

The case for municipal adoption of the Prudent Investor Regime

The following paper was written jointly by RBC Global Asset Management (RBC GAM) and ONE Investment. ONE Investment is a not-for-profit investment manager created by CHUMS, a subsidiary of the Municipal Finance Officers' Association (MFOA) and LAS, the business arm of the Association of Municipalities of Ontario (AMO) to provide pooled, professionally managed investment solutions to Ontario municipalities. RBC GAM's institutional business within Canada, PH&N Institutional, is an institutional investment manager overseeing \$145 billion in assets on behalf of Canadian governments, corporations, unions, not-for-profit organizations, family offices, and Indigenous communities throughout Canada.

For qualified investors only.



Executive summary

The opportunity

Until 2018, Ontario municipalities were limited to investing within the confines to the Legal List Framework – a narrow set of permitted investments established under the Ontario Municipal Act in 1997 that restricted portfolio diversification and growth. With the introduction of the Prudent Investor Regime in 2018, qualifying municipalities gained the flexibility to explore a broader spectrum of investments, tailored to their unique risk profiles and investment goals.

The Prudent Investor Regime expands the investment opportunity set beyond domestic-only investments. This increased breadth allows municipalities to build more resilient portfolios by accessing:

- **Global capital markets** across developed and emerging economies
- **Private markets** such as private equity, infrastructure, real estate, and commercial mortgages
- **Investment style diversification** that captures value, growth, and low-volatility strategies
- **Optimized portfolio construction** using sophisticated risk management techniques

The notion of fiduciary partnership is central to the Prudent Investor Regime. Municipalities have an obligation to delegate complex investment functions to institutional professionals while maintaining accountability through governance structures like the ONE Joint Investment Board. Such a partnership enables the efficient execution of:

- **Program governance:** Policies, function oversight, and transparent reporting
- **Risk management:** Systematic diversification, hedging considerations, and downside protection
- **Investment oversight:** Independent monitoring, compliance verification, and performance evaluation
- **Operational functions:** Best-execution trading, investment accounting, and enterprise-grade controls

Finally, the adoption of the Prudent Investor Regime is an opportunity for a municipality to lean on robust institutional investment infrastructure. Building world-class investment infrastructure internally is cost prohibitive, but through strategic partnerships, municipalities gain immediate access to:

- Advanced technology platforms powered by real-time analytics
- Comprehensive data infrastructure spanning global markets and alternative datasets
- Robust trading and execution capabilities across asset classes
- Enterprise risk management systems and cybersecurity protocols
- Institutional-grade operations with stringent controls and audit trails

The future advantage

Using capital market assumptions and portfolio modelling techniques, this paper investigates the expected behaviours of various portfolios, ranging from fixed income to equities and fully diversified portfolios. The comparisons between a balanced Legal List portfolio and a globally diversified Prudent Investor portfolio, each with a 60% allocation to equities, are notable. Not considering the potential for value added from active management, the analysis presented in this paper projects that the Prudent Investor balanced portfolio could deliver:¹

- **Expected annual return:** 6.7% vs. 5.4% (Legal List)
= **+1.30% in additional annual return**
- **Annual volatility:** 8.2% vs. 10.1% (Legal List)
= **-1.90% in annual risk**
- **Downside risk (CVaR² 95%):** -13.0% vs. -14.1% (Legal List)
= **+1.10% better protection**
- **Sharpe Ratio³:** 0.45 vs. 0.18 (Legal List)
= **+150% in efficiency advantage**

¹Expected risk and return values are for illustrative purposes only and are not guaranteed.

²Conditional Value at Risk (CVaR) is a risk assessment metric that quantifies the average expected loss of an investment portfolio in the worst-case scenarios.

³The Sharpe ratio is a financial metric used to evaluate an investment's return relative to its risk; it is calculated by subtracting the risk-free rate from the investment's return, and then dividing the result by the investment's standard deviation.

The call to action

The evidence suggests that the Prudent Investor Regime is capable of delivering higher risk-adjusted returns for municipalities, and improved downside protection compared to Legal List constraints. For municipalities with multi-million-dollar reserves and long-term obligations, this efficiency gap can compound into transformational differences – funding that could support infrastructure, expand community services, and reduce future tax burdens.

Global pension funds, endowments, and sophisticated institutional investors have long embraced these principles as prudent fiduciary practice. Ontario municipalities have the same opportunity today.

The full paper explores the mechanics of efficient frontier construction, detailed asset allocation frameworks across fixed income, equity, and diversified portfolios and the time-horizon advantages of long-term investing. It provides municipal decision makers with an analytical foundation to make informed choices about the future of their investment programs.



Prudent Investor Regime: Defining features for municipal investors

The Prudent Investor Regime offers municipalities the opportunity to invest in a broader range of assets, as long as they are deemed prudent based on the municipality's objectives and risk tolerance.

The key features of this approach include a broader investment opportunity set, a fiduciary partnership between parties that are philosophically aligned, and the ability for municipalities to leverage the highly efficient operational infrastructures of institutional platforms. In the following sections, we will address each of these features in turn.

Broad investment opportunity set

A broad investment opportunity set refers to having access to a wide range of investable assets, strategies, markets, and financial instruments from which to construct a portfolio.

The broader the opportunity set, the more options investors have to find attractive risk-adjusted returns, exploit market inefficiencies, and tailor portfolios to specific objectives. This breadth is valuable because it allows investors to be more selective, adapt to changing market conditions, and potentially identify superior investments that would be unavailable with a narrow, domestically focused approach.

The Prudent Investor Regime expands investment opportunities beyond domestic equities and fixed income instruments, enabling municipalities to access global financial markets and potentially benefit from worldwide economic growth through more diversified portfolio construction.

The table below summarizes several enhancements beyond what is permitted under the Legal List.

Enhancement	Description
Global capital markets	<p>Global capital markets are interconnected financial systems where individuals, institutions, and governments buy and sell financial securities – including stocks, bonds, currencies, and derivatives – across international borders. These markets bridge investors seeking investment opportunities with organizations requiring capital to fund growth, operations, or projects.</p> <p>The global capital markets are critically important for several reasons:</p> <ul style="list-style-type: none"> ▪ Economic growth: They enable companies and governments to raise funds for expansion, infrastructure, and innovation, driving economic development worldwide. ▪ Efficient capital allocation: Markets direct capital to its most productive use by pricing assets based on risk and return expectations. ▪ Risk management: Markets provide tools (e.g., derivatives, hedging instruments) for businesses to manage currency, interest rate, and commodity price risks. <p>In essence, well-functioning global capital markets are fundamental to modern economic prosperity, enabling efficient resource allocation and supporting sustainable growth across borders.</p>

Enhancement	Description
Private markets	<p>Private markets are investments in assets not traded on public exchanges, including private equity (ownership stakes in private companies), private credit (direct lending), real estate, infrastructure, and commercial mortgages. These investments are illiquid, privately negotiated, and held for extended periods, typically 10+ years. Sophisticated institutional investors like pension funds and endowments allocate significantly to private markets because they can offer the following:</p> <ul style="list-style-type: none"> ▪ Higher returns: An illiquidity premium helps meet long-term obligations. ▪ Diversification: Low correlation with public markets reduces portfolio volatility. ▪ Access to growth: Exposure to high-quality companies and innovations unavailable in public markets. ▪ Long-term alignment: Multi-year holding periods match institutional investment horizons. ▪ Alpha generation: Less efficient pricing creates opportunities for skilled managers to add value. <p>Private markets have become a meaningful component of institutional portfolios seeking enhanced returns and diversification beyond public markets.</p>
Investment style diversification	<p>One element of diversification involves spreading investments across different investment approaches or philosophies, rather than concentrating on a single style. Different investment styles generally perform better in different market conditions and economic cycles. For example, value stocks may outperform during recoveries, while growth stocks often excel in low interest rate environments.</p> <p>Diversifying across styles can help investors:</p> <ul style="list-style-type: none"> ▪ reduce volatility and drawdowns during style-specific downturns; ▪ capture returns across varying market conditions; ▪ avoid over-concentration in one approach that may underperform for extended periods; and ▪ achieve more consistent long-term performance.
Optimized portfolio construction	<p>Portfolio optimization is the systematic process of selecting the best combination of assets (such as stocks, bonds, and other securities) to achieve specific investment objectives while balancing risk and return according to an investor's preferences and constraints.</p> <p>The goal is to construct portfolios that maximize expected returns for a given level of risk, or minimize risk for a desired level of return. The optimization process considers the following:</p> <ul style="list-style-type: none"> ▪ Expected returns of individual assets. ▪ Volatility (risk) of each investment. ▪ Correlations between assets – how they move in relation to each other. ▪ Diversification benefits – combining assets that don't move in lockstep to reduce overall portfolio risk. ▪ Investment constraints, such as asset allocation limits, regulatory requirements, liquidity needs, and time horizons.

