



Getting To ENERGY STAR *'The Real Experience'*

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Y-Home, Kamloops Case Study



Y-Home, Kamloops *Case Study*

- ESNH Performance Path to Compliance
 - HOT2000 Energy Modelling of the proposed design
 - Minimum ESNH Requirements Met
 - Minimum Energuide 81
 - < 2.50 ACH @ 50Pa Air Tightness Level

Getting Started...

- Initial Consultation with Team
 - **ESNH Minimum Requirements Review** - CEA meets with key construction team members to discuss / communicate the mandatory minimum requirements of ESNH Standard to confirm understanding.
 - **Building Opaque Assemblies** – Discuss details of proposed opaque building assemblies / air sealing approach.
 - **Fenestration and Doors** – Identify ES Zone for the project (1,2 or 3) to confirm required minimum U Factors (ES Qualifications) needed for Windows, Doors, Patio Doors, Skylights etc.
 - **HVAC** – Confirm proposed heating / cooling / ventilation approach (HRV Mandatory)
 - **Base Loads** – Discuss plans for lighting and appliances to achieve the required ESNH base load energy savings

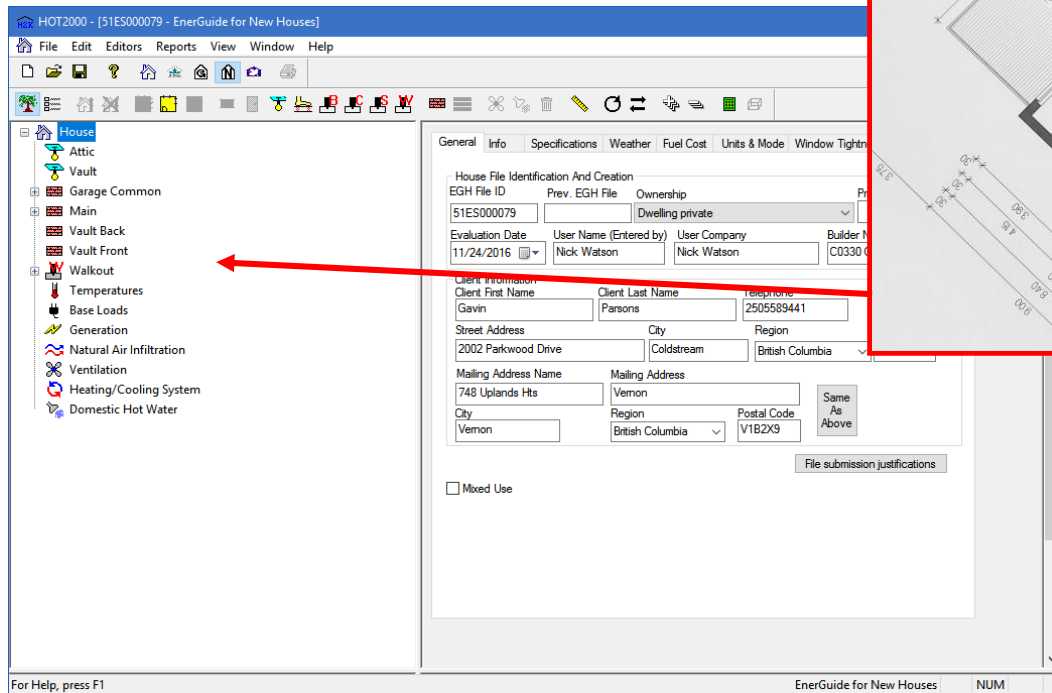
Information Gathering...

