a single TIP and, if so, should it be operated independently of the Admin IP?
Response	Yes.
Question 21:	If there is only a single TIP, should it operate as a for profit business or as a not-for-profit entity? Please explain your answer.
Response	Not-for-profit, this is a public utility and regulated monopoly.
Proposal	General Questions
Question 22:	With respect to Staff Consideration 1, do you think that our review of RTMD costs and accessibility should consider the impact of regulatory requirements, such as OPR and best execution? What could drive changes in consumer behaviour (such as disconnecting from marketplaces that offer little benefit to the market compared with the costs or unprotected marketplaces)? What changes could impact the competition among data producers? What could incrementally increase consumer bargaining power? And ultimately, could any of these suggestions impact fees? Please explain your answer.
Response	Improved public disclosures could allow firms to disconnect from non-OPR protected venues while still being able to evaluate relative execution quality.
Question 23:	Would any of the options outlined above assist dealers with moving retail orders to other marketplaces during a marketplace outage?
Response	As per our enclosed response.
Question 24:	Are there any other options to address industry's concerns about the access to and cost of RTMD that we have not considered? Please explain your answer.
Response	As per our enclosed response.

Appendix 6: Biographies of Subject Matter Expert Contributors

Alan Hutton

Former President and CEO of Fundserv Inc.

Mr. Hutton's several appointments include Vice Chairman and Executive Director of the Canadian Capital Markets Association, President & CEO of Fundserv Inc., President & CEO of Star Data Systems, Chairman & CEO of Multipath Holdings Inc. and Co-founder, President and CEO of Virtual Corporation. Mr. Hutton has been a board member of Aequitas Innovations Inc., Neo Stock Exchange Inc., Alpha Exchange Inc., Cygnal Technologies Corporation, Investment Funds Institute of Canada, Canada Life Insurance EDI Standards Association, Delta Systems Inc., Versent Corporation and of other companies. He has served on the Independent Review Committees for ROI Capital, Fiera Sceptre Inc., NextGen Financial and Fiera Capital including as Chair.

Jerry Beniuk

Former Head of Global Fund Services, CIBC Mellon

Mr. Beniuk acted as the Head of Global Fund Services at CIBC Mellon and, previously, as Vice President at TD Bank, with diverse roles in TD Asset Management, TD Waterhouse and TD Wealth. He has also led mutual fund operations, securities back office and outsourcing businesses at TD. Mr. Beniuk served on many IFIC, IIROC, CCMA, CPA and FundSERV committees and board during his diverse career. Mr. Beniuk serves as a member of Caldwell Investment Management Ltd.'s Independent Review Committee.

Dave Lauer

CEO, Urvin Finance

Mr. Lauer is the co-founder and CEO of Urvin Finance. Urvin Finance has built a data native social platform for retail investors with professional quality data and tools, a community platform for collaborating on research and an education platform for learning about markets. He is an expert on the new electronic marketplace for equities and commodities, with extensive experience helping to design and build the infrastructure that underpins many modern electronic trading systems and exchanges, helping large asset managers with best execution as well as experience as a quantitative analyst and trader on high-frequency trading desks. His recent projects include public advocacy on market structure and Wall St. reform, and technology architecture and design consulting for IEX Group. Mr. Lauer sat on the board of the NEO Exchange as an Independent Director, and chaired its Regulatory Oversight Committee for seven years. Mr. Lauer also sits on FINRA's Market Regulation Committee.

R. "Tee" Williams

Principal, Tee Williams Associates, Inc.

Mr. Williams is an expert in market data, the mechanics of marketplaces, trading techniques, and the related information systems required to support markets; financial and information strategy; national market policy; exchange and dealer trading mechanics, clearance and settlement; information industry operations and economics. Mr. Williams also teaches on market data, market structure, and automated trading. Mr. Williams' projects include extensive market data consulting for various international exchanges; and, creating a capacity planning methodology for the Composite Tape Association for all U.S. listed securities, and the Options Price Reporting Authority for all U.S. options, and his firm specified the methodology used to allocate revenues among exchanges contributing data for consolidation by the US SIPs, under a mandate from the SEC. Mr. Williams was also Chairman of the FISD's sub-committee on Exchange and Regulatory Policy and principal editor of a report on market data information operations and regulation.