Municipalities that embrace a broader investment opportunity set position themselves to build more resilient, efficient portfolios capable of meeting their fiduciary obligations to taxpayers. By accessing the full spectrum of global capital markets, municipalities can achieve superior diversification, reduce concentration risk, and capture returns unavailable in limited, domestic-only approaches.

Outsourced fiduciary management

Fiduciary partnership – or outsourced fiduciary management – is an investment governance solution in which the asset owner sets the objectives, risk limits, and key policies associated with the investment portfolios, but delegates day-to-day implementation and certain investment decisions to a third-party fiduciary manager. This approach has become increasingly common and is typically motivated by the desire to free up time to focus on key strategic issues, improve implementation speed and efficiency, access a greater variety of asset classes and risk management techniques economically, and ensure there is a dedicated investment resource looking at the investment strategy daily.

There is a spectrum of delegation options available. Municipalities can choose from **a spectrum of delegation models** for investment oversight, each independent from elected officials but varying in complexity and resource requirements.

- Establishing an **independent board** provides some control and customization but requires significant effort to recruit qualified members, develop expertise, establish policies, and maintain ongoing governance.

- Forming a **joint investment board** shared with other municipalities reduces this burden by pooling resources and expertise, though it still requires active participation and agreement on governance structure and decision-making.
- At the simplest end of the spectrum, a municipality can join an existing joint investment board like the **ONE Investment Joint Investment Board**. This offers immediate access to a collaborative governance structure, institutional-grade oversight, proven operations, and professional expertise, allowing a municipality to benefit from expert governance while focusing internal resources on existing core responsibilities.

By delegating implementation to investment professionals, municipalities ensure that assets are managed by credentialed institutional investment managers with specialized expertise in all areas of investment management relevant to the municipality. This delegation ensures professional oversight while maintaining fiduciary accountability on the resource-intensive functions described below.

Fiduciary function	Description
Program governance	<p>Investment program governance for a municipality is the framework of policies, procedures, oversight structures, and accountability mechanisms that guide how public funds are invested to achieve financial objectives while protecting taxpayer assets. It establishes clear roles and responsibilities for elected officials, finance staff, and investment advisors; defines permissible investments and risk parameters; ensures compliance with legal and regulatory requirements; and mandates transparent reporting to stakeholders.</p> <p>Effective governance includes written investment policies, regular performance monitoring, independent audits, and adherence to fiduciary standards. The primary goals are preserving capital, maintaining liquidity for operational needs, and generating reasonable returns – all while ensuring transparency, accountability, and prudent stewardship of public resources in accordance with municipal mandates and community expectations.</p>
Risk management	<p>Risk management is the systematic process of identifying, measuring, monitoring, and controlling potential threats to portfolio performance. It involves assessing various risks – including market volatility, credit defaults, liquidity constraints, currency fluctuations, and geopolitical events – and implementing strategies to mitigate their impact.</p> <p>Key techniques include diversification, hedging, position sizing, stress testing, and setting risk limits. The goal is not to eliminate risk, but to ensure risks taken are intentional, well understood, and appropriately compensated by expected returns.</p> <p>Effective risk management protects client assets, ensures regulatory compliance, maintains operational integrity, and enables investment managers to pursue returns within clearly defined risk parameters and fiduciary responsibilities.</p>

Fiduciary function	Description
Investment oversight	<p>Investment oversight is a systematic process that monitors and evaluates investment activities to ensure they align with municipalities' objectives, regulatory requirements, firm policies, and fiduciary responsibilities.</p> <p>Investment oversight typically includes:</p> <ul style="list-style-type: none"> ▪ Performance monitoring: Regularly tracking portfolio returns against benchmarks, peer groups, and stated objectives to identify underperformance or deviations. ▪ Risk assessment: Evaluating portfolio risks – including concentration, liquidity, credit, and market risks – to ensure they remain within acceptable parameters and client mandates. ▪ Compliance monitoring: Ensuring all investments adhere to regulatory requirements, investment guidelines, client restrictions, and internal policies. ▪ Investment process review: Assessing whether portfolio managers follow established investment philosophies, research processes, and decision-making frameworks consistently. ▪ Governance and accountability: Establishing independent oversight committees that provide checks and balances on investment teams, escalate concerns, and ensure fiduciary duties are met. <p>Effective investment oversight protects investors, supports sound decision-making, maintains regulatory compliance, and upholds investment managers' commitment to prudent asset management and fiduciary excellence. Providers of outsourced fiduciary solutions deliver these professional oversight services as a matter of course, using industry-standard governance, risk, and reporting practices to help clients meet their obligations with confidence.</p>
Operational execution	<p>Operational execution is the efficient, accurate, and timely implementation of all non-investment activities required to support portfolio management and deliver client services. It encompasses the end-to-end operational processes that translate investment decisions into actual portfolio positions and ensure seamless investor experiences. Operational execution includes:</p> <ul style="list-style-type: none"> ▪ Trade execution and settlement: Processing buy/sell orders accurately, achieving best execution, and ensuring timely settlement of securities transactions. ▪ Portfolio accounting and reconciliation: Maintaining accurate records of holdings, cash flows, and valuations, with daily reconciliation against custodian records. ▪ Client reporting and communications: Generating performance reports, statements, and tax documents accurately and on schedule. ▪ Cash management: Managing subscriptions, redemptions, dividend payments, and corporate actions efficiently. ▪ Compliance and controls: Implementing pre-trade and post-trade compliance checks, maintaining audit trails, and ensuring operational controls prevent errors. ▪ Technology and data management: Maintaining robust systems, data integrity, and cybersecurity to support all operational functions. <p>Strong operational execution ensures investment decisions are implemented correctly, client assets are safeguarded, regulatory obligations are met, and that investment managers operate with precision and reliability. Poor operational execution can erode investment performance and damage client trust regardless of portfolio management skill.</p>

Fiduciary function	Description
Municipal support	<p>Municipal support refers to the ongoing relationship management and support provided to asset owners to ensure their needs are met, questions are answered, and they receive high-quality experience throughout their investment journey.</p> <p>Effective support includes:</p> <ul style="list-style-type: none"> ▪ Relationship management: Maintaining regular communication, understanding client goals and concerns, and acting as their advocate. ▪ Responsive communication: Promptly addressing inquiries, and providing clear explanations of portfolio activity, performance, and market conditions. ▪ Customized reporting: Delivering tailored performance reports, portfolio updates, and investment insights that meet specific client requirements. ▪ Proactive problem-solving: Anticipating client needs, identifying potential issues early, and resolving concerns efficiently. ▪ Onboarding and education: Ensuring smooth account setup and helping clients understand investment strategies, processes, and firm capabilities. ▪ Coordination and advocacy: Liaising between clients and internal teams (portfolio managers, operations, compliance) to deliver seamless service.

By delegating investment oversight and execution to experienced investment professionals with institutional infrastructure, robust governance frameworks, and dedicated resources, municipalities gain access to sophisticated strategies, disciplined processes, and superior execution that would be prohibitively expensive and complex to replicate internally.

Ultimately, professional delegation transforms investment management from a potential vulnerability into a strategic strength – ensuring taxpayer dollars are stewarded with the highest standards of care, expertise, and diligence while freeing municipal resources to focus on core community services and priorities.



Institutional infrastructure

Institutional infrastructure refers to the comprehensive operational, technological, governance, and support systems that enable an investment management firm to effectively serve institutional clients such as pension funds, endowments, sovereign wealth funds, and insurance companies at scale and with institutional-grade standards.

Building and maintaining institutional-grade investment management infrastructure requires substantial and ongoing

financial resources that would be prohibitively expensive for most municipalities. This infrastructure includes sophisticated technology platforms for portfolio management and risk analytics, comprehensive data subscriptions, trading systems, cybersecurity infrastructure, compliance monitoring tools, professional staff salaries, ongoing training, legal and audit fees, and regulatory compliance expenses.

Key institutional infrastructure components	Description
Advanced technology platforms	<p>Technology platforms power real-time market analysis, trading, and risk modelling while streamlining back-office functions like compliance, reporting, and transaction processing.</p> <ul style="list-style-type: none"> ▪ Data-driven insights: AI and machine learning can analyze vast datasets to identify trends, generate research ideas, and enhance risk management. ▪ Operational efficiency: Automation streamlines processes like compliance, reporting, and client servicing, reducing costs and errors. ▪ Investor experience: Digital platforms and personalized tools empower clients with real-time access to insights and performance metrics. ▪ Risk management: Advanced algorithms monitor market volatility and portfolio exposures to ensure alignment with municipal objectives.
Comprehensive data infrastructure	Enterprise-wide data architecture includes real-time market data feeds, historical pricing databases, fundamental company research, economic indicators, ESG metrics, and alternative data sources. These components are all integrated, normalized, and quality controlled to support investment decisions, risk analysis, performance measurement, and regulatory reporting with accuracy and timeliness.
Robust trading and execution capabilities	Direct market access, relationships with global broker networks, electronic trading systems, and well established protocols that optimize transaction costs and efficiency across multiple asset classes and geographies.
Enterprise risk management systems	Comprehensive risk monitoring and measurement tools, including pre-trade compliance checks, real-time position monitoring, stress testing, scenario analysis, and regulatory reporting capabilities.
Client reporting and analytics infrastructure	Customizable performance reporting systems, attribution analysis, benchmark comparison tools, and client portal technology that deliver transparent, timely insights tailored to institutional requirements.
Cybersecurity and business continuity	Multi-layered security protocols, data encryption, disaster recovery systems, redundant operations centers, and continuous monitoring to protect client assets and ensure uninterrupted service delivery.
Operations	Scalable middle and back-office functions for trade settlement, reconciliation, corporate actions processing, cash management, and custody relationships, supported by stringent controls and audit trails.

