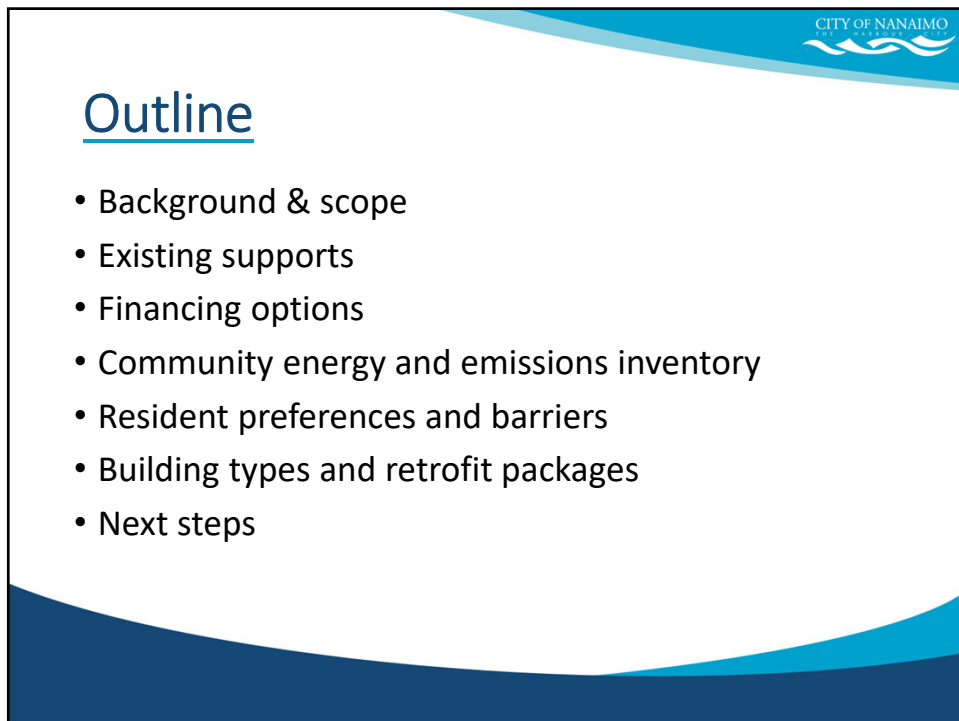


1



2

Background/ Scope

- Funding provided through FCM- CEF program to prepare a home energy retrofit feasibility study
- A feasibility study is the first step towards receiving pilot or program funding
- Study done in partnership with the Regional District of Nanaimo

2 projects in 1

1. Retrofit Financing feasibility study.
2. Community Energy and Emissions Inventory- low density residential.

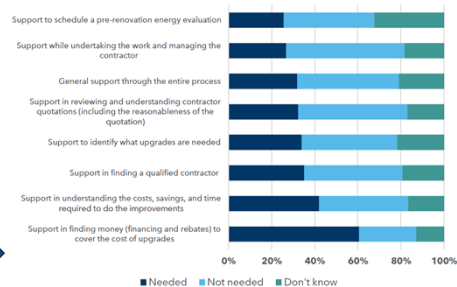


3

Why Retrofit Financing?

- Residential Buildings accounted for 15% of Nanaimo's 2021 emissions
- Financing often cited as a major barrier to home retrofits
- Retrofit financing provides low interest loans for energy efficiency or low-carbon home upgrades

Figure 16: Types of support needed during energy retrofits, survey respondents



4

Existing Retrofit Supports

City of Nanaimo

- Up to \$350 Home Energy Audit Rebate
- \$350 top up to CleanBC Rebates
- Home Energy Navigator Program
- Education and outreach

