

Attachment B: Summary of Retrofit Options

Name: Energy Benchmarking	Type: Regulation or Voluntary
Sector: ICI and High-Density Residential (i.e., large buildings)	
Description: Energy benchmarking policies require owners to measure and disclose their energy use, which makes energy efficiency investments more visible and therefore valuable.	
Benefits: <ul style="list-style-type: none">• Make it possible for potential buyers, renters, and tenants to see which buildings are more energy-efficient, therefore valuing this in their purchase or leasing decisions, and therefore giving owners additional incentives to invest in energy efficiency.• Having visibility into a building's energy consumption relative to similar buildings and to a buildings previous energy performance provides an incentive to ensure the building is not a low performer.	
Challenges: While several municipalities in the US have enacted laws to require benchmarking, to this point in BC only voluntary policies have been used. Therefore, the Province would first have to establish building energy benchmarking policy and to clarify the authority for municipalities to develop their own bylaws. If a voluntary approach was endorsed, it would be difficult to convince building owners and managers that measuring and disclosing energy consumption has benefits, especially if other similar buildings are not required to measure and report; thus, uptake may be low.	
How it Could be Implemented in Kelowna: Educating building managers on the benefits of benchmarking and providing coaching or streamlined access to benchmarking tools (e.g., ENERGY STAR Portfolio Manager®).	
Successful Examples: <ul style="list-style-type: none">• City of Vancouver – mandatory benchmarking for City-owned buildings, and voluntary benchmarking for large public sector/institutional, commercial, and high-density residential buildings.¹• New York City - requires commercial and multifamily buildings above 50,000 square feet to disclose their energy use data.²	

¹ <https://vancouver.ca/green-vancouver/energy-benchmarking-for-large-buildings.aspx>

² <https://www1.nyc.gov/html/gbee/html/plan/1184.shtml>

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Name: Home Energy Labelling	Type: Regulation or Voluntary
Sector: Residential	
Description: Home energy labelling policies require residential energy ratings, reports, or end-use disclosure following a home energy assessment. Home energy ratings are numerical scores based on an assessment of a home's energy efficiency. Home energy ratings let buyers compare the energy efficiency and performance of various homes, much like vehicle fuel-economy ratings or real-estate walk score ratings. Some home energy assessments provide more detailed home energy reports and highlighted recommended energy efficiency improvements. Energy-use disclosure makes utility data on home energy consumption publicly available, typically as part of the real estate sales process. ³ Once a rating, report, or energy consumption history has been established, local or provincial governments can then require that this information be disclosed at various trigger points (e.g., time of home listing, sale, occupancy, rent, renovation).	
Benefits: <ul style="list-style-type: none">• Providing better information about a building's energy efficiency will catalyze owners and occupants to make decisions that reduce energy consumption.• Energy costs can be more easily factored into purchasing or renting decisions, and over time the demand for energy efficient homes and buildings will increase.⁴	
Challenges: <ul style="list-style-type: none">• Local governments cannot require home energy labelling at the time of sale, but the Provincial government can (uncertainty of Provincial program).• The need to establish a consistent labelling program (e.g., EnerGuide) to ensure comparability.• Would need to get the real estate industry on-board if labelling is to be linked to time of sale or time of listing.	
How it Could be Implemented in Kelowna: <ul style="list-style-type: none">• Adoption and support of Provincial home energy rating policy once enacted.• Encouraged on a voluntary basis following EnerGuide assessments.	
Successful Examples: <ul style="list-style-type: none">• City of Portland - Implemented the Home Energy Score ordinance requiring sellers of single-family homes to disclose a Home Energy Report and Score at the time of listing.⁵• City of Berkeley and City of Austin - Adopted mandatory home energy audits and ratings for single-family residential buildings at time of sale. Austin's ordinance only requires the seller to disclose the energy rating and report to prospective buyers, while Berkeley's ordinance requires homeowners to publicly report the energy rating and report.⁶	

³ American Council for an Energy-Efficient Economy. 2018. Policy Brief - Home energy efficiency policies: ratings, assessments, labels, and disclosure. Retrieved from: <https://aceee.org/sites/default/files/pdf/topic-home-energy-assessment.pdf>.

