



# Arlington

## **Removing zoning barriers to net zero energy homes**

From the Arlington Clean Energy Future Committee's Net Zero Energy Action Plan:

Proposal for zoning bylaw change

12-22-20

# The Clean Energy Future Committee (CEFC)

- Established by The Select Board
- The mission: guide the Town of Arlington to a future where, by 2050, net emissions of greenhouse gases attributable to all sources in Town are zero.
- The Committee is charged with identifying short and long-term energy goals; ...  
[including] *recommending changes to laws and regulations*;...
- The CEFC endorsed the successful Fossil Fuel Bylaw that was passed overwhelmingly by the Town Meeting
- CEFC is recommending removal of a zoning barrier to efficient housing
  - Also enhances the Fossil Fuel Bylaw by making more buildings subject to it
  - Culmination of three years of discussions in other zoning studies, with the planning department and with The Town Manager

# 2050 Town greenhouse gas emission reduction goal

- Homes are the single largest source of emissions in Arlington
- To meet the goal: 100% of Arlington buildings have to reach net zero emissions by 2050
- This means ~400 buildings must reach net zero emissions **every year** between 2021 and 2050
- Available methods today:
  - Electrify buildings (e.g. Fossil Fuel Bylaw)
  - Deep energy retrofits of existing buildings
  - New net-zero ready buildings
    - And “Plus” homes that generate more energy than they consume



# The issue & proposal in brief

- Many lots in Arlington are non-conforming
  - Non-conforming lots are not subject to the same energy efficiency requirements with regard to basements as conforming lots
  - Current bylaw does not allow to rebuild with a new foundation on a non-conforming lot
- The proposed bylaw change
  - Would create an exemption for construction on non-conforming lots with existing structures provided they meet certain high energy efficiency standards
  - Would **not** change current building size or dimensional rules for small lots, simply allows new foundations to be installed on homes that are already allowed to be built on top of existing foundations
  - Does **not** result in the division of existing lots or the addition of new homes to lots with existing principle structures

# Why basement insulation matters

- “Heat loss from an uninsulated, conditioned basement may represent up to 50% of a home's total heat loss in a tightly sealed, well-insulated home.” – InterNACHI
  - Case study: Arlington homes are frequently re-built on top of a existing non-insulated foundation resulting in significant heat losses as well as water, mold and radon issues
- MA energy code requires insulated basements for new homes
  - Net zero energy or “plus” homes often cannot be built on top of existing, uninsulated foundations



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<https://www.nachi.org/foundationinsulation.htm>

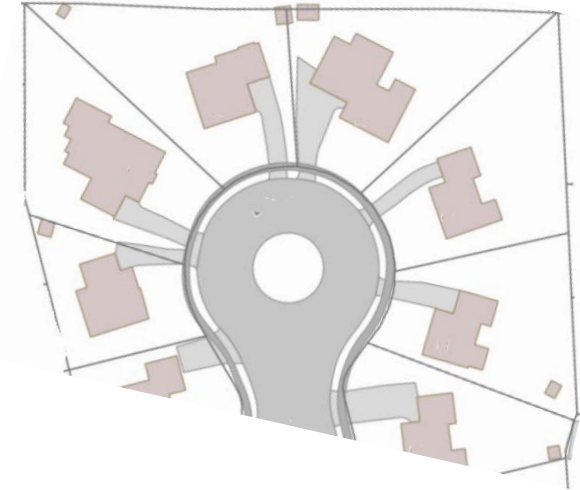
# Proposed bylaw change concept

- Under section 5-18 / B. Exceptions to Minimum Lot Area, Minimum Front Yard Lot Width, Frontage, Open Space, Side Yard, and Height Requirements in the R0, R1, and R2 Districts.
- **Proposed new exemption concept (e.g. 5-18/ B(8)):**  
Exemption for energy efficient homes on R0, R1 or R2 lots with an existing principal building. The lot minimum frontage and lot area requirements shall not apply to homes that are constructed to the higher efficiency standard of either PHIUS+ or the International Energy Conservation Code as adopted and amended by Massachusetts, and;
  1. The new building is built within the existing foundation footprint, or with an addition that is not a Large Addition (as defined in 5-18/B.6), or
  2. The lot has at least 6,000 square feet of area, or
  3. By special permit.

# Large cul-de-sacs and irregular shape lots

- Identified 3%- 4% of lots with greater than 6,000 square feet of area, but minimum frontage below conforming limit
  - Est. fewer than 400 lots
  - Proposed to be treated the same as 6,000 sqft lots with conforming frontage length
- Examples:
  - Large cul-de-sac lots
  - Large irregular shape lots

Cul-de-sac example  
8,000 to 10,000 sqft  
45 feet of frontage



Irregular lot example  
10,000 sqft  
19 ft frontage



# Comparison of existing and proposed bylaw

Existing lots with an existing principal building. Does not add new lots or buildings.

	Non-conforming lot	Proposed exemption to non-conforming lots
<b>New home construction?</b>	<b>Allowed</b>	<b>Allowed</b>
New foundation?	Not Allowed	Allowed
Buildable area: existing footprint & can expand floor area by up to 750 square feet	Currently allowed	No change
Addresses large cul-de-sac and large irregular lots	No	Yes
New fossil fuel bylaw applies	Possibly not. Only if >75% gross floor area is changed	Yes
Required to meet entire state energy code in full?	Only partially	Yes
<b>Automatically tighter standards every 3 years?</b>	<b>No</b>	<b>Yes</b>

- **Current bylaw result: increases divergence in emissions between buildings on conforming and non-conforming lots over time**
- **Arlington cannot meet its 2050 net zero emissions goal without addressing this topic**