

# HOT2000

Natural Resources CANADA  
Version v11.3



**File:** 1234 Fulton Ave..h2k  
ERS reference house

**Weather Library:** C:\HOT2000 v11.3\Dat\Wth110.dir  
**Weather Data for:** VANCOUVER, BRITISH COLUMBIA

**Builder Code:**

**Data Entry by:** Jane Smith  
**Date of entry:** 2018/06/14

**Company:** ABC Energy Advisor

**Client name:** Anderson, Jill  
**Street address:** 1234 Fulton Ave.  
**City:** West Vancouver  
**Postal code:** V7V3T3

**Region:** BRITISH COLUMBIA  
**Telephone:** 604-123-4567

**Mailing address:** 1234 Fulton Ave.  
**City:** West Vancouver  
**Postal Code:** V7V3T3

**Region:** BRITISH COLUMBIA

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## GENERAL HOUSE CHARACTERISTICS

**House type:** Single Detached  
**Number of storeys:** One storey  
**Plan shape:**  
**Front orientation:** South  
**Year House Built:** 2017

<b>Wall colour:</b>	Default	<b>Absorptivity:</b>	0.40
<b>Roof colour:</b>	Default	<b>Absorptivity:</b>	0.40
<b>Soil Condition:</b>	Normal conductivity (dry sand, loam, clay)		
<b>Water Table Level:</b>	Normal (7-10m/23-33ft)		
<b>House Thermal Mass Level:</b>	(A) Light, wood frame		
<b>Effective mass fraction</b>	1.000		

**Occupants :**  
2 Adults for 50.0% of the time  
1 Children for 50.0% of the time  
0 Infants for 0.0% of the time

**Sensible Internal Heat  
Gain From Occupants:** 2.00 kWh/day

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## HOUSE TEMPERATURES

### Heating Temperatures

<b>Main Floor</b>	<b>Daytime Setpoint:</b>	21.0 °C
	<b>Nighttime Setpoint:</b>	18.0 °C
	<b>Nighttime Setback</b>	8.0 Hours
	<b>Duration:</b>	
	<b>24 Hour Average:</b>	20.0 °C
<b>Basement</b>	<b>Setpoint:</b>	19.0 °C
	<b>TEMP. Rise from 20.0 °C:</b>	5.5 °C

**Cooling Temperature: Main Floor + 25.00 °C**  
**Basement:**

**Basement is- Heated:Yes Cooled: Yes**      **Separate T/S: Yes**  
**Fraction of internal gains**      0.150  
**released in basement :**

### Indoor design temperatures for equipment sizing

<b>Heating:</b>	22.0 °C
<b>Cooling:</b>	24.0 °C

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## WINDOW CHARACTERISTICS

Label	Location	#	Overhang Width (m)	Header Height (m)	Tilt deg	Curtain Factor	Shutter (RSI)
<b>South</b>							
<b>Window</b>	Main Fl Walls	1	0.00	0.20	90.0	1.00	0.00
<b>Window</b>	deep base	1	0.00	0.20	90.0	1.00	0.00
<b>East</b>							
<b>Window</b>	Main Fl Walls	1	0.00	0.20	90.0	1.00	0.00
<b>Window</b>	deep base	1	0.00	0.20	90.0	1.00	0.00
<b>North</b>							
<b>Window</b>	Main Fl Walls	1	0.00	0.20	90.0	1.00	0.00
<b>Window</b>	deep base	1	0.00	0.20	90.0	1.00	0.00
<b>West</b>							
<b>Window</b>	Main Fl Walls	1	0.00	0.20	90.0	1.00	0.00
<b>Window</b>	deep base	1	0.00	0.20	90.0	1.00	0.00