Other Supports

- CleanBC Better Homes (Provincial)
 - Rebates available
 - Financing no longer available
- Canada Greener Homes (Federal)
 - Rebates no longer available
 - Financing still available






home energy
NAVIGATOR



cleanBC
BETTER HOMES

5

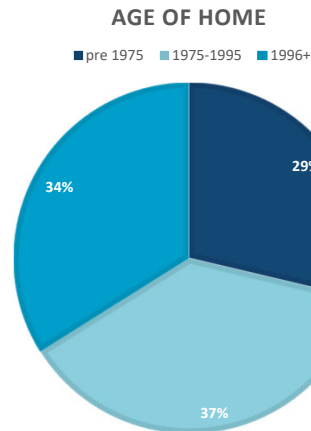
Retrofit Financing Options

Financing Models	 PACE/LIC	 Direct Lending (unsecured)	 On-Bill
	<ul style="list-style-type: none"> • Loan fixed to the property and paid through taxes • Capital from the local government or grants • Difficult to scale 	<ul style="list-style-type: none"> • Unsecured consumer loan • Requires partnership with, and capital from, a third-party lender • Success depends on how attractive it is compared to other options • Scalable 	<ul style="list-style-type: none"> • Loan paid through utility bill • Requires partnership with a utility • Capital from the utility or a third-party lender • Scalable

6

Community Energy Efficiency & Emissions Inventory

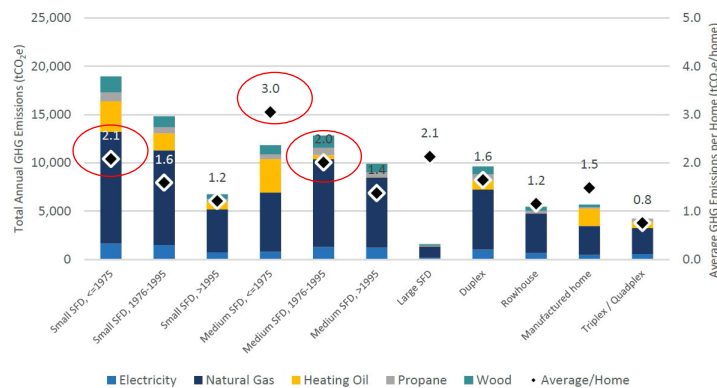
- Only included low-density residential
- Inventoried
 - Building Types
 - Ages
 - Heating & Cooling Source
 - GHG Emissions
 - Energy Use



