

## Supporting Household Energy Efficiency

### EXECUTIVE SUMMARY

Through Notice of Motion NM2017-34, *Supporting Household Energy Efficiency*, Council directed Administration to remove procedural barriers for people who are interested in making their existing homes more energy efficient. This direction was focused on exterior insulation retrofits on existing low density residential buildings where alternative means to increase exterior wall insulation are typically cost or technologically prohibitive. Maintaining building safety and envelope integrity is a primary consideration in the proposed recommendations. To fulfill the direction, it is recommended that the Land Use Bylaw be amended to exempt exterior insulation upgrades from a development permit for lot coverage calculations to allow for side yard setback relaxations. Additionally, the existing Building Permit processes will ensure building fire safety, moisture protection, and envelope durability are maintained through review and inspections of exterior insulation retrofit projects.

#### **ADMINISTRATION RECOMMENDATION:**

That the Standing Policy Committee on Planning and Urban Development:

1. Direct Administration to:
  - a. prepare an amending bylaw to Land Use Bylaw 1P2007 as outlined as proposed text in Attachment 1;
  - b. forward the proposed bylaw directly to the Public Hearing of Council no later than 2018 June 11 to accommodate the required advertising; and
2. Recommend that Council hold a Public Hearing and give three readings to the proposed Land Use Bylaw Amendment.

#### **RECOMMENDATION OF THE SPC ON PLANNING AND URBAN DEVELOPMENT, DATED 2018 APRIL 30:**

That Council hold a Public Hearing and give three Readings to Proposed **Bylaw 39P2018**.

### PREVIOUS COUNCIL DIRECTION / POLICY

On 2017 September 11, Council adopted Notice of Motion NM2017-34 *Supporting Household Energy Efficiency*, directing Administration to:

- a) Develop a standalone permit application process, including a proposed fee structure, pertaining to adding insulation to buildings designated as low density residential to remove excess burden on the planning department;
- b) Explore permitting lot coverage to exceed the current maximum for existing homes to allow for additional exterior insulation, up to a maximum of 30 centimetres per side, so long as relevant building and safety codes are met; and

## **Supporting Household Energy Efficiency**

---

- c) Report back to Council, through the SPC on Planning and Urban Development, on the proposed changes no later than Q2 2018.

### **BACKGROUND**

The direction received from Council was to address energy efficiency upgrades to existing low density homes, specifically improvements to thermal envelope performance. Thermal envelope upgrades to single detached homes are typically executed by exterior insulation retrofits. This is done by removing the existing exterior shell of a building (cladding), adding a layer(s) of insulation to the exterior and then recladding with the same or a different cladding material. This process effectively 'thickens' exterior walls outward and provides a substantial improvement to the thermal performance of the house. However, this may lead to:

- 1) A conflict with the Land Use Bylaw (through an increase in lot coverage and/or side yard setback); and
- 2) An introduction of building performance issues, such as moisture ingress, vapour condensation, and fire spread issues related to the combustibility of materials used.

This report will address all Council directions related to exterior insulation retrofit permitting, bylaw compliance, and life and property protection.

### **INVESTIGATION: ALTERNATIVES AND ANALYSIS**

NM2017-34 identified both Development Permit and Building Permit objectives related to exterior insulation retrofits on low density residential buildings. The intent of the Notice of Motion is to reduce the barriers to these types of home improvements while ensuring property and safety levels are maintained.

The areas of concern for the Development Permit include lot coverage and reduced side yard setbacks, whereas the Building Permit is concerned with fire safety, moisture entering the wall, and wall durability. Because the concerns are largely unrelated, it was deemed beneficial to segregate the processes and recommendations by permit type.

#### ***Current State***

Under existing processes, exterior insulation upgrades would typically require an approved Development Permit for relaxation of lot coverage and side yard if required, and a Building Permit application for exterior insulation upgrades to ensure compliance with the Alberta Building Code to ensure building occupant health, durability, and fire safety are maintained. The Notice of Motion would eliminate the Development Permit requirement in foreseeable cases. The existing Building Permit processes are recommended to be maintained as the projected workload and fees are reasonable, clearly defined, and have been well established with industry and professionals.

## **Supporting Household Energy Efficiency**

### ***Development Permit***

Council direction was to restrict amendments to the Land Use Bylaw to modifying existing buildings. New housing can accommodate high levels of insulation within the allowed building envelope dimensions, whereas existing buildings already built to the edge of the allowable building envelope would need to either: apply for a relaxation of the Land Use Bylaw rule(s); tear down the house and replace it; or reduce the amount of insulation, which would limit the effectiveness of the building envelope upgrades.

An energy retrofit of a single or a semi-detached building can involve the exterior walls and/or the roof. The Notice of Motion proposes that up to 0.3 metres (approx. 12 inches) of exterior insulation may be added to a wall without adversely affecting lot coverage. Administration notes that a more typical insulation upgrade would result in .025 – 0.1 metres (1"-4") of additional thickness being placed on the outside face of the wall. In order to accommodate homeowners who wish to maximize the energy efficiency of their existing home and to acknowledge the direction from Council, Administration recommends amending the Land Use Bylaw in the low density residential districts to exempt insulation retrofit projects from a development permit, allowing them to:

1. Project a maximum of 0.3 metres into a required setback area

The Land Use Bylaw has required minimum front, side and rear yard setback areas. The setback areas can vary by district but a typical house in a developed neighbourhood requires 3.0 metres for a front yard setback, 1.2 metres for a side yard setback and 7.5 metres for a rear yard setback. If a homeowner chose to undertake a project that maximizes the energy efficiency and the house was on a typical lot in the established area, then this amendment would allow for an exemption from a Development Permit for setback relaxations of up to 10% in the front yard, 25% in the side yard and 4% in the rear yard.