By leveraging existing institutional frameworks through strategic partnerships, municipalities may gain immediate access to comprehensive infrastructure, proven systems, and professional resources at a fraction of the cost of building their own. This approach allows municipalities to benefit from economies of scale and redirect scarce financial resources toward core community services, while still receiving institutional-quality investment management that meets their fiduciary obligations and long-term financial goals.



Prudent Investor Regime: Portfolio construction and efficient frontiers

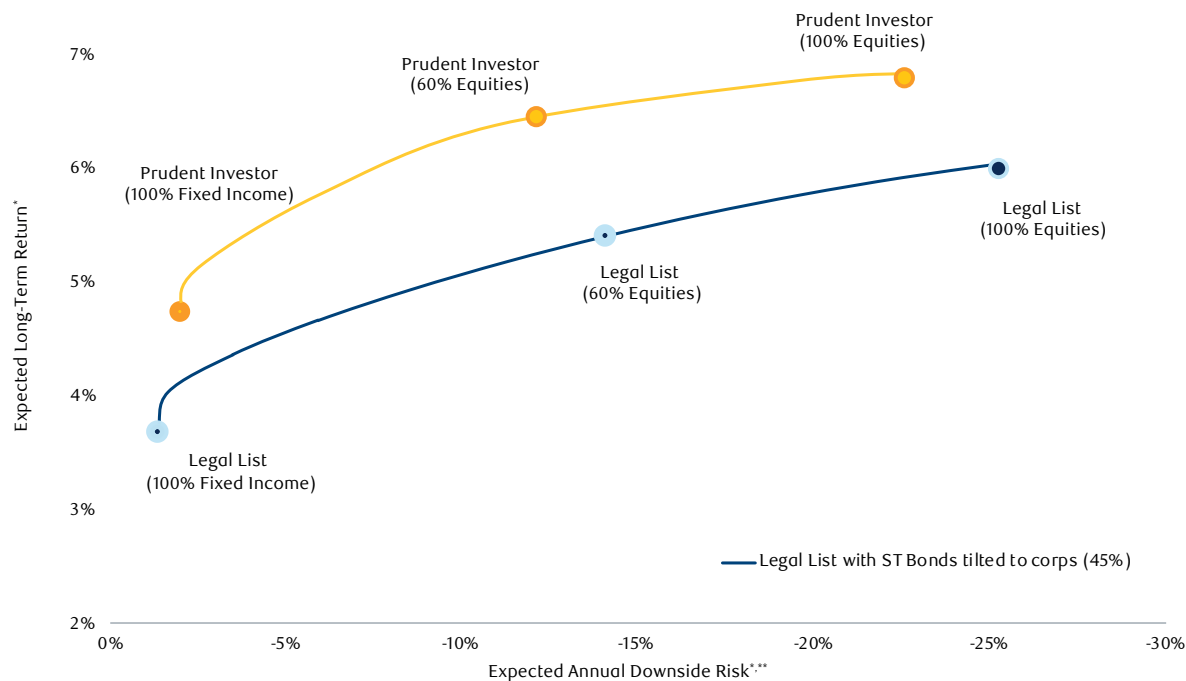
Every investment decision involves navigating the fundamental trade-off between risk and reward under uncertainty. Optimal decision making requires translating this trade-off into actionable insights relevant to an investor's specific objectives – in the case of a municipality, its need to preserve capital, maintain liquidity for operational needs, and generate reasonable returns to support long-term community services and infrastructure.

This is where the concept of the efficient frontier comes into play: it represents the **set of optimal portfolios** that can deliver the highest expected return for each level of risk, or alternatively, the lowest level of risk for each target return. An efficient frontier that moves **upward and to the left** represents a superior investment strategy. Moving upward means achieving higher expected returns, while moving left means reducing downside risk. By identifying portfolios along this frontier, municipalities can make informed choices that balance their return objectives with their risk tolerance, fiduciary obligations, and community needs.

The chart on the following page demonstrates a significant performance gap between the two approaches. The Prudent Investor efficient frontier lies substantially above and to the left of the Legal List frontier across the entire risk spectrum. This means that at any given level of risk, Prudent Investor portfolios deliver higher expected returns. For example, a Prudent Investor portfolio with a 60% allocation to equities achieves approximately 6.3% expected return with -10% downside risk, compared to a Legal List portfolio with the same allocation delivering only 5.2% return with -15% downside risk.⁴

⁴The following section uses hypothetical portfolios to model expected risk and returns; these examples are for illustrative purposes only and are not guaranteed. See pages 13, 14, and 15 for specific asset allocation details and risk and return expectations for the modelled portfolios.

Efficient frontiers: Legal List v. Prudent Investor



Source: RBC GAM
* Refer to appendix for modelling assumptions and disclosures.
** CVaR95, which represents the expected loss during the worst 5% of return outcomes.
Hypothetical performance analyses are for illustrative purposes only and there is no guarantee that hypothetical returns or projections will be realized

This gap reflects the benefit of diversification beyond traditional constraints. The Prudent Investor’s ability to allocate across diversified fixed income and equity categories – rather than being limited to a narrow legal list – enables more efficient risk management and return generation.

By combining quantitative modelling with qualitative judgment and stress testing across historical crisis periods, efficient frontiers can be tailored to each municipality’s unique circumstances. The result is a clear visualization showing how different asset allocation choices position portfolios relative to the efficient frontier – revealing whether a municipality is accepting unnecessary risk for their expected return, or conversely, leaving returns on the table given their risk capacity.

To build an efficient frontier, one needs...	Description
Eligible asset classes	<p>Asset classes represent broad categories of investments with comparable risk/return profiles, structures, and market dynamics. Different asset classes exhibit distinct risk/return profiles and respond differently to economic conditions, interest rate changes, and market events. By diversifying across multiple asset classes with low correlation (they don't all move together), investors can reduce overall portfolio risk while maintaining or enhancing expected returns.</p> <p>The exercise should consider asset classes that can provide:</p> <ul style="list-style-type: none">▪ growth opportunities and wealth generation (i.e., risk assets);▪ protection of invested capital (i.e., defensive assets);▪ inflation and interest-rate risk protection (i.e., hedging assets); and▪ liquidity. <p>Eligible asset classes should align with an investor’s investment objectives, risk tolerance, and specific investment beliefs.</p>

To build an efficient frontier, one needs...	Description
Capital market assumptions (CMAs)	<p>Forward-looking estimates of the expected risk and return characteristics of various asset classes over a specified investment horizon (typically 5 to 10 years or longer). These assumptions form the foundation for strategic asset allocation, portfolio construction, and investment decision making by providing projections for the following:</p> <ul style="list-style-type: none"> ▪ Expected returns: Anticipated annual returns for each asset class. ▪ Volatility (risk): Expected standard deviation or variability of returns around the mean. ▪ Conditional Value-at-Risk (CVaR): Captures the average loss during the worst return outcomes (typically the worst 5%), reflecting extreme downside scenarios and asymmetric risks. ▪ Correlations: How different asset class returns are expected to move in relation to one another. <p>CMAs are developed using a combination of quantitative analysis (historical data, econometric models, valuation metrics) and qualitative judgment (macroeconomic outlook, market conditions, structural trends, expert insights).</p>
Modelling constraints	<p>The purpose of modelling constraints is to compensate for the uncertainty in the estimation of model parameters (especially expected returns), and models' inability to consider risks and trade-offs that are not quantitative in nature.</p> <p>The constraints are used:</p> <ul style="list-style-type: none"> ▪ to provide diversification and avoid overly concentrated portfolios; ▪ to provide portfolio liquidity by specifying maximum limits in illiquid assets; ▪ to ensure that the resulting portfolio is reasonable from a practical standpoint; and ▪ to reduce sensitivity to the input parameters and assumptions, especially expected returns.
Tools and techniques	<p>While quantitative modelling generates critical information for the purpose of making an asset allocation decision, a complete decision-making framework also incorporates qualitative information and judgement. When quantitative and qualitative information are combined and filtered through sound judgement and experience, the best possible solution becomes a high probability outcome. As new information and experiences arise, the process is repeated, and the solution is further refined as needed.</p> <p>The objective here is to ensure that modelling remains relevant, leverages advances in risk management and modelling techniques, incorporates new information generated by capital markets, and that all risks and rewards are appropriate and realistic.</p>

The following sections consider and compare three contrasting portfolios – **fixed income only**, **equity only**, and **diversified** – under both the Prudent Investor and Legal List regimes and analyze the risk and return expectations that are built into them. These portfolios are meant to be illustrative, but not necessarily prescriptive; each municipality will have its own investment objectives and risk appetite, and must determine the most suitable asset allocation based on their specific circumstances.



