



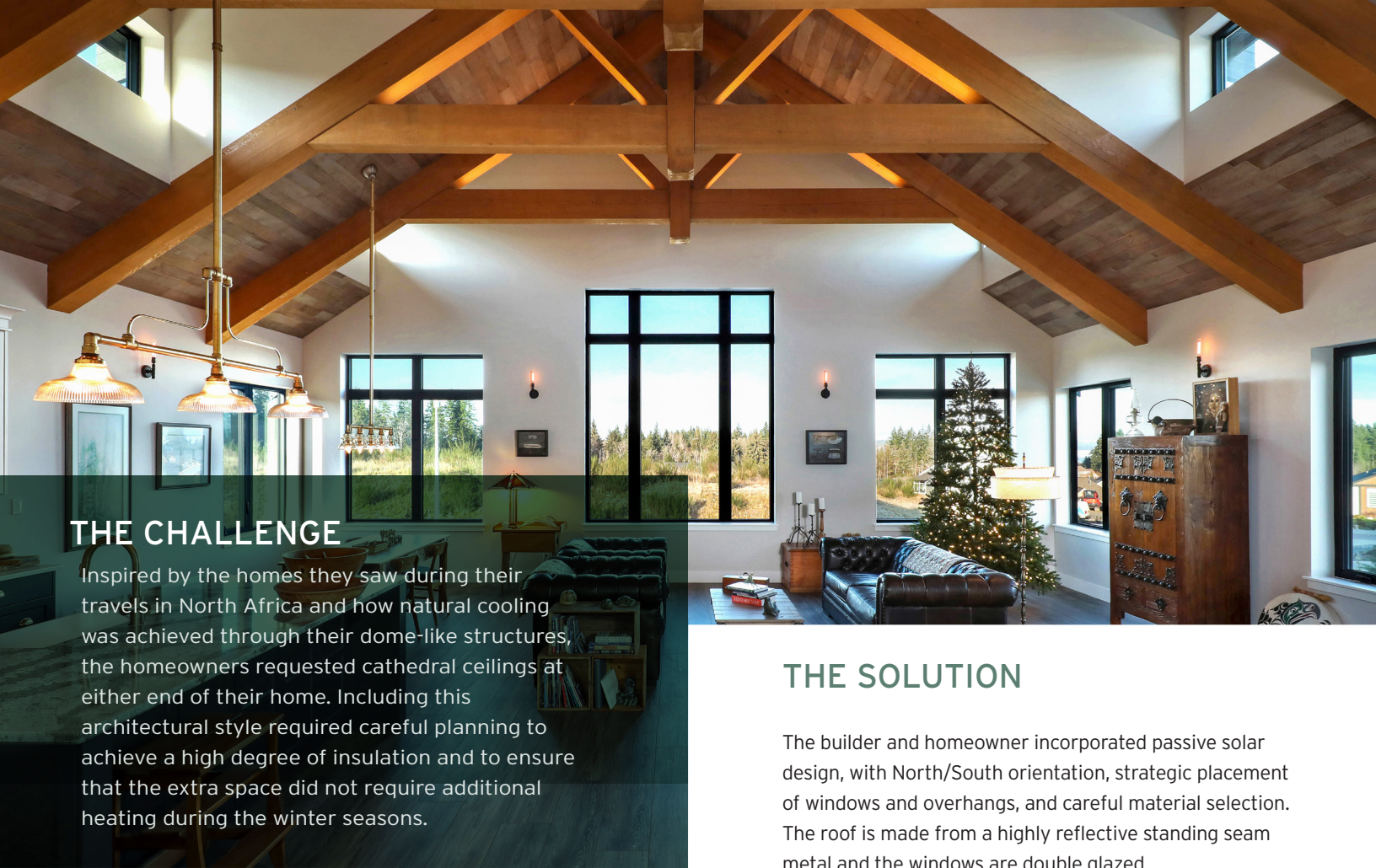
Beautiful, Modern Design (and Energy Efficient!)

Achieving Step Code 5 with Natural Gas

Campbell River, BC

PRESENTED BY





THE CHALLENGE

Inspired by the homes they saw during their travels in North Africa and how natural cooling was achieved through their dome-like structures, the homeowners requested cathedral ceilings at either end of their home. Including this architectural style required careful planning to achieve a high degree of insulation and to ensure that the extra space did not require additional heating during the winter seasons.