Label	Type	#	Window	Window	Total	Window	SHGC	ER*
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			<b>Width (m)</b>	<b>Height (m)</b>	<b>Area (m<sup>2</sup>)</b>	<b>RSI</b>			
<b>South</b>									
<b>Window</b>	NBC 9.36 window	1	3.23	3.23	10.44	0.613	0.3053	21.8	
<b>Window</b>	NBC 9.36 window Code 8	1	3.79	3.79	14.36	0.620	0.3207	23.1	
<b>East</b>									
<b>Window</b>	NBC 9.36 window Code 4	1	3.23	3.23	10.44	0.613	0.3053	21.8	
<b>Window</b>	NBC 9.36 window Code 9	1	3.79	3.79	14.36	0.620	0.3207	23.1	
<b>North</b>									
<b>Window</b>	NBC 9.36 window Code 5	1	3.23	3.23	10.44	0.613	0.3053	21.8	
<b>Window</b>	NBC 9.36 window Code 10	1	3.79	3.79	14.36	0.620	0.3207	23.1	
<b>West</b>									
<b>Window</b>	NBC 9.36 window Code 6	1	3.23	3.23	10.44	0.613	0.3053	21.8	
<b>Window</b>	NBC 9.36 window Code 11	1	3.79	3.79	14.36	0.620	0.3207	23.1	

\*ER Window Energy Rating (ER 2009) estimated for actual dimensions, and Air tightness type: CSA - A3;  
Leakage rate = 0.50 L/s.m<sup>2</sup>

Above grade fraction of wall area occupied by windows: 20.8 %

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**\*\*\* TYPE 2 USER DEFINED WINDOW CODES \*\*\***

<b>Code Label</b>	<b>Description</b>	<b>Glazing Type</b>	<b>Fill Gas</b>	<b>Thermal Resistance</b>	<b>SHGC</b>	<b>Window Style</b>	<b>Low -E Coating</b>	<b>Frame Height</b>
<b>NBC 9.36 window</b>	<b>NBC 9.36 window</b>	<b>Double/double with 1 coat</b>	<b>Argon</b>	<b>0.5556 RSI</b>	<b>0.2600</b>	<b>Picture</b>	<b>Soft Coat</b>	<b>83.00</b>
<b>NBC 9.36 window Code 8</b>	<b>NBC 9.36 window</b>	<b>Double/double with 1 coat</b>	<b>Argon</b>	<b>0.5556 RSI</b>	<b>0.2600</b>	<b>Picture</b>	<b>Soft Coat</b>	<b>97.00</b>
<b>NBC</b>	<b>NBC 9.36 window</b>	<b>Double/double</b>	<b>Argon</b>	<b>0.5556</b>	<b>0.2600</b>	<b>Picture</b>	<b>Soft</b>	<b>83.00</b>

9.36 window Code		with 1 coat		RSI			Coat	
NBC 9.36 window Code 4	NBC 9.36 window	Double/double Argon with 1 coat		0.5556	0.2600	Picture	Soft Coat	97.00
NBC 9.36 window Code 9	NBC 9.36 window	Double/double Argon with 1 coat		0.5556	0.2600	Picture	Soft Coat	83.00
NBC 9.36 window Code 5	NBC 9.36 window	Double/double Argon with 1 coat		0.5556	0.2600	Picture	Soft Coat	97.00
NBC 9.36 window Code 10	NBC 9.36 window	Double/double Argon with 1 coat		0.5556	0.2600	Picture	Soft Coat	83.00
NBC 9.36 window Code 6	NBC 9.36 window	Double/double Argon with 1 coat		0.5556	0.2600	Picture	Soft Coat	83.00
NBC 9.36 window Code 11	NBC 9.36 window	Double/double Argon with 1 coat		0.5556	0.2600	Picture	Soft Coat	97.00

## BUILDING PARAMETER DETAILS

### CEILING COMPONENTS

	Construction Type	Code Type	Roof Slope	Heel Ht. (m)	Section Area (m <sup>2</sup> )	R. Value (RSI)
Base flat F1c	Flat	User specified	0.000/12	0.25	9.10	4.67
R1 Upper Ceiling	Attic/hip	2403J01000	3.996/12	0.20	178.28	7.00
main f2b	Flat	User specified	0.000/12	0.25	10.03	4.67

### CEILING CODE SCHEDULE

Name	Internal Code	Description (Structure, typ/size, Spacing, Insull, 2, Int., Sheathing, Exterior, Studs)
2403J01000	2403J01000	Truss, 38x89 mm (2x4 in) Attic truss, 600 mm (24 in), RSI 7.04 @ 279 mm (R 40 @ 11.0") batt, None, 12 mm (0.5 in) gypsum board, N/A, N/A, N/A

### MAIN WALL COMPONENTS

Label	Lintel Type	Fac. Dir	Number of Corn.	Number of Inter.	Height (m)	Perim. (m)	Area (m <sup>2</sup> )	R. Value (RSI)
Main FI Walls	101	N/A	12	9	3.05	63.47	193.47	2.78

