



H C Fennell Consulting, LLC

Applied Foam Technologies and Commissioning

Performance Tested Projects

(3/21/2009)

New Commercial Buildings, Major additions	Initial / Baseline	Standard set @ 50	CFM50/ Sq. ft.	CFM75/ Sq. ft.	ACH Nat	ACH 50	KWH / SM/Yr.
Reference: Army Corps of Engineers (2008)							
1 Logic Associates (1984)	New		0.095	0.130	0.030	0.570	<100
2 Vermont Law Schl 2 (Addition 1998)	New	0.202	0.220	0.286	0.060	1.260	
3 Rivendell Academy 2nd test (2002)	New	0.180	0.180	0.234	0.094	1.889	
4 Primex Office Bldg. (Addition 2003)	New	0.330	0.190	0.250	0.055	1.150	
5 Wind NRG Phase 1 (2004)	New	0.200	0.162	0.210	0.029	0.580	
6 Randolph Dev. - Offices (2004)	New	0.200	0.200	0.260	0.060	1.150	
7 Champlain Valley UHS (Addition 04)	New		0.144	0.187	0.060	1.020	80
8 Dartmouth – Kemeny (mockup-2005)	New		0.048	0.065	0.015	0.295	
9 Shelburne Museum - Art Storage (00)	New	0.355	0.350	0.456	0.149	2.980	
10 Richmond MS 2 (Whole building)	New	0.210	0.190	0.250	0.055	1.150	
11 CRELL / NSF ARRO 1 (2006)	New		0.060	0.078	0.120	2.400	65
12 Loudon Elementary (Addition 06-07)	New	0.250	0.130	0.169	0.035	0.800	
13 Merrimack Valley HS (06-07)	New	0.250	0.103	0.134	0.030	0.601	
14 Kennett High School Area A1 (06-07)	New	0.180	0.270	0.351	0.079	1.575	
15 UNH/NSF ARRO 2 (2007-08)	New	0.060	0.040	0.052	0.021	0.420	
16 VTC Shape Hall - 3 (07-08)	New	0.250	0.310	0.403	0.160	2.100	
Average			0.168	0.220	0.066	1.246	
Standard Deviation			0.090	0.117	0.044	0.765	

Commercial Renovations	Initial / Baseline	Standard set	CFM50/ Sq. ft.	CFM75/ Sq. ft.	ACH Nat	ACH 50	KWH / SM/Yr.
Reference: Army Corps of Engineers (2008)							
1 NAVC/DARPA (Electric Vehicles 97)	0.399	0.200	0.186	0.235	0.019	0.490	
2 BES headquarters (2002)			0.190	0.247	0.020	0.50	
3 Williams College (Retrofit 2003)		0.340	0.290	0.378	0.086	1.700	
4 Proctor Acad. - Maxwell Savage (03)		0.114	0.210	0.275	0.061	1.250	
5 Phillips Exeter (Remodel 2004-05)		0.230	0.230	0.299	0.070	1.350	
6 Waterbury Ice Center after air sealing	0.330		0.100	0.130	0.058	0.910	
7 Merrimack High School (2006-07)		0.250	0.103	0.134	0.032	0.600	
8 AVA Gallery (2007)		0.250	0.220	0.286	0.067	1.300	82
9 Our Saviour Lutheran Church (2008)			0.250	0.325	0.065	1.500	
10 Middlebury C. - McCulough attic (08)	0.990	0.750	0.730	0.950	0.210	4.300	
Average			0.251	0.326	0.069	1.340	
Standard Deviation			0.178	0.233	0.054	1.128	



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New Residential Buildings, Major additions	Initial / Baseline	Standard set	CFM50/ Sq. ft.	CFM75/ Sq. ft.	ACH Nat	ACH 50	KWH / SM/Yr.
Reference: Army Corps of Engineers (2008)			0.192	0.250	0.100	2.014	
1 Etherington Residence (1984)	New		0.360	0.499	0.380	2.500	
2 Robbins Residence (1990)	New		0.045	0.065	0.060	0.700	
3 Green Residence (2007)	New	0.250	0.250	0.325	0.150	2.950	
4 Crowe Residence (2008)	New	0.200	0.120	0.156	0.080	1.100	
Average			0.194	0.261	0.168	1.813	
Standard Deviation			0.139	0.192	0.147	1.082	

Residential Renovations	Initial / Baseline	Standard set	CFM50/ Sq. ft.	CFM75/ Sq. ft.	ACH Nat	ACH 50	KWH / SM/Yr.
Reference: Army Corps of Engineers (2008)			0.192	0.250	0.100	2.014	
1 Dunham Residence (1984)			0.280	0.364	0.360	2.210	
2 Duncan/Brooks Residence (1990)			0.105	0.135	0.140	1.500	
3 Fennell Residence (2002)	1.500	0.150	0.140	0.182	0.073	1.470	44
Average			0.17	0.23	0.19	1.73	
Standard Deviation			0.09	0.12	0.15	0.42	