City of Barrie

New Technology Policy

G216

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1 INTRODUCTION TO THE NEW TECHNOLOGY POLICY

The City of Barrie is committed to building a more resilient future by thoughtfully adopting new technologies in municipal infrastructure. The New Technology Policy supports staff in exploring innovative solutions while improving consistency and clarity in decision-making to achieve positive outcomes.

The policy provides a clear, transparent framework for evaluating and implementing new technologies, balancing innovation with due diligence and ensuring alignment with the City's infrastructure standards, asset management goals, risk tolerance, and resident health and safety.

Through this policy, staff will benefit from:

- **Confident decision-making** supported by a structured, evidence-based process
- **Reduced risk** through consistent evaluation criteria aligned with City standards
- **Better outcomes for residents** by prioritizing health, safety, sustainability, and economic vitality
- **Stronger collaboration** with clear roles and expectations across teams and partners
- **Improved efficiency and value** through enhanced service delivery and optimized operations

Working in conjunction with existing standards, plans, regulations and the City's Pilot Project Guideline, this policy applies to all City-led projects and municipal infrastructure assets that are ultimately owned, operated or maintained by the City. The policy provides staff with a clear framework for evaluating and implementing innovative solutions, reducing uncertainty, enhancing accountability, and supporting the successful integration of technologies that benefit the community.

2 PURPOSE

This policy sets a standardized approach evaluating, trialing and implementing new technologies within the City of Barrie's municipal infrastructure systems. This policy aims to:

- Support the long-term delivery, resilience and sustainability of municipal infrastructure assets
- Manage risks associated with the introduction of non-standard materials, systems, technologies or methods
- Encourage innovation while maintaining the reliability and performance of city assets.,
- Ensure alignment with Asset Management Plans, Master Plans, City Engineering Standards, and all applicable legislation, regulations and industry standards.

3 SCOPE

This policy applies to all Infrastructure and Growth Management (IGM) stakeholders, internal and external who propose, implement, or deploy new technologies related to:

- Drinking Water Infrastructure
- Wastewater Infrastructure
- Transportation Infrastructure
- Stormwater Infrastructure

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5 TECHNOLOGY CLASSIFICATION AND IMPLEMENTATION GUIDELINES

5.1 PURPOSE OF TECHNOLOGY CLASSIFICATION

Technology classification establishes a consistent framework for evaluating new and emerging technologies proposed for use within municipal infrastructure systems. Classification ensures that the level of scrutiny, testing and approval applied to a technology is proportionate to its risk, maturity and potential impact on public safety, service reliability, costs and long-term operations.

5.2 TECHNOLOGY CLASSIFICATION CATEGORIES

New technologies shall be classified into one of the following categories prior to consideration for implementation.

5.2.1 Proven Technology

Proven Technology is a new technology that has a demonstrated performance record and has been widely implemented by comparable municipalities. The technology demonstrates a documented performance history and complies with recognized industry standards and regulatory requirements.

5.2.2 Emerging Technology

Emerging Technology is a technology that has moved beyond the conceptual development and has undergone limited field or pilot testing but does not yet have an established performance record under municipal operating conditions. They present a moderate risk and typically require a structured pilot testing and performance monitoring prior to implementation. The City does not currently have a pilot testing or performance monitoring process.

5.2.3 New Technology

A New Technology is any method, material, process, system or equipment that has not been formally adopted into the City's Infrastructure Standards and for which no City recognized performance standard exists. New technologies may have limited to no operational history within municipal infrastructure and will typically present higher levels of technical, operational or financial risk. Adoption of new technology requires a comprehensive evaluation and formal approval process.

5.3 IMPLEMENTATION GUIDELINE BY TECHNOLOGY CLASSIFICATION

5.3.1 Proven Technology

Proven technology has a demonstrated performance record within municipalities similar climatic systems and can meet the following criteria:

- At least three (3) separate installations operating at or near their capacity
- A minimum of three (3) years of consistent and reliable compliance with design performance criteria, without major failures of either the process or equipment
- Demonstrated performance in comparable regulatory, climatic and operational environments

5.3.2 Emerging Technology

When implementing Emerging Technologies, the stakeholder shall take the following into consideration:

- Compatibility with the City's existing infrastructure system
- Assess impacts on:
  - Lifecycle cost
  - Maintenance requirements
  - Service Levels
- Working with a pilot or phased implementation approach
- Consider training requirement for operations and maintenance staff

5.3.3 New Technology

Prior to implementing new technologies within the City's infrastructure system, a comprehensive evaluation should be conducted. The following factors must be considered:

- Compatibility with the City's existing infrastructure
- Assessment of impacts on:
  - Lifecycle costs
  - Maintenance requirements
  - Service levels
  - Risks associated with the new technology, including health and safety considerations
- Alignment with applicable regulatory requirements
- Alignment with sustainability or climate goals
- Pilot testing plan should be put in place