PRO TIP

Work with your HVAC provider to conduct a pressurized test once the air ducts are installed. This allows you to identify any leaks and gain their professional input on any recommended improvements to optimize the forced air distribution system.

THE SOLUTION

The builder and homeowner incorporated passive solar design, with North/South orientation, strategic placement of windows and overhangs, and careful material selection. The roof is made from a highly reflective standing seam metal and the windows are double glazed. To insulate the roof assembly, and achieve a high degree of air tightness, the builder used a parallel chord truss with R40 fiberglass batts in the cavity, and polyethylene air barrier on the underside.

BACKGROUND

Hargrave Construction is a family run business, established in 1983 and specializes in custom homes. Throughout the years, Hargrave has incorporated techniques and design elements to improve the energy efficiency and overall comfort of their homes.

HOME PROFILE

Location	Campbell River (Climate Zone 5)
Construction	2020
Size	2,600 ft ²
Bedrooms 3	Bathrooms 2
BC Energy Step Code Level	
Targeted	Step 5
Achieved	Step 5

This home demonstrates that a Step Code 5 home can be achieved with modern architectural features, and natural gas space and water heating.

THE PROJECT UPGRADES

The home is well insulated and careful attention was given to the weather membranes and airtightness layers. Hargrave Construction used their tried and tested approach of working with a 2x6 wall frame, R22 batt insulation and adding 1.5 inches of foam on the exterior. The walls were wrapped with Tyvek weather air barrier and the interior walls were painted with vapour barrier primer.



Photo credit: Homeowner

WORKING WITH AN ENERGY ADVISOR

In selecting an energy advisor, Hargrave looked for someone that had experience building homes with passive solar designs and a good understanding of available building products and their suitability to different applications. The real-time feedback and support from their energy advisor has helped yield excellent results. It is also rewarding to have another member of the team that shares the same goal of achieving energy efficient homes!

ESTABLISHING A CONSISTENT TEAM

Hargrave Construction works with a trusted team of trades people on all their projects to ensure the high quality of their builds. Working with a familiar team has been a key to Hargrave's success, as it facilitates communication and coordination between all trades. This is particularly key to ensure proper air sealing during construction, but has helped to establish the standards and best practices expected by the company through all aspects of each build.



PROJECT DETAILS

ENVELOPE

Airtightness	0.57 ACH ₅₀
Attic Insulation	R59 (effective)
Foundation Insulation	R18 - 4.25 inch rigid insulation on crawlspace walls
Under Slab Insulation	N/A
Wall Construction	2x6 walls with 1.5 inch rigid insulation on exterior
Wall Insulation	R26 (effective)
Window/Wall Area	20%
Windows	Vinyl frame, double glaze, argon filled, 1.1-1.4 U-value

MECHANICAL SYSTEMS

Space Heating	Condensing natural gas furnace (96% AFUE), Natural gas fireplace (70% efficiency)
Space Cooling	AC (18 SEER)
Ventilation	HRV (71% efficiency, 59 cfm flowrate)
Water Heating	Condensing natural gas tankless (96% efficiency)
Other Gas Equipment	Fireplace, cooktop, and double BBQ outlet

LOADS, COST & REBATES

Heating Load (TEDl)	19 kWh/m ² per year
Mechanical Load (MEUI)	28 kWh/m ² per year
Natural Gas Consumption	44 GJ per year
% More Efficient than Typical New Home	44%
Incremental Cost	\$20,000 - \$25,000
FortisBC Home Performance Rebates	\$10,000 Step 5 Rebate + \$800 Energy Advisor Support

RENEWABLE NATURAL GAS

For homeowners looking to lower their environmental impact, Renewable Natural Gas is an affordable, low-carbon option that can be used with existing natural gas equipment. Getting Renewable Natural Gas is simple, visit www.fortisbc.com/rng to learn more.

FortisBC Energy Solutions Managers are here to help. Contact us to discuss your next new construction project. www.fortisbc.com/energyteam

For rebate information, visit www.fortisbc.com/newhome

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