⁴ Zirnhelt, H, and Horne, M. 2010. Energy labelling and efficiency requirements for existing buildings. *Pembina Institute*. Retrieved from: <https://www.pembina.org/reports/labellingee-existingbuildings.pdf>.

⁵ <https://www.portlandoregon.gov/bps/71421>

⁶ Consumers Council of Canada. 2018. Mandatory home energy rating and disclosure for existing houses: opportunities and risks for consumers. Retrieved from: https://www.consumerscouncil.com/site/consumers_council_of_canada/assets/pdf/810796_ccc_energy_rating_report_english_web.pdf.

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Name: Rebates	Type: Incentives
Sector: Residential or ICI	
Description: Financial incentives that help overcome the barrier of higher up-front costs of energy-efficient products or services by offering a refund that ultimately lowers costs. Some of these programs have distinct target markets (e.g., Rental Apartment Efficiency Program, Energy Conservation Assistance Program for low-income households), while others are more generic.	
Benefits: <ul style="list-style-type: none">• Makes energy-efficiency upgrades more affordable, ultimately addressing one of the biggest barriers to energy retrofits (i.e., high capital cost).	
Challenges: <ul style="list-style-type: none">• Typically, rebates are offered after the upgrade has already been completed, so the purchaser would still have to take on the full cost of the upgrade before being reimbursed.• Because the rebates are not returned to the issuer, the City is limited in what it could offer on its own.• Lack of awareness of the rebates can minimize program uptake.	
How it Could be Implemented in Kelowna: <ul style="list-style-type: none">• The City can leverage its marketing channels to help promote and increase participation in existing Provincial and FortisBC rebate program.• The City can “top-up” existing rebate programs.• The City can offer its own unique rebate programs	
Successful Examples: <ul style="list-style-type: none">• Regional District of Central Kootenay - A simplified process has been designed to help residents reduce energy costs. Residents can access an energy evaluation to determine what energy efficient upgrades (retrofits) can be done to reduce energy consumption and lower greenhouse gas emissions. Applicants can access current rebate offers, financing options, a local contractor guide and energy coaching.⁷• Township of Langley - If homeowners complete home improvements that reduce annual energy consumption by at least 10 GJ, they can access rebates from the Township. Residents can access \$15 x every 1 GJ/year reduction (example: \$15 x 25 GJ/Year = \$375 rebate + Subsidized EnerGuide pre-retrofit home evaluations).⁸• LiveSmart BC's Efficiency Incentive Program (2008): the Provincial home retrofit and energy efficiency rebate and incentives program reached its three-year target (40,000 homes) and budget (\$62M) in just 15 months of implementation.	

⁷ <https://rdck.ca/EN/main/services/sustainability-environmental-initiatives/energy/regional-energy-efficiency-program.html>

⁸ <https://betterhomesbc.ca/rebates/900-township-langley-green-building-rebate-program/>

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Name: Tax Exemptions	Type: Incentives
Sector: Residential or ICI	
Description: Municipalities can exempt the municipal portion of taxes paid by a property owner (business or residential properties) who meets certain criteria during an investment in the property. ⁹ A bylaw must be written which satisfies all the requirements as laid out in the <i>Community Charter</i> .	
Benefits: <ul style="list-style-type: none">• Provides a direct link between City processes (i.e., municipal property taxes) and improvements to community buildings.• Similar to a rebate in that it can make energy-efficiency upgrades more affordable, ultimately addressing one of the biggest barriers to energy retrofits (i.e., high capital cost).	
Challenges: <ul style="list-style-type: none">• Not commonly used for energy retrofits, so there are not many successful examples to draw from (no examples in Canada).• Uncertainty on how to link the value of the retrofit to the value of the tax exemption.• Could be a difficult concept for the average resident to grasp, thus participation could be low.	
How it Could be Implemented in Kelowna: <ul style="list-style-type: none">• See New York City's example below.	
Successful Examples: <ul style="list-style-type: none">• New York City - qualifying energy-conservation improvements to homes are exempt from real property taxation to the extent that the retrofit would increase the value of the home. Eligible properties include single-family to four-family dwellings, and the exemption applies directly to a variety of equipment and measures (including solar and wind energy systems).¹⁰	

⁹ Tax exemptions for businesses are exempted from section 25(1) of the *Community Charter* by section 226 (14) which grants the authority to provide a tax exemption subject to the conditions described in section 226.

