

			Hotel	Apartment	Office	School	Retail	
			Group R-1	Group R-2	Group B	Group E	Group M	All Other
		Original Heating Efficiency Points	2	3	3	10	16	7
		Modified original heating	1	1	1	1	2	1
Htg	htg_pts	New points for HP system	1	1	3	1	4	2
Htg	gas_pts	New points for gas system	1	2	8	3	9	5
		Ratio of Gas/HP	1.1	1.5	2.3	2.6	2.2	2.0
		Original Cooling + Fan Effic Points	2	2	3	4	3	2
		Modified original cool + fan	8	5	10	10	8	8.0
Clg + Fan	htg_pts	New points for HP system	12	8	14	8	10	10
Clg + Fan	gas_pts	New points for gas system	10	6	12	8	8	9
		Ratio of Gas/HP	0.8	0.8	0.9	0.9	0.8	0.8
Clg + Fan	htg_pts	New points for HP system	12.0	8.0	14.0	8.0	10.0	10.0
Htg	htg_pts	New points for HP system	1.0	1.0	3.0	1.0	4.0	2.0
Clg + Fan	gas_pts	New points for gas system	10.0	6.0	12.0	8.0	8.0	9.0
Htg	gas_pts	New points for gas system	1.0	2.0	8.0	3.0	9.0	5.0
		Measure to add HPWH for heat pump path when not required due to exception	135.0	163.0	16.0	7.0	68.0	78.0
Clg + Fan	swhe_pts	HPWH points for fossil fuel path	194.0	223.0	21.0	20.0	82.0	108.0
Clg + Fan	swh_pts	HP space heating points for fossil fuel path	11.0	26.0	107.0	34.0	107.0	57.0
Clg + Fan	hp_pts	Measure for high efficiency fossil fuel	59.0	65.0	6.0	11.0	18.0	32.0
Clg + Fan	swhe_he_f	SWH						
Clg + Fan	f_pts							

- Original points based on 2018 IECC prototypes  
- Modified original based on 2018 Seattle baseline  
- New points based on A2 Efficiency simulations  
- Hotel gas system has mix of PTAC elec and PkgAC/furnace, so less difference between HP and gas system  
- Office heating higher than original point basis due to reduced plugs/lighting, reduced occupancy, more window thermal bridging  
- School heating lower than original point basis due to unitary systems (no reheat) and DOAS with ERV  
- Retail heating lower than original point basis due to DOAS with ERV

		CZ4C		CZ5B		CZ5B		elec res		hi eff FF		gas_pts	htg_pts	swh_pts	hp_pts	swhe_pt	swh_he
		gas	hp	elec res	hi eff FF	gas	hp	elec res	hi eff FF	gas_pts	htg_pts	swh_pts	hp_pts	swhe_pt	swh_he		
		swh	SWH	swh	SWH	swh	SWH	swh	SWH	swh	SWH	swh	SWH	swh	SWH	swh	SWH
Office	Equipment Int.	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3								
Office	Equipment Ext.	0	0	0.0	0	0	0	0.0	0								
Office	Equipment Refrig.	0	0	0.0	0	0	0	0.0	0								
Office	Lighting Int.	3	3	3.0	3	3	3	3.0	3								
Office	Lighting Ext.	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2								
Office	Fans	1.6	1.5	1.5	1.6	2	1.6	1.6	2								
Office	Pumps	0.4	0.4	0.4	0.4	0.43	0.52	0.5	0.43								
Office	Cooling	6.2	6.1	6.1	6.2	6.4	6.4	6.4	6.4								
Office	Space Heat, Gas	4.3	0	0.0	4.3	8.9	0	0.0	8.9								
Office	Space Heat, Elec	0	1.4	1.4	0	0	4.3	4.3	0								
Office	DHW, Gas	1.2	0	0.0	1.01	1.2	0	0.0	1.01								
Office	DHW, Elec	0	0.5	1.0	0	0	0.6	1.0	0								
Office	BACK CHECK EUI	31.1	27.4	27.9	31.0	36.4	30.9	31.3	36.2								
Office	TOTAL	31.1	27.4	gas pts	hp pts	hiE FF SWH	36.4	30.9	gas pts	hp pts	hiE FF SWH						
Office	Htg	0.215	0.07	7	3	0.445	0.215	12	7	OfficeHtg	8	3					
Office	Clg + Fan	0.39	0.38	13	14	0.42	0.4	12	13	OfficeClg +	12	14	21	107	16	6	
	SWH only	1.2	0.5	23	17	6	1.2	0.6	16	12	5						
	HVAC	12.5	9.4	100			17.73	12.82	135	Here cooling is included with HVAC instead							
	SWH + cooling/fan/pump	9.4	8.5	29			10.03	9.12	25	Report from A2 Efficiency has cooling/fans/pumps lumped with SWH							
	Heat only	4.3	1.4	93			8.9	4.3	126								
Apartment	Equipment Int.	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4								
Apartment	Equipment Ext.	0	0	0.0	0	0	0	0.0	0								
Apartment	Equipment Refrig.	0	0	0.0	0	0	0	0.0	0								
Apartment	Lighting Int.	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6								
Apartment	Lighting Ext.	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7								
Apartment	Fans	2.2	2.3	2.3	2.2	2.4	2.8	2.8	2.4								
Apartment	Pumps	0	0	0.0	0	0	0	0.0	0								
Apartment	Cooling	2.5	2.2	2.2	2.5	2.8	2.5	2.5	2.8								
Apartment	Space Heat, Gas	1.3	0	0.0	1.3	4.3	0	0.0	4.3								
Apartment	Space Heat, Elec	0	0.6	0.6	0	0	2.3	2.3	0								
Apartment	DHW, Gas	15.8	0	0.0	13.31	15.8	0	0.0	13.31								
Apartment	DHW, Elec	0	6.5	12.6	0	0	7.1	12.6	0	1.94462							
Apartment	BACK CHECK EUI	40.5	30.2	36.4	38.0	44	33.4	38.9	41.5								
Apartment	TOTAL	40.5	30.2		hiE FF SWH	44	33.4		hiE FF SWH								
Apartment	Htg	0.065	0.03	2	1	0.215	0.115	5	3	Apartment	2	1					
Apartment	Clg + Fan	0.235	0.225	6	7	0.26	0.265	6	8	Apartment	6	8	223	26	163	65	
	SWH only	15.8	6.5	230	168	66	15.8	7.1	198	142	60						
	HVAC	6	5.1	22			9.5	7.6	43								
	SWH + cooling/fan/pump	20.5	11	235			21	12.4	195								
	Heat only	1.3	0.6	17			4.3	2.3	45								
School	Equipment Int.	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3								
School	Equipment Ext.	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2								
School	Equipment Refrig.	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8								