Type: User specified

vault 101 N/A 4 0 0.61 20.78 12.66 2.78

Type: User specified

#### EXPOSED FLOORS

Label	Floor Code	Type	Area (m <sup>2</sup> )	R. Value (RSI)
2	User specified		8.36	4.67
m	User specified		34.19	4.67

#### DOORS

Label	Type	Height (m)	Width (m)	Gross Area (m <sup>2</sup> )	R. Value (RSI)
Door Loc: Main FI Walls	User specified	2.07	1.26	2.61	0.56
Door Loc: deep base	User specified	2.07	2.75	5.69	0.56

#### FOUNDATIONS

Foundation Name: deep base  
 Foundation Type: Basement  
 Data Type: Library

Volume: 695.9 m<sup>3</sup>  
 Opening to Main Floor: 8.64 m<sup>2</sup>

Total Wall Height: 4.32 m  
 Depth Below Grade: 2.83 m

Non-Rectangular  
 Floor Perimeter: 64.45 m  
 Floor Area: 161.00 m<sup>2</sup>

Interior wall type: User Specified  
 Exterior wall type: User specified  
 Number of corners :16  
 Lintel type: 101  
 Added to slab type :N/A  
 Floors Above 4511008710  
 Found.:

R-value: 1.87 RSI  
 R-Value: 0.00 RSI  
 R-Value: 0.00 RSI  
 R-Value: 1.06 RSI

Exposed areas for: deep base  
 Exposed Perimeter: 64.45 m

Configuration: BCCB\_4  
 - concrete walls and floor  
 - interior surface of wall insulated over full-height  
 - exterior surface of wall insulated over full-height  
 - sub-surface of floor slab fully insulated but no insulation under footings  
 - thermal-break between walls and floor slab  
 - any first storey construction type

## FOUNDATION CODE SCHEDULE

### Floors Above Foundation

Name	Internal Code	Description (Structure, typ/size, Spacing, Insul1, 2, Int., Sheathing, Exterior, Drop Framing)
4511008710	4511008710	Composite wood joist, 38x302 mm (2x11.875 in), 400 mm (16 in), None, None, Carpet & underpad, Plywood/Particle board 18.5 mm (3/4 in), 12 mm (0.5 in) Gypsum board, No

### PONY WALL COMPONENTS

Label	Lintel Type	Fac. Dir	Number of Corn.	Number of Inter.	Height (m)	Perim. (m)	Area (m <sup>2</sup> )	R. Value (RSI)
deep base Type: User specified	101	N/A	16	2	2.41	64.45	155.19	2.78

### FOUNDATION FLOOR HEADER COMPONENTS

Label	Lintel Type	Fac. Dir	Number of Corn.	Number of Inter.	Height (m)	Perim. (m)	Area (m <sup>2</sup> )	R. Value (RSI)
Floor Header - b copy (Location:deep base) Type: User specified		N/A	4	4	0.33	56.72	18.67	2.78

### Lintel Code Schedule

Name	Code	Description ( Type, Material, Insulation )
101	101	Double, Wood, Same as wall framing cavity

### ROOF CAVITY INPUTS

<b>Gable Ends</b>		<b>Total Area:</b>	0.00 m <sup>2</sup>
<b>Sheathing Material</b>	Plywood/Part. bd 9.5 mm (3/8 in)		0.08 RSI
<b>Exterior Material:</b>	Hollow metal/vinyl cladding		0.11 RSI
<b>Sloped Roof</b>		<b>Total Area:</b>	187.91 m <sup>2</sup>
<b>Sheathing Material</b>	Plywood/Part. bd 12.7 mm (1/2 in)		0.11 RSI
<b>Exterior Material:</b>	Asphalt shingles		0.08 RSI
<b>Total Cavity Volume:</b>	161.8 m <sup>3</sup>	<b>Ventilation Rate:</b>	0.50 ACH/hr

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**BUILDING ASSEMBLY DETAILS**

Label	Construction Code	Nominal (RSI)	System (RSI)	Effective (RSI)
<b>CEILING COMPONENTS</b>				
R1 Upper Ceiling	2403J01000	7.07	7.11	7.00
<b>FLOORS ABOVE BASEMENTS</b>				
deep base	4511008710	0.00	1.06	1.06