2. Exceed the maximum building coverage in the district.

The Land Use Bylaw allows for buildings in low density residential districts to cover between 45%-50% of a lot. If a building were at the maximum allowable lot coverage and the owner then wanted to retrofit their house using 0.3 metres of exterior insulation, we estimate that the additional lot coverage could be up to 3%. As the percentage increase is relatively small, even at the maximum possible amount of insulation being added, Administration recommends an amendment to allow the maximum building coverage rule to be exceeded for the purpose of an energy retrofit project.

By approving the proposed Land Use Bylaw amendments (Attachment 1), Council would be determining that increasing the energy efficiency of an existing home is a worthwhile trade-off for smaller building setbacks and increased lot coverage.

### ***Building Permit***

Increasing the exterior insulation on an existing wall assembly may impact the allowable distance to the property line and certainly impacts the thermal and moisture dissipating characteristics of

## **Supporting Household Energy Efficiency**

the walls. Adding any amount of insulation to a wall assembly impacts code compliance as changes thermal properties, condensation points, and limiting distance to the property line, affecting the combustibility and unprotected opening requirements found in the Alberta Building Code. Issues related to increasing exterior wall insulation include:

- 1) Combustible construction requirements;
- 2) Impacts on the amount of allowable window and door area for walls adjacent to property lines (intended to limit fire spread from neighbouring structures);
- 3) Wall condensation potential and subsequent impacts of failure; and
- 4) Ensuring rain and snow is adequately shed by the cladding and windows.

An exterior insulation retrofit (Attachment 2 – Side Yard of a Typical Retrofit) can provide a continuous, airtight, blanket of insulation around the house. The main advantages of an exterior retrofit are that it doesn't affect interior finishes; it doesn't reduce room sizes; and you can continue to live in the house while the work is completed outside. However, the design and installation of wall insulation materials does require a review to ensure occupant safety in the event of fire, and to confirm envelope durability and performance. Because of these concerns, exterior insulation improvements currently require a Building Permit review and inspection. This allows for an evaluation of site specific requirements such as type and thickness of insulation being added, type and combustibility of cladding, existing and new distance to property line(s), with the intent of verifying compliance with the Alberta Building Code.

To ensure clarity of process, Calgary Building Services has made several resources available for the public seeking information on exterior insulation retrofits, including:

- 1) Online resources ([calgary.ca/myHome](http://calgary.ca/myHome));
- 2) Telephone (311 - Technical Assistance Centre);
- 3) In person (Planning Services Centre); and
- 4) Industry related (BILD Home Renovators Committee).

In addition, modifications to The City of Calgary's 'greenbuilding' web hub ([calgary.ca/greenbuilding](http://calgary.ca/greenbuilding)) will include detailed information on permitting requirements and considerations explicitly related to exterior insulation upgrades. This is in keeping with Calgary Building Services efforts to make information accessible and convenient for homeowners (see Attachment 3 – Information Access for Applicants for current customer service channels).

### **Stakeholder Engagement, Research and Communication**

As the proposed recommendation includes minor changes to the Land Use Bylaw, and utilizes existing Building Permit practices and communication methodologies, additional external stakeholder engagement is not required.

### **Strategic Alignment**

The Land Use Bylaw amendment aligns with the following City initiatives;

## **Supporting Household Energy Efficiency**

---

- 1) Green House Gas mitigation strategy
- 2) Green House Gas Adaptation strategy
- 3) Municipal Development Plan 2.6 Greening the City

### **Social, Environmental, Economic (External)**

Facilitating energy-efficient buildings in the developed communities will help; retain valued existing buildings; balance growth between established and greenfield communities and will help to reduce the impacts that the built form can have on the environment.

### **Financial Capacity**

#### ***Current and Future Operating Budget:***

By utilizing existing processes related to exterior insulation upgrades, Administration would be well positioned to manage anticipated application volume.

#### ***Current and Future Capital Budget:***

There is no foreseen capital budget impact associated with the recommendations in this report.

### **Risk Assessment**

Facilitating energy efficient buildings in the developed communities carries limited risk as life safety and property mitigation measures are maintained through review and inspections. The Land Use Bylaw amendments propose to allow existing buildings to exceed required setbacks and/or building coverage limits which is a reasonable trade-off for homeowners proposing to increase the energy efficiency of their existing home.

#### **REASON(S) FOR RECOMMENDATION(S):**

The Land Use Bylaw amendment provides assurance to homeowners and contractors that they can pursue the most energy efficient and economical methodology of exterior insulation upgrades. By adhering to existing Building Permit processes, the continuity for applicants is ensured while maintaining appropriate property and fire safety levels. Supplementing online resources will further clarify design practice and cost considerations for citizens.

### **ATTACHMENTS**

1. **Proposed Bylaw 39P2018**
2. Side Yard of a Typical Retrofit
3. Information Access for Applicants