- CEA Requires Information to build the HOT2000 Energy Model
 - **Full Set of Design Plans** (*pdf format is common*) – Typically the plans will include details of all proposed opaque assemblies. NB Need to make sure the proposed assemblies on the plans are correct
 - **Proposed Window and Door Schedule** – Typically the quotation for the window and door package is provided – Must include the glazing specifications for each per window (U Factor and SHGC, ES Zone Compliance)
 - **Heating and Cooling** – Makes / Models of all the proposed Heating and Cooling Equipment (so that ESNH compliance can be checked and that the correct performance info is modelled and the AHRI reference #)
 - **HRV** – Make and Model of the proposed HRV (so that ESNH compliance and capacity is checked okay).
 - **Base Loads** – Details of the proposed appliance package and lighting

Y-Home Building Specification Summary

- **ICF Foundation Wall** – R25 (Logix)
- **Framed Walls** – 2x6 24" o/c, R-24 Batt, Halo Exterra ½" Rigid
- **Flat / Cathedral Ceilings** – Eng Truss @ 24" o/c R-40 Batt
- **Attic Ceilings** – R-50 Loose Fill
- **Floor Over Unheated Space** – 11 7/8" I Joists @16" o/c R-28
- **Floor Headers** – Per Framed External Walls
- **Windows and Doors** – ES Zone 1 (USI <=1.60) - Actual USI 1.40 to 1.60
- **Heating** – Amana Furnace (AFUE 97%)
- **Heating / Cooling** – Amana Air Source Heat Pump (SEER 16.5/HSPF 7.826/EER 12)
- **HRV** - Venmar Constructo 2.0ES

Baseline HOT2000 Modelling...



'House as a System' approach

Y-Home – Expected Energuide Rating

Calculation Results

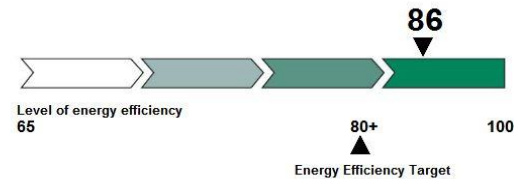
	Base	Upgrade
EnerGuide (0 to 100)	86	87
EnerGuide Added Mechanical Ventilation	43.3	56.1
Target ACH	0.300	0.300
Critical Month ACH (Natural)	0.121	0.068
Critical Month ACH (Total)	0.295	0.242

Annual Fuel Consumption

	Quantity		\$	
	Base	Upgrade	Base	Upgrade
Electricity	13556	13293 kWh	1426.94	1400.21
Natural Gas	498.0	497.4 m3	433.01	432.69
Oil	0.0	0.000 Litres	0.00	0.00
Propane	0.0	0.000 Litres	0.00	0.00
Wood	0.0	0.000 1000 kg	0.00	0.00
Total	67356.6	66386.848 MJ	1859.95	1832.90
Savings		969.704 MJ		27.05

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OK



*Energuide Rating 86 at Mid Construction
BDT = 2.37ACH @ 50 Pa*

Could Achieve 87 with a 1.50ACH @ 50 Pa

Y-Home Mid-Construction BDT

- Drywall was installed, some appliances and mechanicals were not
- Home returned a ACH 2.37 @ 50Pa (slightly better than ESNH requirement)
- Air Leakage Review
 - Minimal at Wall Receptacles
 - Minimal at Windows and Patio Doors
 - Leakage at Doors – fitting was incomplete will be improved
 - Plumbing was capped off, traps were sealed with tape – not tested
 - HRV – Not installed so likely leakage
 - Furnace – No Leakage Detected
 - Bathroom Fans – Not Installed sealed with cloth – not tested
 - Ceiling Light Receptacles – leakage detected at all boxes, will be improved
 - Floor Headers / Foundation Wall / Slab – no leakage detected
 - Floor Conduits – no leakage detected
 - Gas Fireplace – No Leakage Detected
- Team plan to take action to resolve issues identified as the build nears completion and an improvement in ACH is expected for the final test

Some Take Aways...

- Engage with your EA as early as possible in the process
- Your EA will help you confirm that the ESNH Minimum Requirements will be met and raise any issues
- Provide your EA as much accurate information as possible of the proposed baseline home specifications
- The baseline Energy Model will give you a good indication of the homes likely performance, your EA can then help you to make decisions based on different assembly and equipment choices if improvements are required
- Consult with your EA on Air Sealing Strategies
- Use your EA for Mid-Construction Reviews and on target for ACH \leq 2.50
- Make sure any issues identified are addressed
- Enjoy a successful final BDT and a good result...



Thank You...

Questions...



Thank You...

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®

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