¹⁰ <https://programs.dsireusa.org/system/program/detail/1596>

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Name: Local Improvement Charge / Property Assessed Clean Energy (PACE) Financing	Type: Financing
Sector: Residential or ICI	
Description: Local Improvement Charge (LIC) Loans (often referred to as Property Assessed Clean Energy Financing) are an innovative financing tool that allows property owners to borrow money to undertake a broad spectrum of energy retrofits to their buildings. The loan is paid back on the owner's property tax bill, with the energy bill savings created by the improvements, often resulting in net gains for the property owner. The value of the loan is attached to the property itself, not to the owner so when the property is sold, the remaining loan stays with the property, along with the energy efficiency upgrades and the savings associated with them. Local governments voluntarily opt into a LIC or PACE program; their role is to issue tax liens that provides security to the lender and collect payments from the owner via an assessment on the property tax bill and remit them to the administrator.	
Benefits: <ul style="list-style-type: none">• Links the financing to the building rather than the person, so financing can be transferred with ownership changes.• Typically low interest rates with costs spread over the life of the retrofit (up to 30 years), and not linked to credit scores.• Does not require the City to provide funds (i.e., it is not an incentive or subsidy). The City would only need to administer the loan program.	
Challenges: <ul style="list-style-type: none">• Currently no LIC or PACE enabling legislation in BC, so municipalities cannot adopt a program.• Administration of the program could require extensive effort and resources.	
How it Could be Implemented in Kelowna: <ul style="list-style-type: none">• Unable to implement unless the Province passed LIC or PACE enabling legislation.• The municipality of Port Moody has passed a council resolution and provided a letter of support for the Province to conduct a study of PACE best practices. In Kelowna, the City could to take a similar approach if a LIC or PACE or Loan program is desirable.	
Successful Examples: <ul style="list-style-type: none">• Municipality of the District of Lunenburg, NS - Partnered with Clean Foundation and the Province of Nova Scotia to provide PACE financing. The financing allows homeowners to install clean energy upgrades such as insulation, energy efficient windows and doors, as well as high efficiency heat pumps and solar panels as part of the program. A Home Energy Assessment determines what upgrades a home is eligible for. A low lending rate (4%) for the upgrades is provided and borrowers can spread installment payments over a period of 10 years, repayable through charges attached to their property. Should the home sell, the remaining payments become the obligation of the new home owner. Lump sum payments can be made at any time without penalty.¹¹	