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**BUILDING PARAMETERS SUMMARY**
**ZONE 1 : Above Grade**

Component	Area m <sup>2</sup> Gross	Area m <sup>2</sup> Net	Effective (RSI)	Heat Loss MJ	% Annual Heat Loss
Ceiling	197.41	197.41	6.68	7682.55	4.51
Main Walls	206.14	161.77	2.78	16709.33	9.81
Doors	8.30	8.30	0.56	4707.90	2.77
Exposed floors	42.55	42.55	4.67	2593.70	1.52
South Windows	10.44	10.44	0.61	5367.06	3.15
East Windows	10.44	10.44	0.61	5367.06	3.15
North Windows	10.44	10.44	0.61	5367.06	3.15
West Windows	10.44	10.44	0.61	5367.06	3.15
<b>ZONE 1 Totals:</b>				<b>53161.73</b>	<b>31.22</b>

**INTER-ZONE Heat Transfer : Floors Above Basement**

Area m <sup>2</sup> Gross	Area m <sup>2</sup> Net	Effective (RSI)	Heat Loss MJ
161.00	161.00	1.057	12334.86

**ZONE 2 : Basement**

Component	Area m <sup>2</sup> Gross	Area m <sup>2</sup> Net	Effective (RSI)	Heat Loss MJ	% Annual Heat Loss
Walls above grade	95.87	95.87	-	20047.53	11.77
South windows	14.36	14.36	0.62	6797.56	3.99
East windows	14.36	14.36	0.62	6797.56	3.99
North windows	14.36	14.36	0.62	6797.56	3.99
West windows	14.36	14.36	0.62	6797.56	3.99
Basement floor header	18.67	18.67	2.78	2632.11	1.55
Pony walls	155.19	92.04	2.78	12974.93	7.62
Below grade foundation	343.69	343.69	-	22876.75	13.44



**ZONE 2 Totals:** **85721.58** **50.35**

**Air Leakage and Mechanical Ventilation**

<b>House Volume</b>	<b>Air Change</b>	<b>Heat Loss MJ</b>	<b>% Annual Heat Loss</b>
1697.41 m <sup>3</sup>	0.156 ACH	31377.061	18.43

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## AIR LEAKAGE AND MECHANICAL VENTILATION

**Building Envelope Surface Area:** 1059.52 m<sup>2</sup>

**Air Leakage Test Results at 50 Pa.** 2.50 ACH  
(0.2 in H<sub>2</sub>O) =

**Equivalent Leakage Area @ 10 Pa** 1584.51 cm<sup>2</sup>  
=

<b>Terrain Description</b>			<b>Height (m)</b>
@ Weather Station :	Open flat terrain, grass	Anemometer:	10.0
@ Building site :	Suburban, forest	Height of the highest ceiling:	10.4

### Local Shielding:

**Walls:** Heavy

**Flue :** Light

### Leakage Fractions-

**Ceiling:** 0.300

**Walls:** 0.500

**Floors:** 0.200

**Normalized Leakage Area @ 10 Pa:** 1.4955 cm<sup>2</sup>/m<sup>2</sup>

**Estimated Airflow to cause a 5 Pa Pressure Difference:** 252 L/s

**Estimated Airflow to cause a 10 Pa Pressure Difference:** 395 L/s

**Estimated Airflow to cause a 10 Pa Pressure Difference:** 395 L/s

**Estimated Airflow to cause a 10 Pa Pressure Difference:** 395 L/s

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## F326 VENTILATION REQUIREMENTS

Kitchen, Living Room, Dining Room	3 rooms @ 5.0 L/s: 15.0 L/s
Bedroom	1 rooms @ 10.0 L/s: 10.0 L/s
Bedroom	2 rooms @ 5.0 L/s: 10.0 L/s
Bathroom	3 rooms @ 5.0 L/s: 15.0 L/s
Basement Rooms	10.0 L/s

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## SECONDARY FANS & OTHER EXHAUST APPLIANCES

	<b>Control</b>	<b>Supply (L/s)</b>	<b>Exhaust (L/s)</b>
<b>Other Fans</b>	Continuous	13.91	17.66