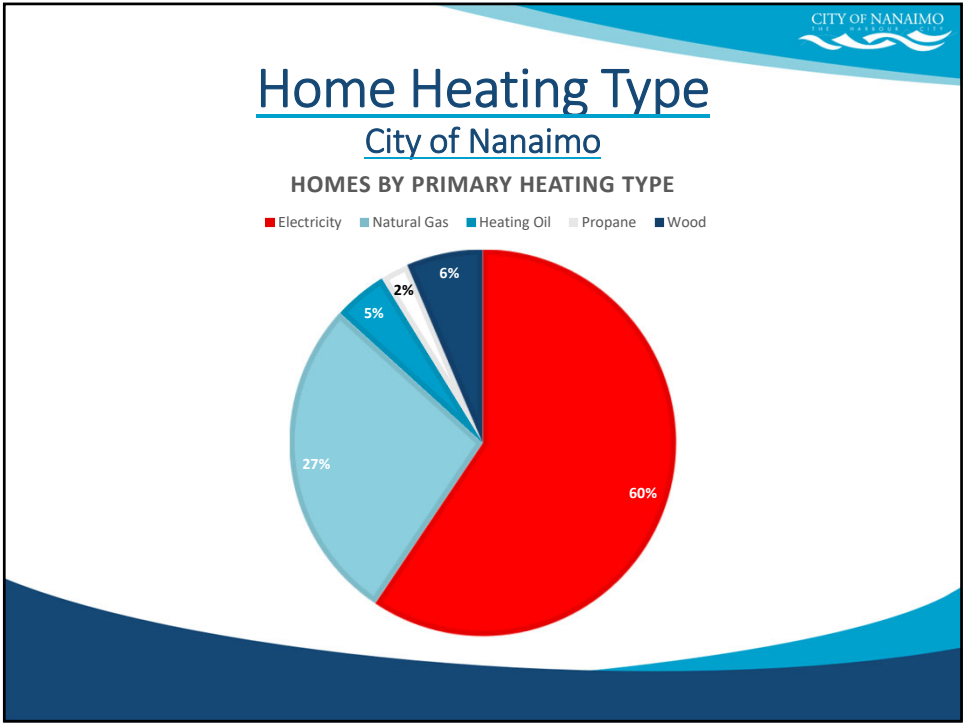
7

GHG Emissions by Home Type

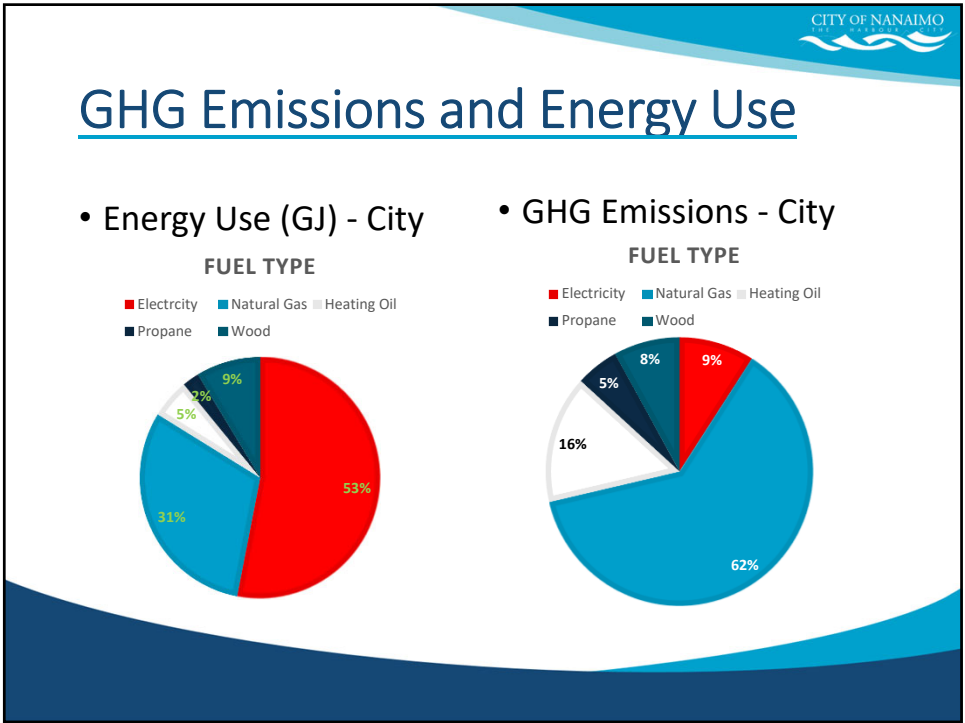
Figure 10: GHG emissions (total and average/home (tCO₂e)) per year by archetype, low-density homes, study region



8



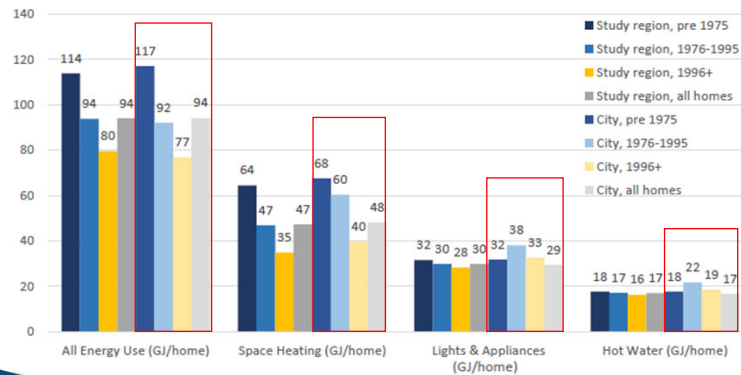
9



10

Energy Use Types

Figure 11: Average energy consumption per home by end energy use type (GJ/home), study region and City of Nanaimo