Fixed income portfolio construction: Breaking Canadian bond concentration

The simplest comparison begins with the fixed income portfolios. Under the Legal List regime, Ontario municipalities are limited to Canadian investments: bonds rated A- or higher, short-term instruments, and corporate bonds/equities under certain conditions. Such a homogeneous portfolio is vulnerable to changing domestic financial conditions and domestic interest-rate trends. The Prudent Investor framework, by contrast, offers access to global sovereign fixed income, multi-asset credit, private placement corporate debt, and commercial mortgages.

Asset allocation: Fixed income only

Asset class ⁵	Legal List (100% fixed income)	Prudent Investor (100% fixed income)
Legal List bonds	100%	–
Short-term bonds and mortgages	–	50%
Corporate bonds	–	20%
Private placement corporate debt	–	5%
Commercial mortgages	–	5%
High yield bonds	–	5%
Global multi-asset credit	–	15%
TOTAL FIXED INCOME	100%	100%

Risk/return metrics comparison

Performance metric	Legal List (100% fixed income)	Prudent Investor (100% fixed income)	Advantage
Expected annual return	3.7%	4.7%	+100 bps
Annual volatility	2.3%	3.2%	+90 bps
Downside risk (CVaR 95%)	-1.4%	-3.7%	-230 bps
Sharpe ratio	0.06	0.35	483%

Fixed income analysis summary

Despite both portfolios being entirely comprised of fixed income, the performance differences are striking. The Prudent Investor portfolio is expected to deliver expected annual returns of 4.7% compared to the Legal List's 3.7%, a substantial 100 basis point advantage that will compound significantly over time. While it exhibits higher volatility (3.2% vs. 2.3%) and downside risk (-3.7% vs. -1.4%), the critical metric is risk-adjusted performance: the Prudent Investor portfolio achieves a Sharpe ratio of 0.35 compared to just 0.06 for the Legal List, nearly six times better efficiency.

The analysis reveals a striking paradox: the Legal List portfolio, designed to be “safe” through restrictions, is profoundly inefficient, taking on modest risk but generating inadequate

returns for that risk. The Prudent Investor portfolio's higher volatility reflects intentional, well-compensated risk-taking across diversified global fixed income markets, including corporate bonds, private debt, commercial mortgages, and global credit. For municipalities with long-term investment horizons, this efficiency advantage is crucial. Over 20-30 years, earning an additional 100 basis points annually through superior risk-adjusted returns translates to materially higher long-term wealth without disproportionate risk-taking. The Legal List approach sacrifices substantial returns for only marginal reductions in volatility, a poor trade-off that demonstrates how restrictive constraints, paradoxically, create inefficiency rather than safety.

⁵Please refer to Appendix – Exhibit 1 for asset class details

Equity portfolio construction: Risk reduction through global diversification

Moving to equity-only allocations reveals a similar pattern. The Legal List framework restricts equities to Canadian stocks (S&P/TSX Index) with specific constraints, while the Prudent Investor Regime provides access to global markets. The S&P/TSX itself is a highly concentrated index, creating acute sector risk that municipal reserves cannot afford. Domestic concentration increases portfolio risk by exposing reserves to single-country economic cycles and sector imbalances.

Asset allocation: Equities only

Asset class ⁶	Legal List (100% equities)	Prudent Investor (100% equities)
Canadian equities	100%	33.00%
Canadian low volatility equities	–	17%
U.S. equities	–	8.50%
U.S. low volatility equities	–	8.50%
International equities	–	23.00%
Emerging market equities	–	10.00%
TOTAL EQUITIES	100%	100%

Risk/return metrics comparison

Performance metric	Legal List (100% equities)	Prudent Investor (100% equities)	Advantage
Expected annual return	6.0%	6.4%	+40 bps
Annual volatility	16.8%	13.2%	-360 bps
Downside risk (CVaR 95%)	-25.3%	-22.4%	+290 bps
Sharpe ratio	0.15	0.22	47%

Equity analysis summary

While both portfolios are comprised entirely of equities, their respective diversification strategies drive meaningful differences in performance and risk outcomes. The Prudent Investor equity portfolio has expected annual returns of 6.4% annualized over 10 years, compared to the Legal List's 6.0% expected return, creating a 40-basis point advantage. More significantly, the Prudent Investor portfolio achieves this with dramatically lower volatility (13.2% vs. 16.8%) and meaningfully better downside protection (-22.4% vs. -25.3%). The Sharpe Ratio shows improved portfolio efficiency: 0.22 for the Prudent Investor portfolio compared to 0.15 for the Legal List – nearly 50% better risk-adjusted returns.

The difference lies in portfolio construction: the Legal List portfolio is 100% concentrated in Canadian equities, creating acute vulnerability to domestic market volatility and country-specific risks. The Prudent Investor equity portfolio is globally diversified and moreover, it incorporates low-volatility strategies (designed to mitigate periods of equity drawdowns). This geographic and style diversification means no single market dominates performance, reducing concentration risk while accessing diverse return sources. For municipalities, this demonstrates that diversification isn't just about spreading risk – it delivers higher returns with lower volatility and better downside protection. The Legal List's domestic concentration delivers neither superior returns nor effective risk management, underscoring why access to global equity markets and sophisticated portfolio construction principles are essential for long-term investment success.

⁶Please refer to Appendix – Exhibit 1 for asset class details

Diversified portfolio construction: Integrated long-term investment strategy

The most compelling comparison emerges when examining fully diversified balanced portfolios, where the Prudent Investor framework demonstrates its full transformational advantage. The Legal List portfolio assumes a 60/40 balanced allocation to Canadian equities and fixed income, while the Prudent Investor portfolio allocates to globally diversified asset classes including private markets.

Asset allocation: Balanced portfolio

Asset class ⁷	Legal List (60% equities)	Prudent Investor (60% equities)
FIXED INCOME	40%	30%
Legal List bonds	40%	–
Short-term bonds	–	20%
Commercial mortgages	–	10%
EQUITIES	60%	60%
Canadian equities	60%	20%
Canadian low volatility equities	–	10%
U.S. equities	–	5%
U.S. low volatility equities	–	5%
International equities	–	14%
Emerging market equities	–	6%
ALTERNATIVES	–	10%
Canadian core real estate	–	5%
Global infrastructure	–	5%
TOTAL PORTFOLIO	100%	100%

Risk/return metrics comparison

Performance metric	Legal List (60% equities)	Prudent Investor (60% equities)	Advantage
Expected annual return	5.4%	6.7%	+130 bps
Annual volatility	10.1%	8.2%	-190 bps
Downside risk (CVaR 95%)	-14.1%	-13.0%	+110 bps
Sharpe ratio	0.18	0.45	+150%

⁷Please refer to Appendix – Exhibit 1 for asset class details

Diversified portfolio analysis summary

Both portfolios target balanced risk profiles with significant equity exposure, but once again the performance differences are striking. The Prudent Investor balanced portfolio delivers expected annual returns of 6.7% compared to the Legal List portfolio's 5.4%, a substantial 130 basis point advantage that compounds dramatically over the 10-year forecasted period. Even more impressive, the Prudent Investor balanced portfolio achieves this with significantly lower risk: volatility of 8.2% versus 10.1%, and downside risk of -13.0% versus -14.1%.

The Sharpe ratio shows improved portfolio efficiency: the Prudent Investor balanced portfolio achieves a Sharpe ratio of 0.45 compared to just 0.18 for the Legal List. This demonstrates that sophisticated diversification can simultaneously deliver higher returns and meaningfully lower risk.

The dramatic performance gap stems from fundamentally different portfolio construction approaches. The Legal List balanced portfolio allocates 60% to Canadian equities and 40% to Legal List bonds, creating severe domestic concentration and single-country risk.

By contrast, the Prudent Investor balanced portfolio employs comprehensive global diversification: 60% equities spread across Canadian, U.S., international, and emerging markets, including fundamental and low volatility strategies; 30% diversified fixed income, including mortgages; and 10% alternatives (real estate and infrastructure) that provide inflation protection and low correlation to public markets. This structure means not all portfolio components move in tandem during market stress, providing resilience during downturns while still capturing upside during recoveries.

