Utilities and Established Area Growth

Challenge:

The existing utility networks (water, sanitary, storm, electricity) in the established area were **designed to service the built form of the original communities**. As the built form and land use changes in these communities, the utility networks will need to adapt to support growth.

Objective:

Develop **sustainable utility planning and funding tools** to continue to meet the servicing needs of existing customers, regulatory and safety requirements, and to successfully support growth to achieve Calgary's Municipal Development Plan targets.

Focus areas to improve

To address this challenge and work toward its objective, the Utility Working Group (comprised of community members, industry and The City), focused their efforts on the following to support redevelopment in the established area:

INFORMATION SHARING

COST PREDICTABILITY

ADMINISTRATIVE SUSTAINABILITY

REGULATORY PROCESS

Approach

In pursuing these Focus Areas, the Utility Working Group was guided by the following considerations:

Build upon a foundation

The City of Calgary has been laying a foundation of projects and initiatives that have enabled focused utility discussions as part of the Established Area Growth and Change Strategy. Projects like the Centre City Levy, the Municipal Development Plan, the Industry/City Work Plan, and Main Streets provide information and lessons learned for the work.

Balance proactive and responsive actions

It is important to identify opportunities to be proactive. However, being proactive requires predictability, which is not always possible in the established area. As a result, The City will complement proactive actions with a focus on improving responsiveness.

Focus on efficiency

The Utility Working Group focused on actions that are implementable without requiring extensive staff resources, complicated processes or extensive analysis that can result in diminishing returns.