¹¹ <https://www.modl.ca/i-want-to/apply-for/pace-program>

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Name: Information Distribution	Type: Education and Awareness
Sector: Residential or ICI	
Description: Information distribution assets are characterized by simple, punchy messaging which culminates in a call to action. These assets are meant to generate increased awareness of energy retrofits, and the possible benefits associated with them. The call to action is meant to encourage building owners who are starting to become interested in the idea of energy retrofits to engage with other, more complex program assets described as educational assets. Some examples of information distribution channels are: <ul style="list-style-type: none">• Mass marketing campaigns (all mediums, untargeted)<ul style="list-style-type: none">○ On-bill (City and FortisBC)○ Conventional Marketing (social, print, TV, radio)• Targeted digital campaigns• Targeted direct mail campaigns• Contractor distribution• Live media (TV, radio)• Events<ul style="list-style-type: none">○ Green Living Expo (home shows etc.)○ Block Party's.	
Benefits: <ul style="list-style-type: none">• Generally easy to implement.• Cost can be scaled to level of effort.• Can be used to support any other initiative.• Method of delivery can match target market (e.g., mailouts for seniors; social media for younger generation and seniors).	
Challenges: <ul style="list-style-type: none">• Does not directly result in uptake of energy retrofits (i.e., the actual turnover rate can be low); thus, difficult to track success.• Will generally require the City to offer financial support.	
How it Could be Implemented in Kelowna: <ul style="list-style-type: none">• To support FortisBC and Provincial retrofit initiatives, and any initiatives supported by the City (e.g., Municipal Top-Up and See the Heat Thermal Imaging Camera Program).	
Successful Examples: <ul style="list-style-type: none">• City of Kamloops: Block party funding is available to any Kamloops resident who wants to organize a block party. The funding is applied for through the City's Neighbourhood Matching Fund program with a focus on energy efficiency. Successful applicants will receive up to \$1,750 to cover the cost of food, music, and entertainment. FortisBC and the City fund these block parties to help neighbourhood associations and community members to build community by bringing people together, and to help customers save energy and energy-related costs.¹²	

¹² <https://www.kamloops.ca/our-community/news-events/news-releases/city-kamloops-and-fortisbc-block-party-funding>

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Name: Educational Assets	Type: Education and Awareness
Sector: Residential or ICI	
Description: These are pieces of property (both physical and information) that can increase education and awareness of retrofit initiatives. The level of complexity of these educational assets can vary widely, and can come in two forms: <ul style="list-style-type: none"><li data-bbox="253 512 1406 793">• Digital Asset – a digital asset could be as simple as www.betterhomesBC.ca which provides detailed information on incentives, or could be as complex as www.gofuelswitch.com which after providing information on dozens of variables clients receive detailed suggestions for how to reduce their GHG emissions. Both examples are information heavy, require inputs from the user and are designed with building owners who are already interested in doing some energy efficiency upgrades. Users are willing to spend some time working on it. These are tools that are meant to be used in the retrofit planning process and could promote the value of professions such as Energy Advisors, and CleanBC Program Registered Contractors.<li data-bbox="253 827 1330 930">• Physical Asset – an example of a physical education asset is a demonstration site that provides building owners the opportunity to see, touch and use equipment, building materials, and energy saving techniques they might not otherwise be familiar with.	
Benefits: <ul style="list-style-type: none"><li data-bbox="253 972 1349 1035">• The ability to actually see relatively unfamiliar things up close helps to increase comfort levels and could make building owners more likely to retrofit their building.<li data-bbox="253 1045 816 1077">• Can be used to support any other initiative.<li data-bbox="253 1087 1354 1150">• May be an effective method to educate industry stakeholders (e.g., trades), who may be skeptical on how to approach energy retrofits and their benefits.	
Challenges: <ul style="list-style-type: none"><li data-bbox="253 1192 1349 1255">• Can be costly to develop and maintain, and would reach a much smaller, more engaged audience.<li data-bbox="253 1266 1354 1329">• Does not directly result in uptake of energy retrofits (i.e., the actual turnover rate can be low); thus, difficult to track success.	
How it Could be Implemented in Kelowna: <ul style="list-style-type: none"><li data-bbox="253 1371 1373 1434">• To support FortisBC and Provincial retrofit initiatives, and any initiatives supported by the City.	
Successful Examples: <ul style="list-style-type: none"><li data-bbox="253 1518 1406 1728">• Wilden Living Lab (Kelowna) - featured two different homes built in 2017 that had different energy efficiency characteristics. One featured standard technologies according to the current Building Code. The other exceeded code requirements using the latest technologies to enhance energy efficiency. Currently, both homes are being monitored and compared for energy consumption and cost efficiency by a research team at UBC Okanagan's School of Engineering.¹³	