This modelling clearly demonstrates that the Prudent Investor Regime's use of diversification across geographies, asset classes, and investment styles can deliver superior returns with substantially lower volatility and better downside protection, enabling more predictable outcomes and greater confidence in meeting long-term obligations.

ABOUT DOWNSIDE RISK (CVaR 95%)

Conditional Value at Risk (CVaR 95%) measures the expected loss in the worst 5% of outcomes over a one-year period. In practical terms, it answers the question: If markets turn against us, how bad could the damage realistically be? Rather than simply identifying a threshold loss level, CVaR 95% calculates the average of all losses that fall into that worst 5% tail, giving us a more complete picture of downside exposure during severe market stress.

This metric is particularly useful because it captures the severity of losses beyond a simple worst-case scenario. For example, a CVaR 95% of 12% means that in the worst 5% of annual outcomes, the annual return for the portfolio would be -12% on average. This tells municipal investors not just that losses can happen, but how deep those losses tend to run when conditions deteriorate.

Proper diversification provides critical protection precisely when it matters most. The Legal List approach, despite its conservative intent, can concentrate risk in ways that amplify losses during severe downturns. Understanding CVaR 95% helps municipal decision-makers distinguish between portfolios that appear safe and those that demonstrate resilience when markets are under real stress.



ABOUT TIME HORIZON ADVANTAGE: HOW ANNUALIZED VOLATILITY DIMINISHES OVER TIME

One of the most important principles in investment management is that the annualized volatility of a portfolio decreases as the investment horizon extends. While it's true that the cumulative range of possible outcomes widens over longer periods (uncertainty compounds in absolute terms), the annualized rate of volatility declines substantially when measured per year across the full period. **A portfolio with 15% annualized volatility in year one might show only 5% annualized volatility over a ten-year horizon.** The fluctuations smooth out, producing far more predictable annualized returns and substantially reducing the likelihood of negative performance. **This time advantage is one of the most powerful tools available to long-term investors.**

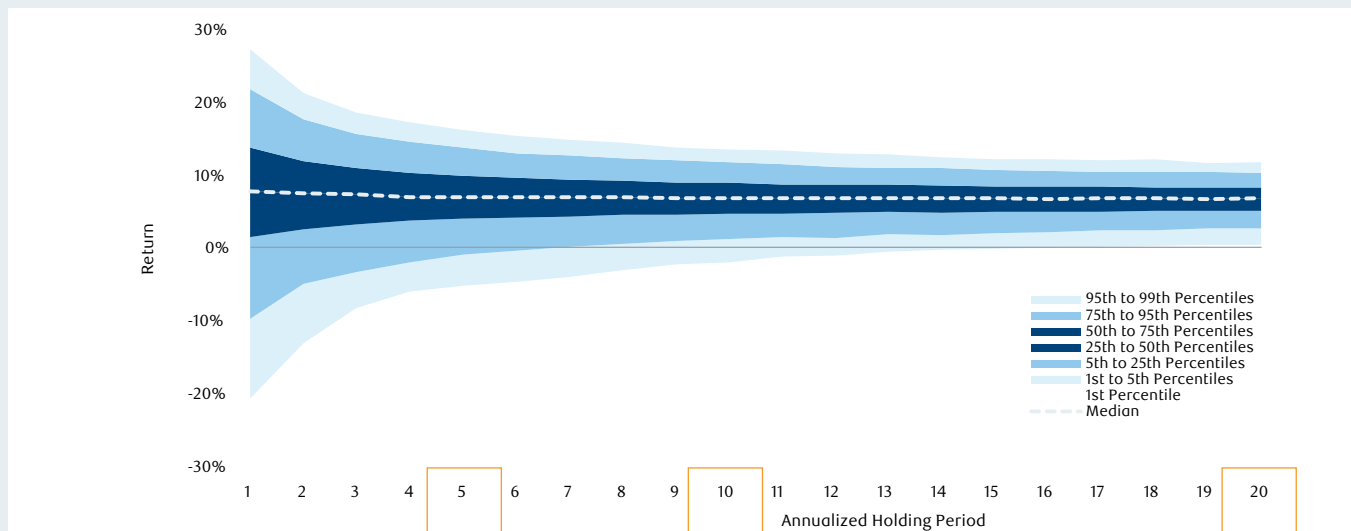
Markets tend to mean-revert over time. Short-term shocks get absorbed, strong performance offsets weaker years, and compounding gradually stabilizes the range of outcomes. While equities may swing dramatically in any

single year (let alone any single month), the probability of negative annualized returns over five years drops considerably, and over ten years becomes quite rare based on historical evidence.

The graph below illustrates this pattern using the Prudent Investor Balanced portfolio over a 20-year period. The dark blue area represents the normal range of expected returns, while the lighter blue areas show less frequent but statistically possible outcomes.

- Over any one-year period, a return between ~1% and ~14% would be considered typical for this portfolio, with best and worst outcomes estimated at +27% and -20%.
- Over any annualized 10-year period, the expected return range narrows to between ~ 5% and ~9%, with best and worst outcomes estimated at +13% and -2% annualized.

Distribution of returns: Prudent Investor Balanced



Expected annual return		6.7%	6.7%	6.7%
Annual volatility		4.6%	3.2%	2.3%
Downside risk (CVaR 95%)		-3.8%	-0.8%	1.4%

Source: RBC GAM

For municipalities with investment horizons spanning decades, this time diversification effect is crucial. By maintaining discipline through market cycles and resisting the temptation to react to temporary downturns, municipalities can harness the full benefit of equity risk premiums while time naturally reduces the probability of loss over longer periods. As a result, well-diversified portfolios become increasingly reliable wealth-building vehicles as the horizon extends, which increases the importance of portfolio construction for municipalities with multi-decade obligations.



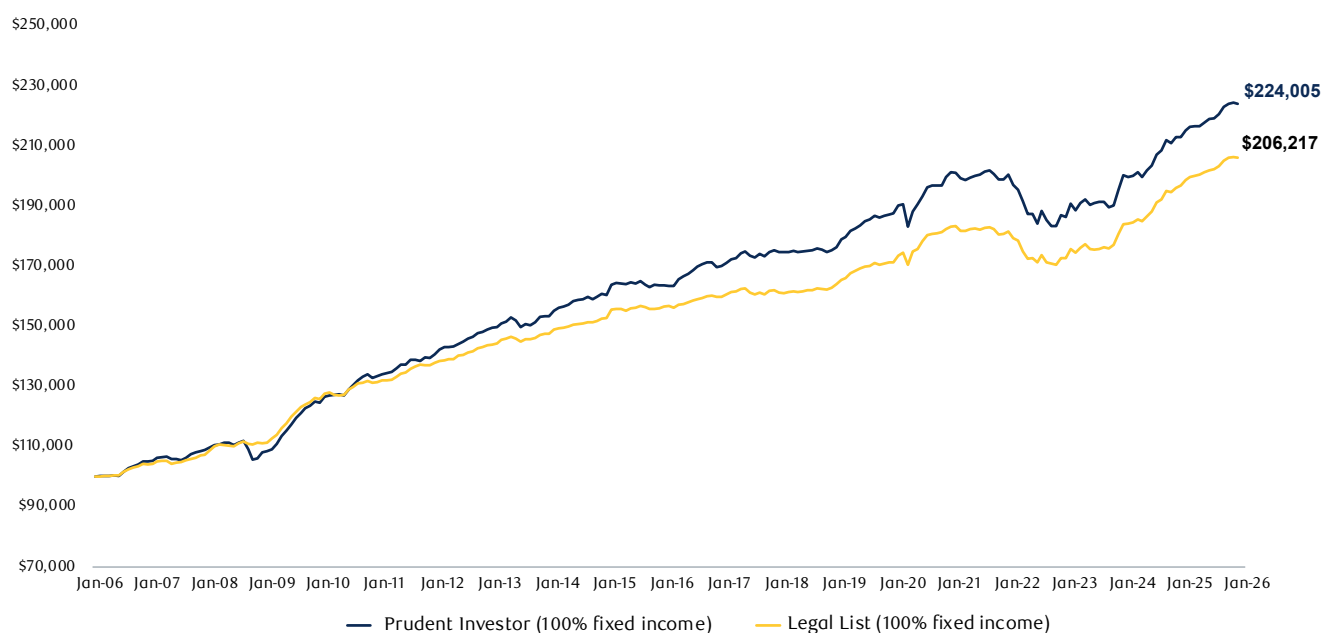
Prudent Investor Regime: Looking back

The following section once again compares the performance of the six portfolios considered in the previous section, but this time by looking back over a 20-year investment period that captures multiple significant capital market stress events, including the Great Financial Crisis of 2008-2009, the European debt crisis, oil price shocks, the COVID-19 pandemic, and the recent inflationary period with rising interest rates.⁸

Enhanced risk-adjusted return generation: 100% fixed income portfolios

First, let us revisit the two fixed-income-only portfolios, and consider how a \$100,000 investment would have performed across the twenty-year period from 2006-2025.

