Load Summary — Secondary Suite

Secondary Suite / Additional Dwelling Unit — Heating Load & Existing Equipment Check

OntarioHeatLoss.ca
Residential HVAC design documents
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Job	SAMPLE-ADU-001
Date	November 09, 2026
For	Worked example — not a real project
Site	Barrie, Ontario — existing 1970s bungalow

The question this package answers

A second dwelling unit is being added to an existing house. The building department will ask whether the existing heating equipment can carry both units and how each unit is ventilated. The suite load below is calculated room by room per the CSA F280-12 procedure from owner-supplied field measurements; the existing house load is an **estimate** from the construction era, because no drawings exist for it. Every owner-supplied value is listed on the Assumptions page.

Item	Btuh	Basis
Suite — transmission (walls, glazing, doors, foundation)	4,276	F280-12 worksheet, next page
Suite — infiltration	3,154	0.3 ACH natural, 7,020 ft³
Suite — ventilation (no heat recovery credited)	4,762	53 cfm principal ventilation, OBC 9.32.3.3
Suite design heating load	**12,193**	13.0 Btuh/ft² of suite floor area
Existing house — estimated design heating load	36,000	ESTIMATE from construction era (R-8 to R-12 walls, single or early double glazing) scaled to the -24 degC design temperature - no drawings
Combined (additive, conservative)	**48,193**	house + whole suite
Incremental load added by the suite	4,762	suite space was already heated by this equipment; only the new unit's ventilation load is added
Verdict on the incremental figure	**CARRIES IT**	Rated output 64,000 Btuh against a combined load of 40,762 - 57% spare.

EXISTING EQUIPMENT: CARRIES IT
Rated output 64,000 Btuh against a combined load of 48,193 - 33% spare.

The verdict is made on the conservative additive figure. The house load is an estimate and must be treated as such: if the verdict is MARGINAL, a measured whole-house calculation or a site visit is the correct next step, not a tighter estimate.

DRAFT — PENDING REVIEW

Load Worksheet — surface by surface

Residential Heating & Cooling Load Calculation

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						BASEMENT APARTMENT	
Ty	**Assembly**	**R**	**Or**	**Gross**	**Net / perim**	**Btuh/ft²**	**Load Btuh**
Room							*936 ft² · 7.5 ft ceiling · level 1*
W	foundation wall above grade R-12	12.00	-	186	138	6.9	957
F	foundation r10_r12	–	-	–	124	–	2,088
G	existing glazing U-0.35 (owner-supplied)	2.86	-	28	28	29.1	815
D	exterior door	4.00	-	20	20	20.8	416
Total conductive loss							*4,277*
Infiltration							*3,154*
Total room load							**7,430**

Ty: W wall · G glazing · D door · C ceiling · P partition to unconditioned space · F floor and foundation. Opaque assemblies are $Q = A_{net} \times TD / R$; glazing is $Q = A \times U \times TD$. The foundation line is a linear loss along the exposed below-grade perimeter, which is how stamped F280 packages report it — the column headed “Net / perim” carries feet of perimeter on that row, not square feet.

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Existing Equipment Check

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Nameplate data

Field	Value		Source
Equipment type	gas furnace, mid-efficiency		owner photo of nameplate
Model	nameplate photographed by owner		owner photo of nameplate
Rated input		80,000 Btuh	owner photo of nameplate
AFUE		80 %	owner photo of nameplate
Rated output		64,000 Btuh	derived: 80,000 Btuh input × 80% AFUE = 64,000 Btuh output
Approximate age		18 years	owner

Capacity against the combined load

Item	Btuh
Rated output	64,000
Combined design load (house estimate + suite)	48,193
Spare capacity	15,807 (33 %)

CARRIES IT. Rated output 64,000 Btuh against a combined load of 48,193 - 33% spare.

What the verdict does and does not say

1. It compares rated output with calculated design load. It says nothing about the condition of the equipment, the heat exchanger, the venting or the combustion air, all of which a licensed gas technician must assess before the appliance serves a second unit.
2. An appliance near the end of its service life that "carries it" on paper is still a replacement decision for the owner; CSA F280-12 sizing for the replacement is the combined load on this page.
3. Whether one appliance MAY serve two dwelling units is a Code question, not a capacity question. See Code Questions for the Designer.
4. Distribution is separate from capacity: existing ductwork may not deliver the suite's share of airflow to the suite. A duct assessment is part of the full package, not this check.

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Ventilation by Dwelling Unit

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Principal ventilation capacity is per DWELLING UNIT under OBC 9.32.3.3. The existing house keeps its own requirement.