<b>Ventilation Energy Load:</b>	
<b>Seasonal Heat Recovery Ventilator Efficiency:</b>	0.000 %
<b>Estimated Ventilation Electrical Load: Heating Hours:</b>	0.000 MJ
<b>Estimated Ventilation Electrical Load: Non-Heating Hours:</b>	0.000 MJ
<b>Net Air Leakage and Mechanical Ventilation Load:</b>	31377.057 MJ

## SPACE HEATING SYSTEM

**PRIMARY Heating Fuel:** Natural Gas  
**Equipment:** Condensing furnace/boiler  
**Manufacturer:** Carrier  
**Model:** 59TN6A100V211122  
**Calculated\* Output Capacity:** 17.50 kW

\* Design Heat loss X 1.00 + 0.5 kW

**AFUE:** 92.00  
**Steady State Efficiency:** 94.31  
**Fan Mode:** Auto  
**ECM Motor:** No  
**Low Speed Fan Power:** 0 watts  
**High Speed Fan Power:** 339 watts

### Supplementary Heating - System # 1

**Fuel type:** Natural Gas  
**Equipment:** Fireplace with spark ignit. (sealed)  
**Manufacturer:**  
**Model:**  
**Description:**  
**Year built:** 2000-

**Usage:** Never  
**Location Heated:** Main Floors **Approx. Floor Area:** 12.0 m<sup>2</sup>

**Rated output heating capacity:** 2.0 kW  
**Steady state efficiency (%) :** 65.0

### Supplementary Heating - System # 2

**Fuel type:** Natural Gas  
**Equipment:** Fireplace with spark ignit. (sealed)  
**Manufacturer:**  
**Model:**  
**Description:**  
**Year built:** 2000-

**Usage:** Never  
**Location Heated:** Main Floors **Approx. Floor Area:** 12.0 m<sup>2</sup>

Rated output heating capacity: 2.0 kW  
 Steady state efficiency (%): 65.0

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## **AIR CONDITIONING SYSTEM**

System Type: Central split system  
 Manufacturer:  
 Model:  
 Capacity: 20666 Watts  
 SEER 14.50  
 Sensible Heat Ratio: 0.76  
 Indoor Fan Flow Rate: 1394.47 L/s  
 Ventilator Flow Rate: 0.00 L/s  
 Fraction of windows Openable: 0.000  
 Cooling system capacity sizing factor: 1.000  
 Economizer control: N/A  
 Indoor Fan Operation: Auto

Rated COP 3.095  
 Fan Power (watts) 1080.71  
 Crankcase Heater Power (watts): 60.00

Air Conditioner is integrated with the Heating System

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## **DOMESTIC WATER HEATING SYSTEM**

PRIMARY Water Heating Fuel: Natural gas  
 Water Heating Equipment: Instantaneous (condensing)  
 Energy Factor: 0.800  
 Manufacturer: Navien  
 Model: NPE-240A  
 Pilot Energy : 0.0 MJ/day  
 Flue Diameter: 0.0 mm

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## **ANNUAL DOMESTIC WATER HEATING SUMMARY**

Daily Hot Water Consumption: 187.6 Litres  
 Hot Water Temperature: 55.0 °C  
 Estimated Domestic Water Heating Load: 12825 MJ

Primary Domestic Water Heating Energy 14711 MJ

**Consumption:**

Primary System Seasonal Efficiency: 87.2%

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**ANNUAL SPACE HEATING SUMMARY**

Gross Space Heat Loss: 170260 MJ

Gross Space Heating Load: 170260 MJ

Usable Internal Gains: 24105 MJ

Usable Internal Gains Fraction: 14.2 %

Usable Solar Gains: 46006 MJ

Usable Solar Gains Fraction: 27.0 %

Auxiliary Energy Required: 100237 MJ

Space Heating System Load: 100071 MJ

Furnace/Boiler Seasonal efficiency: 75.1 %

Furnace/Boiler Annual Energy Consumption: 104093 MJ

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**DESIGN SPACE HEATING AND COOLING LOADS**

Design Heat Loss\* at -7.0 °C (10.20 Watts / m3): 17312 Watts

Design Cooling Load\* for July at (28.0 ° C ): 17129 Watts

\* Please refer to notes at the end of this report.