Growth of \$100K over 20 years: Prudent Investor vs Legal List (100% fixed income)



⁸Simulated performance data is for illustrative purposes only and not indicative of actual results. Please see the important disclosures at the end of this presentation regarding the use of simulated performance history.

Cumulative returns (Dec 31, 2025)	5 years	10 years	15 years	20 years
Prudent Investor (100% fixed income)	11.33%	36.78%	67.77%	124.76%
Legal List (100% fixed income)	12.61%	31.62%	56.78%	106.59%

Annualized returns (Dec 31, 2025)	5 years	10 years	15 years	20 years
Prudent Investor (100% fixed income)	2.17%	3.18%	3.51%	4.13%
Legal List (100% fixed income)	2.40%	2.79%	3.04%	3.69%

Volatility (Dec 31, 2025)	5 years	10 years	15 years	20 years
Prudent Investor (100% fixed income)	3.72%	3.35%	2.96%	3.03%
Legal List (100% fixed income)	2.79%	2.48%	2.17%	2.19%

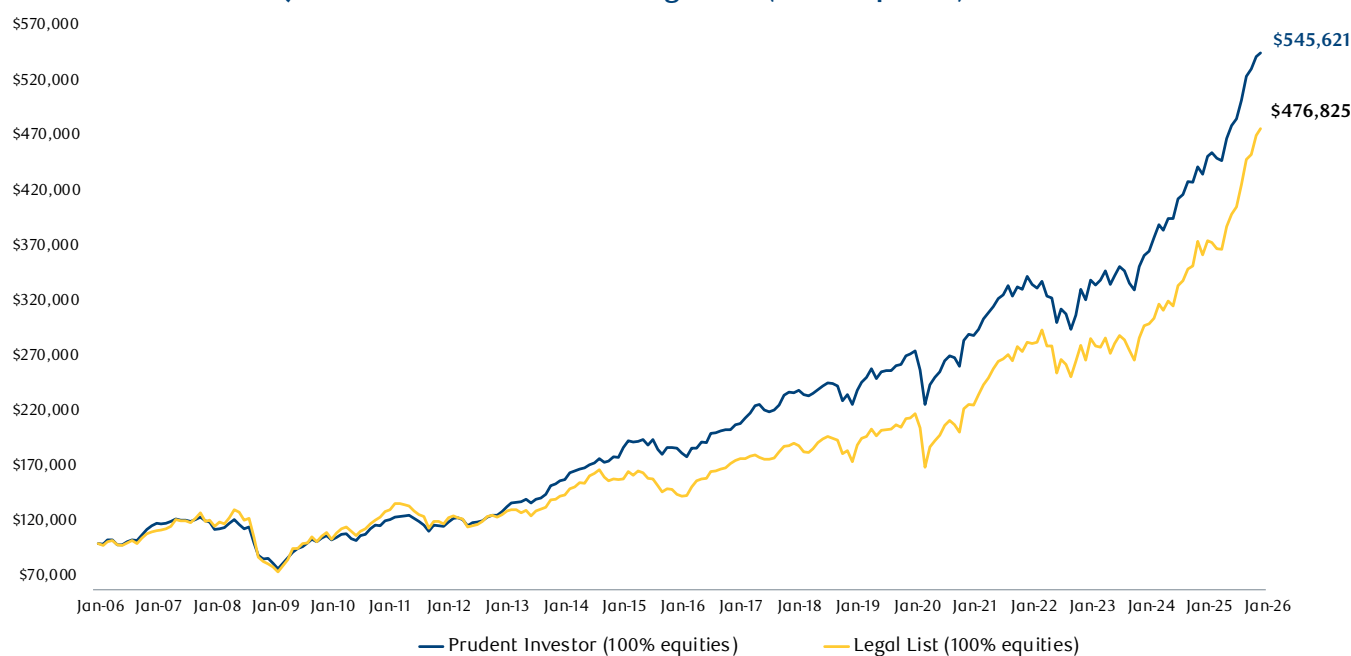
Worst returns (2006-2025)	3 months	1 year	5 years	10 years
Prudent Investor (100% fixed income)	-5.18%	-8.58%	4.94%	23.76%
Period of worst performance	Sep 2008 – Nov 2008	Oct 2021 – Sep 2022	Nov 2017 – Oct 2022	Nov 2012 – Oct 2022
Legal List (100% fixed income)	-3.82%	-6.41%	5.38%	19.17%
Period of worst performance	Feb 2022 – Apr 2022	Sep 2021 – Aug 2022	Nov 2017 – Oct 2022	Nov 2012 – Oct 2022

The performance gap between the narrow, domestically focused Legal List portfolio and the globally diversified Prudent Investor fixed income strategy is remarkable given both are comprised entirely of conservative fixed income investments – the difference lies entirely in how those fixed income investments are accessed, managed, and diversified. This underscores just how costly restrictive investment constraints can be, even within traditional “safe” assets. Access to global fixed income markets, diverse credit strategies, and professional active management made all the difference.

Enhanced risk-adjusted return generation: 100% equity portfolios

Now, let us consider the two equity-only portfolios over the same period.

Growth of \$100K over 20 years: Prudent Investor vs Legal List (100% equities)



Cumulative returns (Dec 31, 2025)	5 years	10 years	15 years	20 years
Prudent Investor (100% equities)	88.10%	192.26%	353.36%	445.62%
Legal List (100% equities)	110.84%	229.29%	269.01%	376.82%
Annualized returns (Dec 31, 2025)	5 years	10 years	15 years	20 years
Prudent Investor (100% equities)	13.47%	11.32%	10.60%	9.09%
Legal List (100% equities)	16.09%	12.66%	9.09%	8.44%
Volatility (Dec 31, 2025)	5 years	10 years	15 years	20 years
Prudent Investor (100% equities)	9.81%	10.38%	9.59%	10.60%
Legal List (100% equities)	12.02%	12.81%	11.89%	13.27%
Worst returns (2006-2025)	3 months	1 year	5 years	10 years
Prudent Investor (100% equities)	-25.23%	-31.93%	-5.24%	76.75%
<i>Period of worst performance</i>	<i>Sep 2008 – Nov 2008</i>	<i>Mar 2008 – Feb 2009</i>	<i>Jun 2007 – May 2012</i>	<i>Feb 2007 – Jan 2017</i>
Legal List (100% equities)	-32.08%	-38.20%	-5.49%	43.11%
<i>Period of worst performance</i>	<i>Sep 2008 – Nov 2008</i>	<i>Mar 2008 – Feb 2009</i>	<i>Jun 2007 – May 2012</i>	<i>Feb 2006 – Jan 2016</i>

While investors often focus on diversification of equity allocations to enhance returns, its primary value lies in meaningful risk reduction.

A common misconception is that if equity markets are highly correlated – meaning they tend to move in the same direction during major market events – then diversifying globally provides little benefit. However, correlation measures the strength and direction of the relationship between returns, not the absolute level or long-run magnitude of those returns. Two markets can be highly correlated (both declining during a crisis or both rising during a recovery) yet deliver vastly different performance outcomes over time due to differences in economic fundamentals, corporate profitability, currency movements, sector composition, valuation levels, and policy responses.

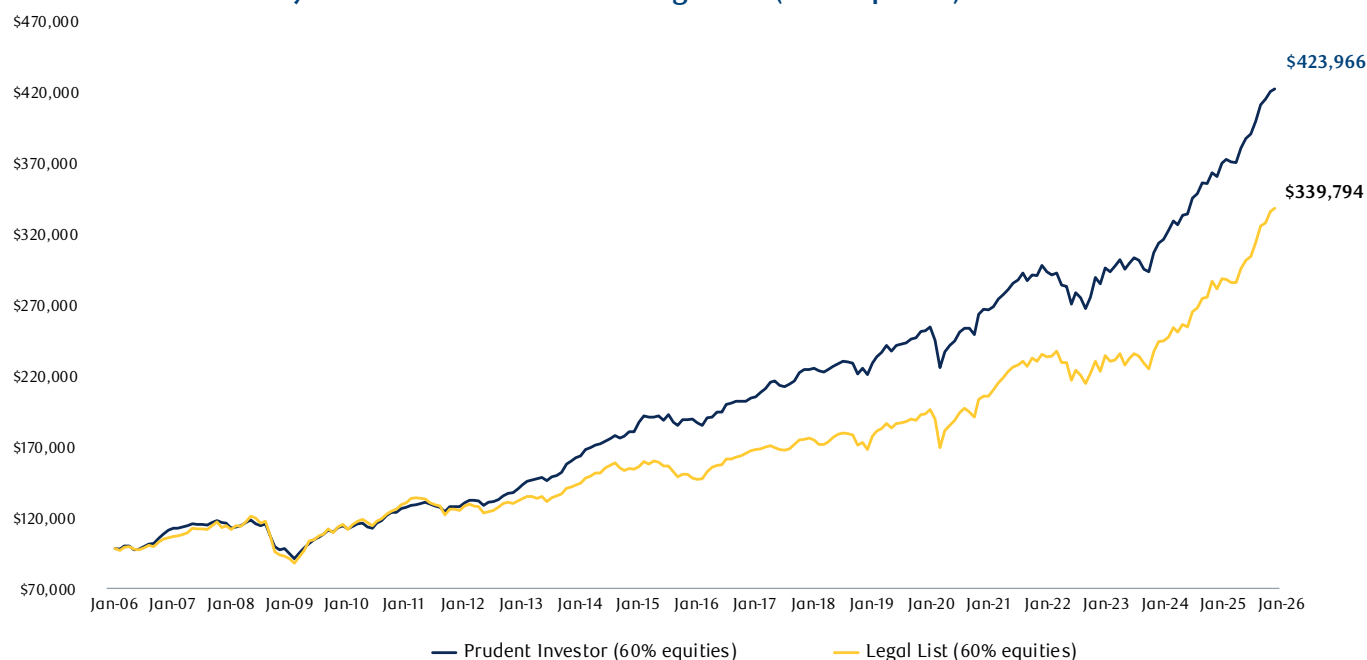
As demonstrated in the results above, the benefit of diversification is dual: stronger long-term returns and, most notably, a drastically lower risk profile over every period. The “worst returns” analysis is particularly clear on that aspect.