11

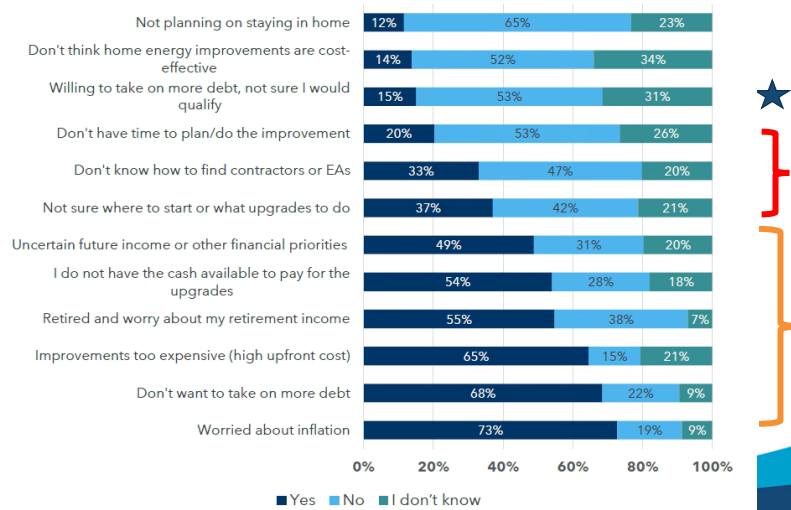
Homeowner Survey

- 1,050 Responses - Phone and Web
- 82% in the City of Nanaimo
- 85% live in detached or semi-detached homes
- Critical Financial Considerations
 - **60% of respondents anticipated needing financial support**
 - 73% are concerned with inflation costs
 - 68% are reluctant to take on more debt
 - **65% are concerned about high upfront costs**

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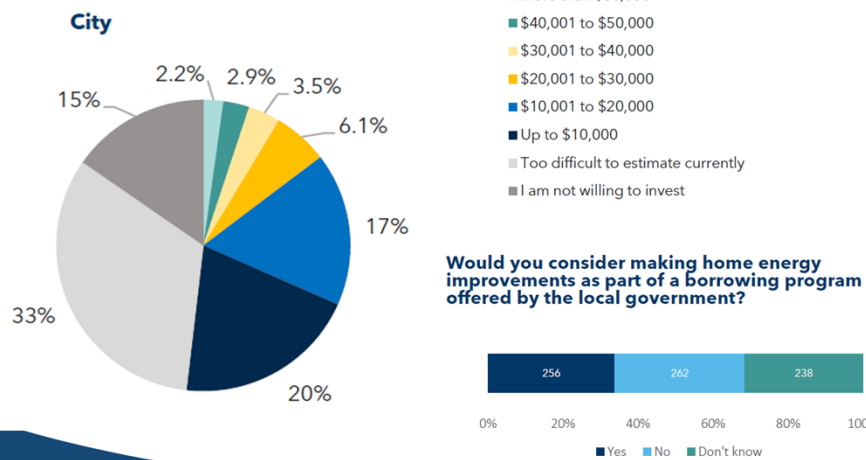
Homeowner Barriers

Figure 17: Factors discouraging homeowners from undertaking retrofit projects, survey respondents



13

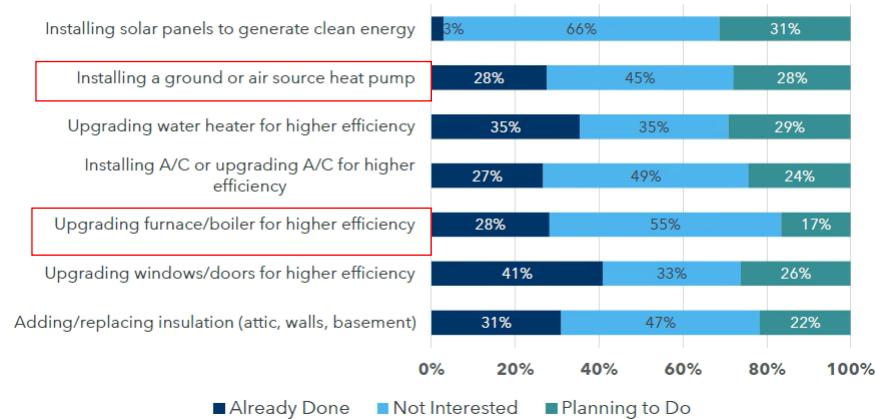
Homeowners Willing to Invest in Retrofits