Unit	Bedrooms	Principal ventilation capacity	Basis
Secondary suite (this package)	1	25 L/s (53 cfm)	OBC 2024 Div B Table 9.32.3.3
Existing principal dwelling	owner to state	per Table 9.32.3.3 for its bedroom count	unchanged by the suite; existing system to be confirmed

Heating load of the suite's ventilation air

Case	Btuh
No heat recovery (as calculated in this package)	4,762
With an HRV at 60% sensible recovery (−25 °C rating)	1,905
With an HRV at 75% sensible recovery (0 °C rating)	1,190

No heat-recovery credit is taken in the suite load because the ventilation equipment for the suite has not been selected. If an HRV is specified, the credit is taken at its cold-weather rating, because the load is computed at the SB-1 design temperature. Exhaust-only ventilation for a secondary suite is common in practice; whether it is acceptable, and whether a shared HRV is permitted, is listed under Code Questions.

The HRAI Residential Mechanical Ventilation Design Summary is a copyrighted HRAI form and is not reproduced here. The data above is what that form requires for the suite; the Designer of Record completes the form itself.

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Code Questions for the Designer of Record

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The following matters are governed by the Ontario Building Code and are **deliberately not answered by this software**. They are printed as questions with the article to consult, for the Designer of Record to settle and record before sealing. A wrong paraphrase of a fire-separation requirement on a permit document is worse than a blank, so this page carries none.

Matter	Question	Where to look	Designer's finding
Shared heating system	May one forced-air system serve both dwelling units, and if so under what conditions (fire dampers, duct separation, smoke detection)?	OBC 2024 Div B 9.33 and 9.10 - secondary suite provisions	
Ventilation per unit	Each dwelling unit requires its own principal ventilation capacity and exhaust. Confirm whether a shared HRV is permitted or each unit needs its own.	OBC 2024 Div B 9.32	
Fire separation of ducts	Where ducts pass between units or through the separating assembly, confirm the required fire separation, dampers and sealing.	OBC 2024 Div B 9.10 - fire separations between dwelling units	
Independent temperature control	Confirm whether the suite requires its own thermostat or zone control.	OBC 2024 Div B 9.33	

Also to be confirmed with the building department

1. Whether the municipality's own secondary-suite or ADU checklist asks for documents beyond heat loss, ventilation and equipment capacity (some ask for a duct layout showing the separation between units).
2. Which outdoor design temperature the department expects where the municipality is not listed in Supplementary Standard SB-1. This package used the value stated on the Assumptions page, with its source.
3. Whether a gas technician's report on the existing appliance is required with the application or at inspection.

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Assumptions & Sources — reviewer action required

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Every value below was either read from the drawings or assumed. The Designer of Record must confirm each one before sealing. Anything marked Low confidence should be checked against the drawings directly.

Item	How it was obtained	Confidence
Suite dimensions 36 ft x 26 ft x 7.5 ft	owner tape measure, self-survey form	Medium
Foundation wall exposed 1.5 ft above grade	owner measurement at two corners	Medium
Foundation insulation R-12 (interior stud wall, batt)	owner photo of an opened outlet box; assumed continuous	Low
Window area 28 ft² (4 hopper windows)	owner measurements with photos	Medium
Exterior door 20 ft², R-4	owner photo; insulated steel door assumed	Medium
Glazing U-0.35	double-glazed vinyl visible in photos; no label	Low
Natural air change 0.30 ACH	class default for 1970s construction; no depressurization test	Medium
Existing house load 36,000 Btuh	ESTIMATE from construction era at 30 Btuh/ft², no drawings	Low
Furnace output 64,000 Btuh	80,000 input × 80% AFUE from nameplate photo	High
Design temperature −24 °C	SB-1 Table 2, Barrie	High

Values supplied by the owner on the verification screen

- existing glazing U-0.35 (owner-supplied)

Software verification status. The calculation engine named in the footer follows the CSA F280-12 procedure but has **not** completed the Clause 8 software verification administered by HVAC Designers of Canada. Nothing in this package is a claim of conformity to F280-12, and the package is a draft until a qualified designer has reviewed and sealed it.

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Designer of Record — Review & Seal

This package is not valid for permit until this page is completed

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The undersigned has reviewed the calculations, assumptions and drawings in this package, accepts them as their own design, and takes responsibility for the design work under Division C 3.2.4 of the Ontario Building Code.

Field	Entry
Name of Designer of Record	
Firm	
BCIN / qualification	
Date of review	
Signature	

Seal

Where the applicant is the owner designing a house on their own lot, OBC Division C 3.2.5.1.(3)(b)(i) exempts the owner from the designer qualification requirements. That exemption applies to *who may design*; it does not lower the standard the calculations must meet, and this page should still be completed by whoever takes responsibility for the design.