¹³ <https://wildenlivinglab.com/>

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Name: Educational Interventions	Type: Education and Awareness
Sector: Residential or ICI	
Description: Educational interventions are focussed on capacity building for building owners and industry professionals. Education for building owners in this context could be provided through lunch and learns, public access lectures, and tours. Education and training for industry is one of the most important elements that will need to be enacted to ensure the success of any retrofit effort. Working with trades especially HVAC, insulation, and general contractors to ensure that they are aware of the program offerings, are up to date on what technologies are available and the benefits of those technologies and are able to effectively discuss energy retrofits especially once an energy audit has been conducted are all crucial.	
Benefits: <ul style="list-style-type: none">• May be an effective method to educate industry stakeholders (e.g., trades), who may be skeptical on how to approach energy retrofits and their benefits.• The City has several facilities that could facilitate lunch and learns and public access lectures, which could make these options more cost effective.	
Challenges: <ul style="list-style-type: none">• Attracting interest from trades can be a challenge as most of them do not require any specific professional development and they are typically very busy.• Does not directly result in uptake of energy retrofits (i.e., the actual turnover rate can be low); thus, difficult to track success.	
How it Could be Implemented in Kelowna: <ul style="list-style-type: none">• Organize, host, and facilitate lunch and learn's and public access lectures on topics relevant to energy retrofits.• Partner with an architect/developer/builder/building owner to offer tours of homes that have undergone successful deep energy retrofits.	
Successful Examples: <ul style="list-style-type: none">• Green Energy Doors Open 2017: Net-zero Energy Retrofit Tour (Toronto): a retrofit of an existing home in Toronto to be net-zero served as a case study and demonstration that it is possible to conduct deep energy retrofits. Tours of the home were offered to the public.¹⁴	

¹⁴ <https://www.coolearth.ca/2017/09/05/green-energy-doors-open-2017-net-zero-energy-retrofit-tour/>

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Name: Targeted Marketing	Type: Education and Awareness
Sector: Residential or ICI	
Description: As with any community initiative, an obvious starting point is to segment the market to understand priorities and opportunities, and to have some sort of baseline data to understand the current state. Although some of this work has been done to understand the energy efficiency market from the building sector (e.g., demographic data, uptake of energy efficiency incentives from utilities), most municipalities do not have a thorough understanding of their building stock and have not mapped energy/GHG emissions from buildings at the neighbourhood or parcel level. As such, most energy/GHG emissions reduction strategies for the building sector are advised by higher level data (e.g., Community Energy and Emissions Inventory data from the Province of BC) that provides little insight or spatial visibility into how energy is currently being used how it may be used in the future under different scenarios. Because education and awareness will play a big role in retrofit uptake, the more intentional and targeted the messaging is, the more effective it will be. Highly targeted marketing can be achieved by using all the data sources that are available to the City to identify priority areas for energy retrofits (e.g., building age, demographic data) and by having a better understanding of the existing building stock. This is a crucial first step before spending time and resources on marketing efforts.	
Benefits: <ul style="list-style-type: none">• Allows retrofit education and awareness initiatives to be more impactful and backed by data analysis to understand the local market.• Allows for more efficient use of resources.	
Challenges: <ul style="list-style-type: none">• Data analysis can be time consuming.• Limitations on what data is available and privacy issues around data access (e.g., energy use at the parcel level from FortisBC).• Does not directly result in uptake of energy retrofits (i.e., the actual turnover rate can be low); thus, difficult to track success.	
How it Could be Implemented in Kelowna: <ul style="list-style-type: none">• The City is currently in the early stages of partnering with CanmetENERGY-Ottawa, a division of Natural Resources Canada (NRCAN), to develop an online map-based decision tool for building stock energy efficiency. The aim of the project is to make residential energy end-use and efficiency opportunities visible on a map, using available federal, municipal, and open data. Available data can be used to correlate specific household attributes with each other to develop targeted mailing lists, or phone call campaigns for a specific segment of the households or businesses.	
Successful Examples: <ul style="list-style-type: none">• City of Berkeley: City Building Energy Saver (CityBES) is a web-based data and computing platform, focusing on energy modeling and analysis of a city's building stock to support district or city-scale efficiency programs. CityBES employs EnergyPlus to simulate building energy use and savings from energy efficient retrofits.¹⁵	

¹⁵ <https://citybes.lbl.gov/>