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**ANNUAL SPACE COOLING SUMMARY**

Design Sensible Heat Ratio: 0.769

Estimated Annual Space Cooling Energy: 724.27 kWh

Seasonal COP ( May to October): 1.617

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**BASE LOADS SUMMARY**

	kwh/day	Annual kWh
Interior Lighting	2.60	949.00

<b>Appliances</b>	6.30	2299.40
<b>Other</b>	9.70	3540.50
<b>Exterior Use</b>	0.90	328.50
<b>HVAC Fans</b>		
<b>HRV/Exhaust</b>	0.98	358.83
<b>Space Heating</b>	1.45	529.01
<b>Space Cooling</b>	0.24	86.56
<b>Total Average Electrical Load</b>	22.17	8091.81

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***FAN OPERATION SUMMARY (kWh)***

<b>Hours</b>	<b>HRV/Exhaust Fans</b>	<b>Space Heating</b>	<b>Space Cooling</b>
<b>Heating</b>	264.4	529.0	0.0
<b>Neither</b>	49.8	0.0	0.0
<b>Cooling</b>	44.6	0.0	86.6
<b>Total</b>	358.8	529.0	



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## ENERGY CONSUMPTION SUMMARY REPORT

<b>Estimated Annual Space Heating Energy Consumption</b>	= 105997.77 MJ	= 29443.83 kWh
<b>Ventilator Electrical Consumption: Heating Hours</b>	= 0.00 MJ	= 0.00 kWh
<b>Estimated Annual DHW Heating Energy Consumption</b>	= 14710.91 MJ	= 4086.36 kWh
<b>ESTIMATED ANNUAL SPACE + DHW ENERGY CONSUMPTION</b>	= 120708.68 MJ	= 33530.19 kWh
<b>Estimated Greenhouse Gas Emissions</b>	6.327 tonnes/year	

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## ESTIMATED ANNUAL FUEL CONSUMPTION SUMMARY

Fuel	Space Heating	Space Cooling	DHW Heating	Baseloads	Ventilation	Total
<b>Natural Gas (m3)</b>	2793.8	0.0	394.8	0.0	0.0	3188.6
<b>Electricity (kWh)</b>	529.0	724.3	0.0	7117.4	358.8	8729.5

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## ESTIMATED ANNUAL FUEL CONSUMPTION COSTS

Fuel Costs Library = Embedded

RATE	Electricity (BCHydro)	Natural Gas (LwrMain)	Oil (BC Oil)	Propane (BCPropan)	Wood (BC ave)	Total
\$	654.16	1225.57	0.00	0.00	0.00	1879.73

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## Fuel Costs Library Listing

Filename = Embedded

**Record # 1** Fuel: Electricity  
 Rate ID = BCHydro Lower mainland hydro rated

Rate Block	kWhr	Dollars Per kWhr	Charge (\$)
Minimum	0.0		4.340
1	675.0	0.0667	
2	99999.0	0.0962	

<b>Record # 2</b>	Fuel: Natural Gas			
Rate ID = LwrMain	Lower Mainland			
Rate Block		Dollars		Charge
	GJ	Per GJ		(\$)
Minimum	0.0			11.840
1	99999.0	9.1200		
<b>Record # 3</b>	Fuel: Oil			
Rate ID = BC Oil	Oil rate block			
Rate Block		Dollars		Charge
	Litre	Per Litre		(\$)
Minimum	0.0			1.000
1	99999.0	1.0000		
<b>Record # 4</b>	Fuel: Propane			
Rate ID = BCPropan	BC average propane cost			
Rate Block		Dollars		Charge
	Litre	Per Litre		(\$)
Minimum	1.0			10.000
1	99999.0	0.6300		
<b>Record # 5</b>	Fuel: Wood			
Rate ID = BC ave	Cord Rate			
Rate Block		Dollars		Charge
	Cord	Per Cord		(\$)
Minimum	0.0			0.000
1	99999.0	175.0000		