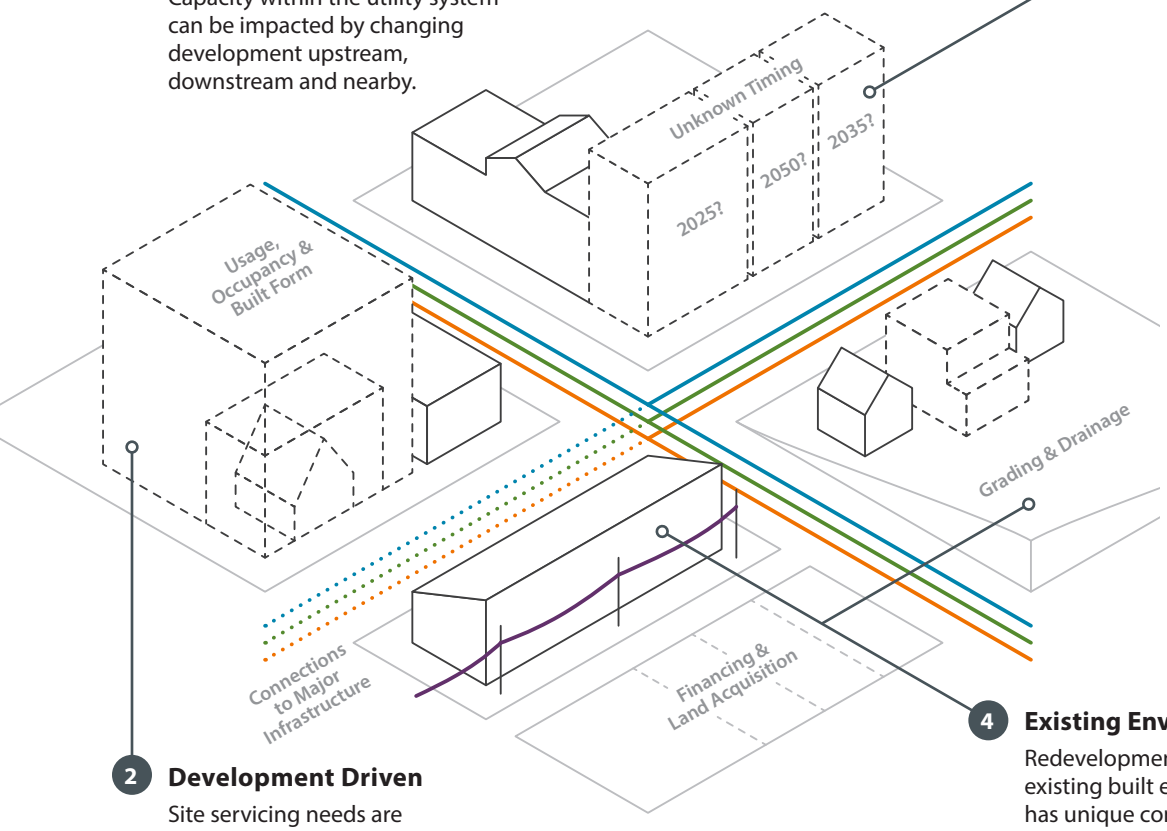
Test, monitor and continuously improve

Phase 1 of the Established Areas Growth and Change Strategy established an understanding of the challenges faced by development, The City and other utility providers related to utilities. This resulted in early recommendations based on initial assumptions and preliminary analyses. Ongoing monitoring and stakeholder conversations will improve the Strategy's effectiveness over time. The goal is to create a rhythm to growth planning that continuously improves and adapts based on the information available.

Constraints of redevelopment on utilities

1 Dynamic Systems & Dynamic Growth

Capacity within the utility system can be impacted by changing development upstream, downstream and nearby.



2 Development Driven

Site servicing needs are determined by project specifics.

3 Timing & Predictability

Developer risk: Property investment may occur before project details are known and the servicing needs understood. Currently, the first development to trigger an upgrade funds it, which may impact project viability. Developers have to account for this risk in their projects and proformas.

City risk: Growth will not always occur as planned and local area planning does not provide detailed timing data. Utilities function best when tailored to the built form and use. For these reasons, a strategic approach to utility funding and timing is required to support development and enable The City to maximize the value of existing assets.

4 Existing Environment

Redevelopment must work within the existing built environment. Each location has unique constraints, such as overhead powerline setbacks and site grading.

Impacts of redevelopment on utilities

Each utility has unique considerations in how the service evolves to meet the needs of growing communities.

The impacts of growth on the **WATER SYSTEM** are strongly influenced by the size, type and material of buildings.

Upgrades are typically triggered by fire flow requirements, which ensure there is an adequate pressure and flow rate in the system to fight fires. These requirements are dependent on the building's materials, size, internal sprinklers, and many other building features.

The impacts of growth on the **SANITARY SYSTEM** are strongly influenced by the number and type of users contributing to the flow of wastewater.

Water conservation efforts have allowed the system, which was designed for predominantly single family homes, to accommodate more users incrementally. Larger increases in density may result in the need for an upgrade.

The impacts of growth on the **STORMWATER SYSTEM** are strongly influenced by the permeability of the land.

Much of the established area was built to rely solely on piped approaches to manage stormwater. Older communities within the established areas are also redeveloping faster and, as a result, permeable land is decreasing, and land permeability is important in stormwater management (i.e. more hard surfaces reduce the ability of the landscape to absorb water).

The impacts of growth on the **ELECTRICITY SYSTEM** are strongly influenced by the use and behaviour of customers.

The electrical load is based on electricity draw from users. A higher draw can be attributed to more users or more appliances using more electricity. This makes predicting upgrades to the system a challenge.

Aligning the water utility system with planning growth

Scale	ESTABLISHED AREA	NEIGHBOURHOODS	SITE

Municipal Development Plan growth data provides The City with information to evaluate the larger pipe network. These are referred to as capital-size pipes. Finer level growth data is required for smaller pipes, also known as "local-size pipes" *

Type of Action	PROACTIVE		RESPONSIVE
Planning Level	**Municipal Development Plan** 60-year growth plans	**Local area plans** 20-30 year growth plans	**Development permit** Immediate growth

The greater level of development detail, the more accurate the utility system analysis can be.