Enhanced risk-adjusted return generation: Diversified portfolios

Finally, let us revisit the Legal List and Prudent Investor balanced portfolios, and observe how they would have performed over the 20-year period in question.

Growth of \$100K over 20 years: Prudent Investor vs Legal List (60% equities)



Cumulative returns (Dec 31, 2025)	5 years	10 years	15 years	20 years
Prudent Investor (60% equities)	57.76%	121.59%	230.46%	323.97%
Legal List (60% equities)	34.44%	68.85%	94.53%	239.79%
Annualized returns (Dec 31, 2025)	5 years	10 years	15 years	20 years
Prudent Investor (60% equities)	9.55%	8.28%	8.29%	7.63%
Legal List (60% equities)	10.35%	8.53%	6.55%	6.50%
Volatility (Dec 31, 2025)	5 years	10 years	15 years	20 years
Prudent Investor (60% equities)	6.46%	6.61%	6.04%	6.59%
Legal List (60% equities)	7.72%	8.02%	7.35%	8.08%
Worst returns (2006-2025)	3 months	1 year	5 years	10 years
Prudent Investor (60% equities)	-15.44%	-19.25%	11.06%	80.74%
Period of worst performance	Sep 2008 – Nov 2008	Sep 2008 – Aug 2009	Jun 2007 – May 2012	Feb 2007 – Jan 2017
Legal List (60% equities)	-19.71%	-22.86%	7.25%	43.16%
Period of worst performance	Sep 2008 – Nov 2008	Mar 2008 – Feb 2009	Apr 2015 – Mar 2020	Nov 2013 – Oct 2023

This comparison reveals a powerful and compelling result: despite both portfolios having 60% equity allocations, the Prudent Investor portfolio delivered substantially superior returns with meaningfully lower volatility and better downside protection compared to the Legal List portfolio.



The municipal imperative

The Legal List framework was established in 1997 to protect public funds by limiting exposure to risky or speculative assets. While well intentioned, these restrictions can disadvantage municipalities in a globally interconnected capital market environment, especially when it comes to maximizing risk-adjusted returns on public reserves and preserving financial flexibility.

Limitation	Description	Impact
Excessive concentration	The portfolio is exclusively exposed to the Canadian capital market and yield curve, with no geographic or economic diversification.	If Canadian bonds underperform due to rising rates or equity markets decline, there are no offsetting asset classes to cushion losses. Investor reserves are fully exposed to domestic economic downturns.
Exclusion of proven diversifiers	The Legal List prohibits global equities (U.S., international developed, emerging markets), real assets (infrastructure, real estate), and alternative fixed income (high yield bonds, global bonds).	Investors cannot access asset classes that institutional investors worldwide rely on to reduce volatility, enhance returns, provide stable cash flows, and protect against inflation.
Poor trade-off between risk and return	The restricted investment universe limits an investor's ability to build an optimal portfolio given your unique circumstances.	Investors may need to accept lower returns for the same level of risk, or more risk to achieve the same return.

The Prudent Investor Regime supports Ontario municipalities' financial strength

The evidence is compelling. Over a 20-year period – through the financial crisis, pandemic, inflation shocks, and market volatility – the Prudent Investor approach would have consistently delivered superior outcomes relative to a portfolio invested according to the Legal List guidelines.

The hypothetical Prudent Investor fixed income portfolio generated 18% higher cumulative returns (124.76% vs. 106.59%) with six times better risk-adjusted performance than its Legal List counterpart. The Prudent Investor balanced portfolio delivered 84% more cumulative wealth than its Legal List counterpart (\$423k vs. \$339k from \$100K), with lower volatility and significantly better downside protection.

Looking forward, this advantage compounds. A 10-year forecast projects 130 basis points higher annual returns (6.7% vs. 5.4%) with 190 basis points lower volatility for the balanced portfolio. For a typical municipality with multi-

million-dollar reserves, this efficiency gap translates to millions of dollars in additional wealth over a generation – funding that could support infrastructure, build community services, or reduce tax burdens.

The opportunity cost extends beyond returns alone. Municipalities remaining under Legal List constraints accept concentrated domestic risk, forgo global diversification and private market access, and miss out on the benefits of institutional-grade governance infrastructure. Meanwhile, global pension funds, endowments, and sophisticated investors have long embraced these principles as prudent fiduciary practice, not aggressive speculation.

Ontario municipalities have a fiduciary obligation to taxpayers and future generations. Legal List constraints, however well-intentioned historically, are no longer prudent in today's capital market environment. The Prudent Investor regime can offer a better path: evidence-based diversification, institutional-grade oversight, and alignment with global best practices.

Appendix

Exhibit 1: Capital market assumptions

The capital market assumptions and data sources used in the modelling analysis are presented in the following tables:

Asset classes	Representative data series	Expected long-term return	Expected annual volatility	Expected annual downside risk
Cash	FTSE Canada 30 Day T-Bill Index	3.5%	0.4%	2.6%
Legal List bonds	Custom Index ⁹	3.7%	2.3%	-1.4%
Legal List short corporate bonds	Custom Index ¹⁰	4.0%	2.4%	-1.5%
Short-term bonds and mortgages	Custom Index ¹¹	3.8%	2.3%	-1.1%
Corporate bonds	Custom Index ¹²	4.2%	4.3%	-5.6%
Private placement corporate debt	Custom Index ¹³	5.0%	4.7%	-6.6%
Commercial mortgages*	Custom Index ¹⁴	6.8%	3.3%	-6.0%
High yield bonds	ICE BofA US High Yield Master II (CAD-Hedged)	5.6%	9.2%	-15.7%
Global multi-asset credit	Custom Index ¹⁵	6.4%	8.1%	-15.9%
Canadian equities	S&P/TSX Composite Index	6.0%	16.8%	-25.3%
Canadian low volatility equities	RBC QUBE Low Volatility Canadian Equity Strategy	5.4%	12.8%	-14.7%
U.S. equities	S&P 500 Index (CAD)	5.1%	14.6%	-23.1%
U.S. low volatility equities	RBC QUBE Low Volatility U.S. Equity Strategy (CAD)	4.6%	12.9%	-15.9%
International equities	MSCI EAFE Index (CAD)	6.9%	16.1%	-28.1%
Emerging market equities	MSCI Emerging Markets (EM) Index (CAD)	7.7%	20.8%	-31.7%
Core real estate*	RBC Canadian Core Real Estate Strategy	6.3%	9.6%	-13.1%
Infrastructure*	EDHEC Infra 300 Index (Local)	6.7%	11.6%	-16.5%

Capital market assumptions represent the views of PH&N Institutional for the purposes of illustrating and understanding the potential risk-reward trade-off of different portfolio decisions and are established by considering a variety of qualitative and quantitative sources of information including: different forecasting models; internal and external research; existing and implied future conditions as priced by capital markets; and internal views of our fund managers. Expected long term annualized returns are for a 10-year forecast time horizon. Volatilities, downside risk and correlations are estimated from historical data and adjusted as required to reflect future market conditions. Investors should be aware of the limitations using forward-looking assumptions in that there is absolutely no guarantee that future performance will occur according to any ex-ante expectation.

* Expected return net of fees

⁹ 55% FTSE Canada Short Term Government Bond Index and 45% FTSE Canada Short Term Corporate Bond Index excluding BBB-rated segment.