14

Completed and Planned Energy Improvements

Figure 13: Energy improvements completed or planned over the past 5 years, all survey respondents



15

Archetypes and Retrofit Packages

- 30 key residential archetypes identified
- 10 retrofit packages developed and modelled
- Packages designed to understand uptake and capital but do not represent actual homeowner retrofits

#	Archetype	Base Fuel	Package
1	SFD (Small + Medium)	Elec	Heat Pump
2		Gas	
3		Oil	
4	SFD (Small + Medium)	Elec	Heat Pump + Insulation
5		Gas	
6		Oil	
7	Rowhouse / Duplex	Elec	Heat Pump + Insulation
8		Gas	
9	Manufactured	Oil	
10	All	All	Solar PV

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Retrofit Package Impact

- Looked at impact for each package type by:
 - GHG Savings
 - Energy Cost Savings
 - Energy Consumption
- GHG savings greatest for oil and gas to heat pump conversions
- Cost savings greatest for oil

Table 9: Selected priority retrofit packages for key low-density residential market segments

Retrofit Package	1	2	3	4	5	6	7	8	9	10
Heating Type	Small/Medium Single-Family Dwelling					Rowhouses / Duplex		Multi-Family		
Floor Area (m ²) (per dwelling)	188					137		112		
EUL (years)	15	15	15	20	20	20	20	20	20	30
Primary Space Heating Energy (Baseline)	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Any
Retrofit Package Measure	Heat Pump Only	Heat Pump Only	Heat Pump Only	Deep Retrofits (HP+EE)	Deep Retrofits (HP+EE)	Deep Retrofits (HP+EE)	Deep Retrofits (HP+EE)	Deep Retrofits (HP+EE)	Deep Retrofits (HP+EE)	Solar PV
As source heat pump	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Insulation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Down Sidescan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Roof-top solar PV	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Estimated Annual Costs and Savings per Home (\$)										
Costs*	12,185	12,421	10,575	32,813	26,444	27,939	25,797	25,791	25,804	18,735
Available Incentives**	3,830	5,125	9,375	6,300	11,625	11,875	11,300	11,625	12,225	5,250
Cost covered by incentives (%)	32%	73%	89%	19%	33%	43%	44%	45%	47%	28%
Energy bill savings	900	-100 to 100	2,100	1,200	200	2,400	1,100	-100 to 100	1,500	900
Estimated Annual Energy per Home (kWh)										
Baseline energy consumption	80	94	97	80	94	97	80	96	60	N/A
Retrofit energy consumption	60	60	58	49	50	51	54	55	32	27
Energy savings	27	34	38	38	45	46	32	40	28	27
Energy savings (%)	31%	36%	40%	43%	47%	47%	37%	42%	47%	N/A
Estimated Annual GHG Emissions per Home (tCO₂e)										
Baseline GHG emissions	0.36	3.3	5.1	0.36	3.3	5.1	0.36	3.6	3.5	Varies
Retrofit GHG emissions	0.25	0.69	0.24	0.20	0.65	0.21	0.23	0.60	0.13	Varies
GHG savings	0.11	2.6	4.8	0.16	2.7	4.9	0.13	3.0	3.3	0.11
GHG savings (%)	31%	79%	95%	43%	81%	96%	27%	83%	96%	Varies

*All costs adjusted to 2023 CAD

**Incentives are specific to BC and the package measures and include offers from CleanBC, Canada Greener Homes, and the RDN and/or City, as appropriate.

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Next Steps

- Continue to work with the RDN and confirm if a regional program is supportable
- Refine retrofit packages to offer
- Meet with financial institutions (Direct Lending)
- Complete FCM program design requirements
- Council report - proposed program

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Questions