6 EVALUATING PRINCIPLES

Asset management principles should guide every phase of the evaluation process for new technologies and corporate initiatives. Informed decision making must be supported by a structured evaluation framework that addresses the following key considerations:

- Functionality and Effectiveness
  - Evaluates whether the technology meets a defined need or enhances the performance of existing infrastructure systems.
- Cost and Economic Feasibility
  - Evaluates both initial investment and long-term costs, including operation, maintenance and potential cost savings over the lifespan of the product.
- Safety and Risk Management
  - Assesses the extent to which the technology improves safety outcomes for users, workers and the public, while reducing risks associated with infrastructure vulnerabilities and hazardous conditions.
- Reliability and Durability
  - Evaluates the consistency and longevity of the technology's performance under diverse environments and operating conditions.

- Useability and Implementation
    - Assesses how easily the technology can be implemented, operated and integrated into current systems, including the associated training and skill requirements.
- Environmental Impact and Sustainability
    - Evaluates how the technology contributes to environmental protection, improves resource efficiency and advances sustainability objectives.
- Scalability and Adaptability
    - Evaluates the technology's ability to be expanded, adapted or deployed across different locations and projects of varying scales.
- Compatibility with Existing Infrastructure
    - Review how well the technology with or enhances existing systems without the need for significant modifications.
- Innovation and Technological Advancement
    - Reviews the level of innovation of the technology and its potential to significantly enhance infrastructure design, construction or management practices.
- Regulatory and Standards Compliance
    - Ensure the technology complies with applicable legal, industry and safety standards for use in public or private infrastructure.

7 Risk Management and Contingency Planning

All new technologies shall include a risk mitigation strategy that addresses potential technical, environmental, and financial risks. A contingency plan must also be established should the technology fail to perform as expected.

8 Approval Process

The approval process for evaluating and implementing new technologies shall be carried out in accordance with the City's Pilot Project Guideline (G217).

9 Implementation Requirements

All requirements for testing, evaluation, deployment and integration of new technologies shall be governed by the City's Pilot Project Guideline (G217).

10 APPENDICES

10.1 APPENDIX A – DEFINITIONS

Asset Management – The coordinated activities of an organization to realize value from its infrastructure assets throughout their lifecycle while balancing costs.

City Standards – The City of Barrie's approved engineering standards, specifications, guidelines, policies and standard drawings governing the design, construction, operation and maintenance of municipal infrastructure.

Deviation – A change to the materials, equipment or other works from what was originally shown, specified, or approved in the project drawings or documents. A deviation must comply with applicable City standards and requirements and provide the same intended function and level of service as the specified works.

Emerging Technology – A technology that has progressed beyond the conceptual stage and has undergone limited pilot or field testing but does not yet have an established performance record under municipal operating conditions.

Infrastructure Asset – Any physical asset owned, operated or maintained by the City that supports the delivery of municipal services, including drinking water, wastewater, stormwater, transportation and related systems.

Lifecycle Cost – The total costs of an asset or technology throughout its useful life, including planning, design, installation, operation, maintenance, rehabilitation, replacement and disposal.

New Technology – Any material, product, equipment, system, method, process, software or innovation that has not been formally adopted or recognized within the City's infrastructure standards and specifications.

Proven Technology – A technology that has demonstrated successful performance through multiple installations and has an established operating history in comparable municipal applications, environments and regulatory jurisdictions.

Risk Assessment – A systematic process used to identify, evaluate and mitigate potential technical, operational, financial, environmental, health and safety risks associated with a technology.

Stakeholder – Any internal department, external agency, consultant, contractor, utility, regulator or other party with an interest or responsibility related to the evaluation, approval, implementation, operation or maintenance of a technology.

Technology Classification – The process of categorizing a technology as Proven, Emerging or New based on its level of maturity, demonstrated performance, implementation history and associated risk.

10.2 Appendix B – Stakeholder Review List

The following table identifies the stakeholders to be consulted during the introduction of a new technology. In certain cases, multiple subgroups within each stakeholder category may require engagement.

		Infrastructure Asset			
		Drinking Water Infrastructure	**Wastewater Infrastructure**	**Stormwater Infrastructure**	**Transportation Infrastructure**
Stakeholder Review Group	**Corporate Asset Management**	X	X	X	X
	Infrastructure	X	X	X	X
	Development Services	X	X	X	X
	Water Operations	X			
	Wastewater Operation		X		
	Technical Stormwater Operations			X	X
	Road Operations			X	X

*It is important to remember that, within certain stakeholder groups mentioned above, several subgroups may need to be included in the review process.

10.3 Appendix C – Document Status and Change Log

Over time it will be necessary for the City of Barrie to update this standard as the regulations, design practices and technologies continue to evolve and change. It is the user's responsibility to check the City's website for the status and revisions of this standard. Standard Owners should immediately discard superseded and cancelled standards.

Revision No.	Date	Status (Under Review/Document Change)	Comment