Guidance for Acceptable Load Calculations

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This document provides guidance on how to perform heating and cooling load calculations for applications to the New York State Clean Heat Program. Load calculations are required for all applications for Clean Heat incentives and are subject to review by the Program Administrators. Participating Contractors who choose to perform load calculations that do not meet the criteria outlined in this document may be asked to provide written justification and their projects may be subject to additional review.

1. **Methodology**
	1. Calculations shall be in accordance with ACCA Standard 183-2007 for commercial projects, ACCA Manual J for residential projects, or other approved calculation methods in accordance with the Clean Heat Program Manual.
	2. Residential equipment sizing shall be based on manufacturers’ extended performance tables in accordance with ACCA Manual S, not based on nominal size or AHRI ratings.
	3. Each outdoor condensing unit should be sized for the dominant heating or cooling load of its corresponding zone. When multiple outdoor condenser units condition separate zones within a building, the individual zonal loads should be equal to the dominant heating or cooling load of that zone. When one outdoor condenser unit conditions multiple zones within a building (e.g., a VRF system), the block load of the entire conditioned space should be used (which may be smaller than the sum of the individual zone loads).
		1. Con Edison requires all Manual J submittals to follow a floor-by-floor load calculation methodology.
2. **Temperatures**
	1. Outdoor design temperatures should be within ±5°F of the Clean Heat program default for the project’s location, based on the Clean Heat Weather Station Reference ([zip code lookup tool](https://cleanheat.ny.gov/assets/other/Design%20temperature%20lookup%20tool.xlsx)). In cases where the design professional chooses to use a different weather city or different ACCA reference, the design temperatures shall remain within 5°F of the site found in the CH weather station reference.
		1. Design temperature requirements may be superseded by manufacturer-specific requirements. In such cases, Clean Heat applicants must provide documentation citing the applicable manufacturer’s requirement.
	2. Indoor design temperatures for heating load calculations shall not exceed 72°F, and for cooling shall not be less than 75°F.
3. **The following component loads should NOT be included in load calculations:**
	1. Humidification loads;
	2. Hot water piping distribution losses;
	3. Adiabatic surfaces (surfaces in which there is no heat transfer; i.e., party walls, within the building or between buildings, floors, or ceilings between conditioned floors);
	4. Duct losses/gains, where indoor equipment is ductless or where ducts are located inside conditioned space;
	5. Multiplicative or additive safety factors with no defined source.
4. **Component load guidance**
	1. Ventilation loads shall be supported by mechanical schedules and account for heat recovery, so that they represent only the loads served by heat pumps.
	2. Unless otherwise supported by blower door testing, heating and cooling infiltration shall be

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|  | **Natural ACH heating** | **Natural ACH cooling** |
| **Retrofits** | ≤0.7 | ≤0.4 |
| **Typical new construction and gut rehab** | ≤0.3 | ≤0.17 |
| **Passive House** | ≤0.06 | ≤0.034 |

* 1. Clean Heat provides guidance on calculating design infiltration based on blower door testing. See <http://cleanheat.ny.gov/assets/pdf/infiltration-guidance-for-buildings-at-design-conditions.pdf>
	2. Enclosure (envelope) component loads should use R values consistent with plans for new construction or gut rehab and existing conditions for retrofit.
		1. Category 4A baseline loads should be calculated based on the existing building for retrofit or gut rehab projects and the energy code minimum for new construction projects.
		2. All documented energy-efficient features and specifications shall be accounted for when defining component loads.
	3. Internal gains above normal levels (e.g., those from industrial process heat) shall be accounted for as offsetting design heating load.
	4. Heating load calculations shall account for cold processes or equipment in the zone that absorb heat (for example, indoor unitary heat pump water heaters or some refrigerated cases) .
	5. Surface areas and geometry of exterior components (thermal envelope) and floor area used in loads must be consistent with architectural plans.

Note: The infiltration guidance document, zip code weather station reference, and other helpful resources can be found at <https://cleanheat.ny.gov/contractor-resources/> under the Air Source Heat Pump and Ground Source Heat Pump expanders.