¹⁰ 55% FTSE Canada Short Term Corporate Bond Index excluding BBB-rated segment.

¹¹ 49% FTSE Canada Short Term Government Bond Index, 45% FTSE Canada Short Term Corporate Bond Index and 6% PH&N Mortgage Strategy.

¹² 25% FTSE Canada Corporate AA+ Bond Index, 25% FTSE Canada Corporate A Bond Index and 50% FTSE Canada Corporate BBB Bond Index.

¹³ 7% FTSE Canada Short Term Federal and 93% FTSE Canada Mid Term Federal Bond Index + 50% FTSE Canada Short Term Corporate Bond Index (spread) and 50% FTSE Canada Mid Term Corporate Bond Index (spread).

¹⁴ 40% PH&N Mortgage Strategy and 60% PH&N High Yield Mortgage Strategy.

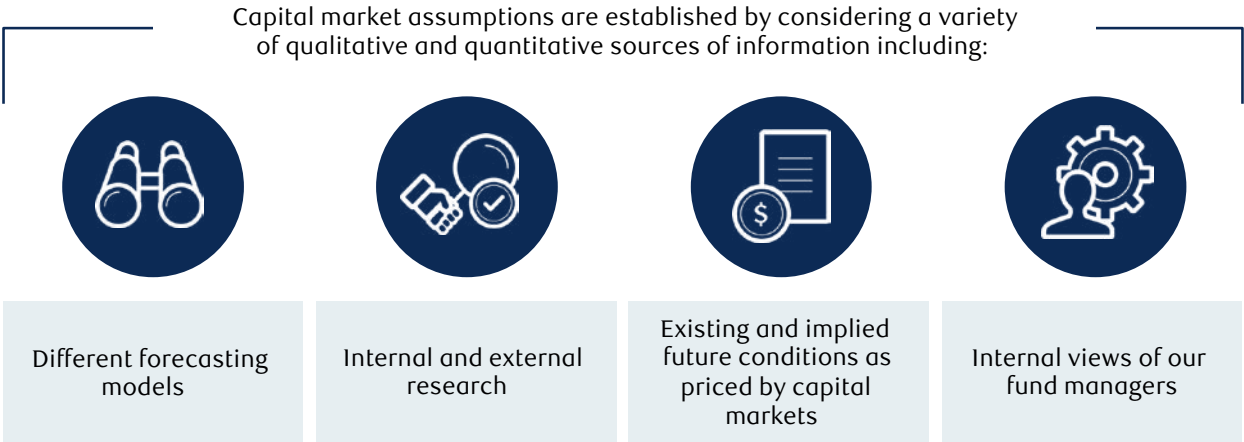
¹⁵ 7.5% ICE BofA 3 Month US T-Bills (CAD-H), 35% ICE BofA Global High Yield Index (CAD-H), 11.25% J.P. Morgan Emerging Market Bond Index (CAD-H), 11.25% J.P. Morgan Corporate Emerging Markets Bond Index (CAD-H), 7.5% J.P. Morgan Government Bond Index-Emerging Markets (GBI-EM) (CAD-H), 7.5% Credit Suisse Leveraged Loan Index (CAD-H) and 20% Thomson Reuters Convertible Global Focus Index (CAD-H).

Correlations

	Cash	Legal List bonds	Legal List short corporate bonds	Short-term bonds and mortgages	Corporate bonds	Private placement corporate debt	Commercial mortgages	High yield bonds	Global multi-asset credit	Canadian equities	Canadian low volatility equities	U.S. equities	U.S. low volatility equities	International equities	Emerging market equities	Core real estate	Infrastructure
Cash	1																
Legal List bonds	0.3	1															
Legal List short corporate bonds	0.2	0.9	1														
Short-term bonds and mortgages	0.2	1.0	0.9	1													
Corporate bonds	0.1	0.8	0.9	0.9	1												
Private placement corporate debt	0.1	0.8	0.9	0.9	1.0	1											
Commercial mortgages	0.2	0.7	0.7	0.8	0.7	0.7	1										
High yield bonds	-0.1	0.1	0.3	0.2	0.5	0.4	0.2	1									
Global multi-asset credit	0.0	0.2	0.4	0.3	0.5	0.5	0.2	0.9	1								
Canadian equities	-0.1	0.0	0.2	0.0	0.3	0.2	0.1	0.7	0.7	1							
Canadian low volatility equities	0.0	0.1	0.2	0.1	0.4	0.3	0.2	0.6	0.6	0.8	1						
U.S. equities	-0.1	0.1	0.2	0.1	0.3	0.2	0.1	0.5	0.4	0.6	0.5	1					
U.S. low volatility equities	-0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.5	0.7	1				
International equities	0.0	0.1	0.2	0.2	0.3	0.3	0.2	0.6	0.6	0.7	0.6	0.8	0.4	1			
Emerging market equities	0.0	0.1	0.2	0.1	0.3	0.3	0.1	0.6	0.7	0.6	0.5	0.5	0.2	0.7	1		
Core real estate	0.0	-0.2	-0.3	-0.3	-0.3	-0.2	-0.3	-0.1	-0.2	-0.1	0.0	-0.1	0.0	0.0	-0.1	1	
Infrastructure	0.0	0.3	0.2	0.3	0.3	0.4	0.3	0.1	0.1	0.0	0.2	0.0	0.2	0.1	0.0	0.3	1

Capital market assumptions represent the views of PH&N Institutional for the purposes of illustrating and understanding the potential risk-reward trade-off of different portfolio decisions and are established by considering a variety of qualitative and quantitative sources of information including: different forecasting models; internal and external research; existing and implied future conditions as priced by capital markets; and internal views of our fund managers. Expected long term annualized returns are for a 10-year forecast time horizon. Volatilities, downside risk and correlations are estimated from historical data and adjusted as required to reflect future market conditions. Investors should be aware of the limitations using forward-looking assumptions in that there is absolutely no guarantee that future performance will occur according to any ex-ante expectation.

Exhibit 2: Capital market assumptions methodology and definitions



Volatilities and correlations are estimated from historical data and adjusted as required to reflect expected future conditions. The forward-looking annual volatility assumptions are calibrated using a dual-state regime switching lognormal model and downside risk estimates are adjusted for the influences of excess skewness and kurtosis, if applicable.

Risk metric	What it represents	How it is calculated
Annual volatility	How much investment returns fluctuate over time; higher volatility means less predictable returns	Standard deviation of periodic returns, annualized using the appropriate time-scaling factor (e.g., $\sqrt{12}$ for monthly data)
Downside risk, as measured by CVar95	Average loss during the worst 5% of periods; shows how severe losses can be when markets decline	Average of all the negative returns that fall into the bottom 5% of outcomes
Sharpe ratio	Return earned per unit of risk taken; higher is better, indicating more efficient use of risk	Excess return over the risk-free rate divided by annual volatility
Worst return period	The worst returns an investor would have earned over the relevant period of time	By compounding monthly returns over all applicable periods and determining the minimum

Exhibit 3: Description of asset classes

The capital market assumptions and data sources used in the modeling analysis are presented in the following tables:

Asset classes	What they are	What is their role in a portfolio?
Cash	Highly liquid, low return, principal protected securities that are akin to cash	Generally not recommended in a long-term portfolio, but can be used to meet short-term funding needs.
Legal List bonds	Representative of allowable bond allocations under the Legal List, which includes Canadian government bonds and A-rated or higher corporate bonds	Fixed income assets generally serve to provide higher levels of capital preservation, income return, and a hedge to equity risk exposure under normal market conditions.
Short-term bonds and mortgages	Short-term government and corporate bonds, and very conservative multi-residential commercial mortgages as a yield enhancement	
Private placement corporate debt	Directly negotiated corporate loans and bonds with customized terms, offering higher yields and stronger creditor protections than public markets	
Commercial mortgages	Commercial mortgages backed by real assets across Canada's major real estate markets and property types, designed to provide a high degree of capital preservation and income return	
Global multi-asset credit	Diversified fixed income investments across geographies, sectors, and credit quality to optimize risk-adjusted yield	
Canadian equities	Shares in publicly traded Canadian companies	Equity assets generally serve to generate higher returns by accessing different markets and investing strategies.
Canadian low volatility equities	Canadian equity strategy designed to provide equity-like risk premiums with lower downside risk	
U.S. equities	Shares in publicly traded U.S. companies	
U.S. low volatility equities	U.S. equity strategy designed to provide equity-like risk premiums with lower downside risk	
International equities	Shares in publicly traded companies in developed countries, excluding North America	
Emerging market equities	Shares in publicly traded companies in emerging economies	
Core real estate	Direct ownership in high-quality Canadian commercial real estate	Alternative assets generally serve to provide a source of return that is uncorrelated with fixed income or equities, further diversifying a portfolio's returns and making it more resilient to changing market conditions.
Infrastructure	Direct ownership in global infrastructure assets	

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