

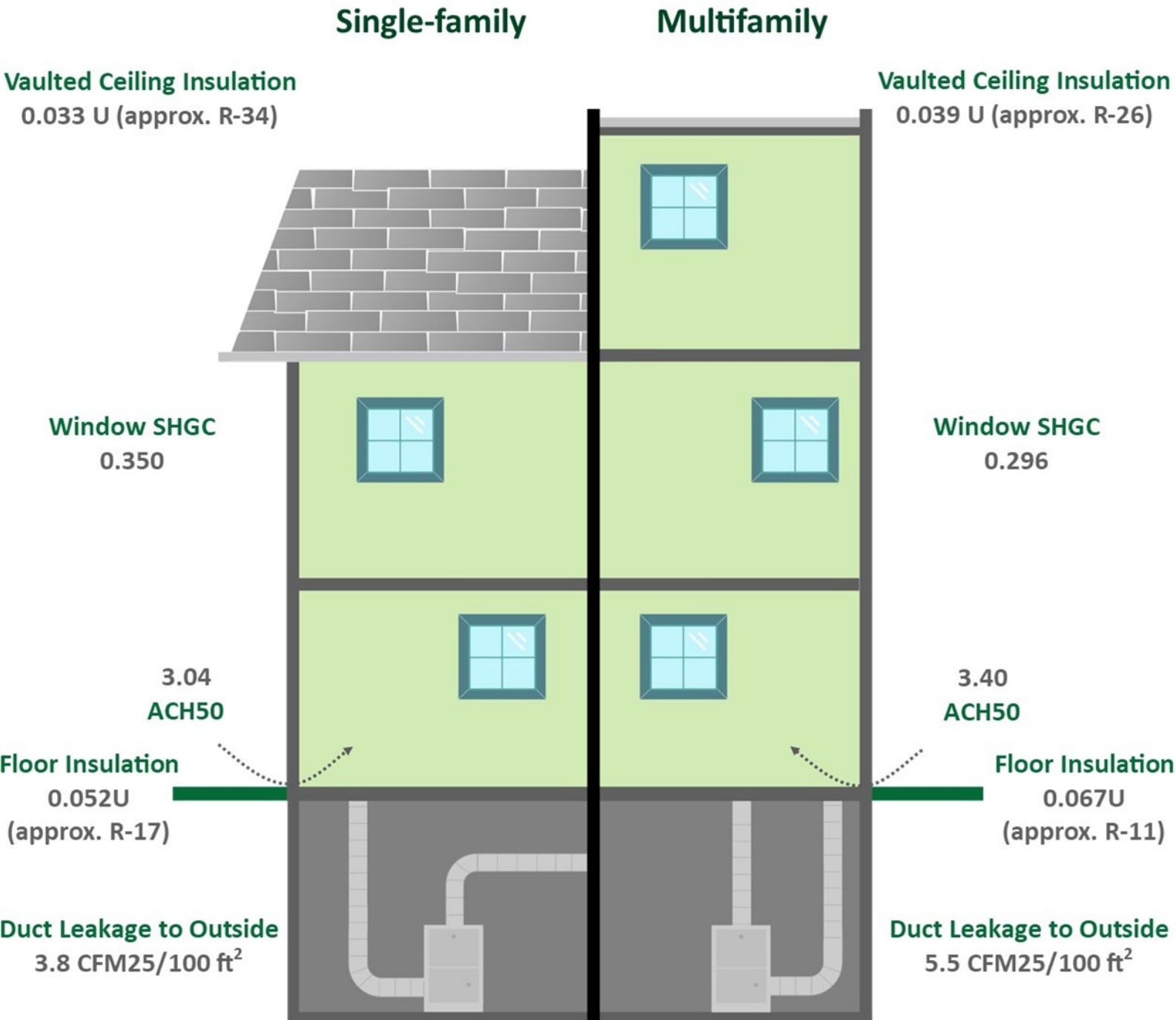


MA Low-Rise Multi-Family Baseline

This study explores differences between single-family (SF) and low-rise multifamily (MF) home construction. A new UDRH for low-rise MF homes was developed using the results of this research.

Primary Differences between Single-family and Multifamily

The diagram below highlights the portions of homes where practices differ the most between SF and MF home construction. While MF is more likely to include tankless or electric resistance water heaters, the average efficiencies are similar to SF. See below for more about mechanical equipment.



Methods and Analysis



This study is primarily based on HERS ratings purchased from RESNET, which NMR supplemented with construction records collected from building departments. Addresses for the building department data collection were sourced from utility account information, real estate listings and public records such as assessors' databases.

Extensive data cleaning was performed on the RESNET data before merging the building department records to produce a single dataset. In an interim memo comparisons were made between many different subsets of the data, and to data from other recent studies, to explore potential biases or important differences between groups. These results were presented to a panel of stakeholders who helped the develop the low-rise multifamily UDRH through a consensus-seeking process.

Key Findings & Results



While there are some measure-level differences, the base code and stretch code buildings in this study are broadly similar, with the same average HERS index score of 54.

Registered HERS ratings are a rich source of vetted information for hard to reach market segments such as multifamily residential construction.

The team estimates that the buildings sampled for this study represent 33% to 41% of the non-participant low-rise multifamily market. The sampled projects represent 27% to 38% of the non-program base code market and 36% to 42% of the non-program stretch code market.

Mechanical Equipment Efficiencies



The table below compares the existing SF UDRH to the new MF UDRH, where an asterisk (*) indicates reference efficiencies if there is no natural gas service.

Few data points for MF homes heated with propane or heat pumps were uncovered in this study, and overall heating equipment efficiencies were similar to those observed in the single-family baseline. As a result, the MF UDRH values for this category are the same as for SF.

	Hot Water			Heating			Cooling
	Natural Gas (EF)	Propane * (EF)	Electric* (EF)	Natural Gas (AFUE)	Propane * (AFUE)	Electric* (HSPF)	(SEER)
SF	0.87	As built	Resistance: As built Heat pump: 0.92	93.5	97.1	9.28	14.9
MF	0.93	0.93	1.00	93.5	97.1	9.28	13.8