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**MONTHLY ENERGY PROFILE**

Month	Energy Load (MJ)	Internal Gains (MJ)	Solar Gains (MJ)	Aux. Energy (MJ)	HRV Eff. %
Jan	24434.4	2195.2	2090.6	20148.6	0.0
Feb	20199.7	1978.2	2925.9	15295.6	0.0
Mar	19371.5	2194.9	4642.6	12534.1	0.0
Apr	14929.3	2137.8	5438.5	7352.9	0.0
May	10741.0	2227.9	5797.8	2715.3	0.0
Jun	7026.0	2133.6	4696.5	199.9	0.0
Jul	5020.6	1224.7	3830.8	9.3	0.0
Aug	4844.1	1217.2	3654.5	8.9	0.0
Sep	7468.2	2184.9	4749.3	537.0	0.0
Oct	13400.4	2246.3	4033.0	7121.0	0.0
Nov	19051.6	2155.6	2284.8	14611.2	0.0
Dec	23773.6	2208.8	1862.1	19702.8	0.0
Ann	170260.4	24105.1	46006.3	100236.6	0.0

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**FOUNDATION ENERGY PROFILE**

Month	Heat Loss (MJ)				Total
	Crawl Space	Slab	Basement	Walkout	
Jan	0.0	0.0	9797.2	0.0	9797.2
Feb	0.0	0.0	7507.1	0.0	7507.1
Mar	0.0	0.0	6082.4	0.0	6082.4
Apr	0.0	0.0	3447.3	0.0	3447.3
May	0.0	0.0	1233.0	0.0	1233.0
Jun	0.0	0.0	199.9	0.0	199.9
Jul	0.0	0.0	9.3	0.0	9.3
Aug	0.0	0.0	8.9	0.0	8.9
Sep	0.0	0.0	327.2	0.0	327.2
Oct	0.0	0.0	3041.9	0.0	3041.9
Nov	0.0	0.0	6831.1	0.0	6831.1
Dec	0.0	0.0	9413.8	0.0	9413.8
Ann	0.0	0.0	47899.2	0.0	47899.2

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**FOUNDATION TEMPERATURES & VENTILATION PROFILE**

Month	Temperature (Deg °C)			Air Change Rate		Heat Loss (MJ)
	Crawl Space	Basement	Walkout	Natural	Total	

Jan	0.0	19.0	0.0	0.162	0.203	5128.2
Feb	0.0	19.0	0.0	0.155	0.195	4055.7
Mar	0.0	18.9	0.0	0.144	0.184	3671.5
Apr	0.0	19.0	0.0	0.126	0.166	2638.5
May	0.0	19.2	0.0	0.100	0.141	1674.9
Jun	0.0	19.8	0.0	0.079	0.120	937.8
Jul	0.0	20.7	0.0	0.064	0.105	557.3
Aug	0.0	20.7	0.0	0.061	0.102	528.9
Sep	0.0	19.7	0.0	0.080	0.120	1046.2
Oct	0.0	19.0	0.0	0.114	0.154	2316.3
Nov	0.0	18.9	0.0	0.146	0.186	3805.9
Dec	0.0	19.0	0.0	0.162	0.202	5015.8
Ann	0.0	19.4	0.0	0.116	0.156	31377.1

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### SPACE HEATING SYSTEM PERFORMANCE

Month	Space Heating Load (MJ)	Furnace Input (MJ)	Pilot Light (MJ)	Indoor Fans (MJ)	Heat Pump Input (MJ)	Total Input (MJ)	System Cop
Jan	20135.1	20944.5	0.0	383.2	0.0	21327.7	0.944
Feb	15295.1	15910.0	0.0	291.1	0.0	16201.0	0.944
Mar	12506.4	13009.2	0.0	238.0	0.0	13247.2	0.944
Apr	7353.7	7649.3	0.0	139.9	0.0	7789.2	0.944
May	2702.5	2811.1	0.0	51.4	0.0	2862.5	0.944
Jun	199.9	208.0	0.0	3.8	0.0	211.8	0.944
Jul	9.3	9.7	0.0	0.2	0.0	9.8	0.944
Aug	8.9	9.2	0.0	0.2	0.0	9.4	0.944
Sep	529.4	550.7	0.0	10.1	0.0	560.8	0.944
Oct	7108.1	7393.8	0.0	135.3	0.0	7529.1	0.944
Nov	14538.1	15122.5	0.0	276.7	0.0	15399.2	0.944
Dec	19684.3	20475.6	0.0	374.6	0.0	20850.2	0.944
Ann	100070.7	104093.4	0.0	1904.4	0.0	105997.8	0.751

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### AIR CONDITIONING SYSTEM PERFORMANCE