Broad Planning → **Detailed Planning**

Information Available to Plan	High level growth targets	Local growth projections	Development proposal
What can be Determined	Long range plans for capital-size pipes *	Approximation of potential upgrades based on the growth forecasted	Confirmation of the servicing required for a specific development

Broad Analysis → **Fine Grained Analysis**

Proactive upgrades require careful considerations because if a pipe is not used to its design capacity, it requires more maintenance resulting in higher operational costs.

Resulting Action	Capital-size* pipe upgrades	Preliminary identification of capital and local-size pipe* upgrades based on growth assumptions	Local-size* pipe upgraded to service a development
Upgrade Funding (agreed to by the Utility Working Group)	Currently, utility rates fund the established areas growth portion of capital-size* pipes since there is no levy mechanism for collection. This may change in the future.	The City to fund proactive upgrades when they support short-term growth and align with other initiatives, like Main Streets (for Phase 1 as a pilot)	Phase 2 of Established Areas Growth and Change Strategy to determine how local-size upgrades will be funded as a pilot

* Capital-size pipes refer to the larger diameter pipes that service communities as a whole or multiple communities (i.e. feedermains, trunks). Local size pipes refer to smaller pipes that service specific areas within a community (e.g. streets, blocks).

How we got here and where we are going

In Phase 1 of Established Areas Growth and Change Strategy, the Utility Working Group discussed how The City can further support redevelopment in the established area related to utilities across all scales of planning and using multiple mechanisms. The table below brings together actions identified through the Utility Working Group for Phase 1 as well as areas to explore further in Phase 2.

	Utility			Focus areas to improve			
	Water + sanitary	Stormwater	Electricity	Improve information sharing	Improve cost predictability	Improve regulatory process	Improve municipal sustainability
Current practices to continue							
City-wide sanitary and water growth analysis	■						■
Local sanitary and water growth analysis as part of strategic planning projects	■					■	
Utility-funded established area growth portion of capital-size pipe upgrades	■	■			■		
Interim stormwater release rates; workplan meetings		■			■		
Actions: Phase 1							
Water Utility focused Pre-Application discussions	■	■		■			
Established area capital and local-size pipe threshold review	■	■			■		■
ENMAX Power information sharing through *partnerconnect@enmax.com*			■	■			
Proactive Water Utility-funded local-size pipe upgrades coordinated with Main Street streetscape improvements, where identified	■				■		
Adapt the utility analysis to the new local area planning approach	■	■	■			■	
Future actions: Phase 2 and beyond							
Explore and consider integrating local-size pipes, in consultation with industry, into the off-site levy for the established area, concurrent with a proposed public realm funding approach	■				■		
Monitor the relationship between growth and upgrades and adjust the analysis and approach as necessary	■	■				■	■
Share Utility Working Group findings with the Land Use Bylaw Review team (e.g. setbacks)	■	■	■			■	
Deliver in-progress stormwater initiatives and as they are completed, discuss lessons learned and apply to the Established Area Growth and Change Strategy: + City-wide Stormwater Model + Renfrew Integrated Stormwater Management Project + The Stormwater Strategy + The Variable Rate Study + The Level of Service Study		■				■	
Analyze the impact of overhead power line conversion to development costs and design			■		■		
Explore further information-sharing opportunities	■	■	■	■			
Continue to identify opportunities for proactive upgrades aligned with Main Streets and transit-oriented development	■				■		

The Utility Working Group reviewed each utility to different degrees, as described below. The graphic to the right showcases a sequence of steps to create a cycle of continuous improvement and how far the Utility Working Group progressed related to each utility.

- For **WATER AND SANITARY**, the Utility Working Group was able to take the conversation further by building upon a foundation of existing practice and work, including past Main Streets servicing analysis.
- For **STORMWATER**, multiple "in-flight" projects are running concurrent with Phase 1 (e.g. Stormwater Strategy). When complete, these will help inform further discussion starting in Phase 2.
- For **ELECTRICITY**, Phase 1 provided the opportunity to raise challenges and define directions to pursue further in Phase 2.