Month	Sensible Load (MJ)	Latent Load (MJ)	AirCond Energy (kWh)	Fan Energy (kWh)	Ventilator Energy (kWh)	Crankcase Heater (kWh)	Total Energy (kWh)	COP	Av.RH %
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<b>May</b>	119.6	16.1	14.6	2.9	0.0	42.0	59.5	0.6	38.7
<b>Jun</b>	478.0	81.6	59.9	12.0	0.0	32.3	104.2	1.5	40.2
<b>Jul</b>	1360.9	278.5	168.8	33.3	0.0	21.1	223.2	2.0	41.8
<b>Aug</b>	1243.4	277.2	156.1	30.7	0.0	23.5	210.4	2.0	42.4
<b>Sep</b>	285.3	70.8	38.3	7.6	0.0	36.1	82.1	1.2	42.8
<b>Oct</b>	2.9	0.7	0.4	0.1	0.0	44.5	45.0	0.0	42.6
<b>Ann</b>	3490.1	725.0	438.1	86.6	0.0	199.6	724.3	1.6	41.7

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### **MONTHLY ESTIMATED ENERGY CONSUMPTION BY DEVICE (MJ)**

<b>Month</b>	<b>Space Heating</b>		<b>DHW Heating</b>		<b>Lights &amp;</b>	<b>HRV &amp;</b>	<b>Air</b>
	<b>Primary</b>	<b>Secondary</b>	<b>Primary</b>	<b>Secondary</b>	<b>Appliances</b>	<b>FANS</b>	<b>Conditioner</b>
<b>Jan</b>	20944.5	0.0	1349.5	0.0	2176.2	492.9	0.0
<b>Feb</b>	15910.0	0.0	1232.8	0.0	1965.6	390.2	0.0
<b>Mar</b>	13009.2	0.0	1349.5	0.0	2176.2	347.7	0.0
<b>Apr</b>	7649.3	0.0	1265.3	0.0	2106.0	246.1	0.0
<b>May</b>	2811.1	0.0	1250.1	0.0	2176.2	171.7	203.5
<b>Jun</b>	208.0	0.0	1154.2	0.0	2106.0	153.0	332.1
<b>Jul</b>	9.7	0.0	1150.7	0.0	2176.2	229.8	683.4
<b>Aug</b>	9.2	0.0	1135.3	0.0	2176.2	220.4	646.7
<b>Sep</b>	550.7	0.0	1113.6	0.0	2106.0	143.6	268.1
<b>Oct</b>	7393.8	0.0	1192.7	0.0	2176.2	245.3	161.8
<b>Nov</b>	15122.5	0.0	1209.8	0.0	2106.0	382.8	0.0
<b>Dec</b>	20475.6	0.0	1307.5	0.0	2176.2	484.3	0.0
<b>Ann</b>	104093.4	0.0	14710.9	0.0	25622.6	3507.9	2295.7

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### **ESTIMATED FUEL COSTS (Dollars)**

<b>Month</b>	<b>Electricity</b>	<b>Natural Gas</b>	<b>Oil</b>	<b>Propane</b>	<b>Wood</b>	<b>Total</b>
<b>Jan</b>	55.75	215.16	0.00	0.00	0.00	270.91
<b>Feb</b>	47.99	168.18	0.00	0.00	0.00	216.17
<b>Mar</b>	51.87	142.79	0.00	0.00	0.00	194.66
<b>Apr</b>	47.92	93.14	0.00	0.00	0.00	141.06
<b>May</b>	52.61	48.88	0.00	0.00	0.00	101.48
<b>Jun</b>	53.67	24.26	0.00	0.00	0.00	77.93
<b>Jul</b>	66.98	22.42	0.00	0.00	0.00	89.41
<b>Aug</b>	65.75	22.28	0.00	0.00	0.00	88.03
<b>Sep</b>	51.70	27.02	0.00	0.00	0.00	78.72
<b>Oct</b>	53.46	90.15	0.00	0.00	0.00	143.61

<b>Nov</b>	50.93	160.79	0.00	0.00	0.00	211.72
<b>Dec</b>	55.52	210.50	0.00	0.00	0.00	266.02
<b>Ann</b>	654.16	1225.57	0.00	0.00	0.00	1879.73

**The calculated heat losses and energy consumptions are only estimates, based upon the data entered and assumptions within the program. Actual energy consumption and heat losses will be influenced by construction practices, localized weather, equipment characteristics and the lifestyle of the occupants.**