School	Lighting Int.	kBtu/sf	3.2	3.2		3.2	3.2	3.2	3.2		3.2	3.2									
School	Lighting Ext.	kBtu/sf	0.4	0.4		0.4	0.4	0.4	0.4		0.4	0.4									
School	Fans	kBtu/sf	3.4	3.5		3.5	3.4	3.8	4		4.0	3.8									
School	Pumps	kBtu/sf	0	0		0.0	0	0	0		0.0	0									
School	Cooling	kBtu/sf	1.6	1.6		1.6	1.6	2.4	2.3		2.3	2.4									
School	Space Heat, Gas	kBtu/sf	1.6	0		0.0	1.6	3.6	0		0.0	3.6									
School	Space Heat, Elec	kBtu/sf	0	0.5		0.5	0	0	1.7		1.7	0									
School	DHW, Gas	kBtu/sf	2.2	0		0.0	1.85	2.2	0		0.0	1.85									
School	DHW, Elec	kBtu/sf	0	1.5		1.8	0	0	1.7		1.8	0									
School	BACK CHECK EUI		32.8	31.1		31.3	32.4	35.9	33.7		33.7	35.6									
School	TOTAL	kBtu/sf	32.8	31.1				35.9	33.7												
School	Htg		0.08	0.025	2	1		0.18	0.085	5	3										
School	Clg + Fan		0.25	0.255	8	8		0.31	0.315	9	9										
		SWH only	2.2	1.5	21	8	11	2.2	1.7	14	2	10									
		HVAC	6.6	5.6	30			9.8	8	50											
		SWH + cooling/fan/pump	7.2	6.6	18			8.4	8	11											
		Heat only	1.6	0.5	34			3.6	1.7	53											
Retail	Equipment Int.	kBtu/sf	7.5	7.5		7.5	7.5	7.5	7.5		7.5	7.5									
Retail	Equipment Ext.	kBtu/sf	0	0		0.0	0	0	0		0.0	0									
Retail	Equipment Refrig.	kBtu/sf	0	0		0.0	0	0	0		0.0	0									
Retail	Lighting Int.	kBtu/sf	8.6	8.6		8.6	8.6	8.7	8.7		8.7	8.7									
Retail	Lighting Ext.	kBtu/sf	1.6	1.6		1.6	1.6	1.6	1.6		1.6	1.6									
Retail	Fans	kBtu/sf	3.3	3.3		3.3	3.3	3.6	3.8		3.8	3.6									
Retail	Pumps	kBtu/sf	0	0		0.0	0	0	0		0.0	0									
Retail	Cooling	kBtu/sf	1.4	1.4		1.4	1.4	2	2		2.0	2									
Retail	Space Heat, Gas	kBtu/sf	4.6	0		0.0	4.6	9.7	0		0.0	9.7									
Retail	Space Heat, Elec	kBtu/sf	0	1.6		1.6	0	0	4.2		4.2	0									
Retail	DHW, Gas	kBtu/sf	3.6	0		0.0	3.03	3.6	0		0.0	3.03									
Retail	DHW, Elec	kBtu/sf	0	1		2.9	0	0	1		2.9	0									
Retail	BACK CHECK EUI		30.7	25.1		26.9	30.0	36.7	28.8		30.7	36.1									
Retail	TOTAL	kBtu/sf	30.6	25.1				36.7	28.8												
Retail	Htg		0.23	0.08	8	3		0.485	0.21	13	7										
Retail	Clg + Fan		0.235	0.235	8	9		0.28	0.29	8	10										
		SWH only	3.6	1	85	70	19	3.6	1	71	61	16									
		HVAC	9.3	6.3	98			15.3	10	144											
		SWH + cooling/fan/pump	8.3	5.7	85			9.2	6.8	65											
		Heat only	4.6	1.6	98			9.7	4.2	150											
Wharehou	Equipment Int.	kBtu/sf	2.5	2.5		2.5	2.5	2.5	2.5		2.5	2.5									
Wharehou	Equipment Ext.	kBtu/sf	0	0		0.0	0	0	0		0.0	0									
Wharehou	Equipment Refrig.	kBtu/sf	0	0		0.0	0	0	0		0.0	0									
Wharehou	Lighting Int.	kBtu/sf	1.9	1.9		1.9	1.9	1.9	1.9		1.9	1.9									
Wharehou	Lighting Ext.	kBtu/sf	1.2	1.2		1.2	1.2	1.2	1.2		1.2	1.2									
Wharehou	Fans	kBtu/sf	0.4	0.4		0.4	0.4	0.5	0.6		0.6	0.5									
Wharehou	Pumps	kBtu/sf	0	0		0.0	0	0	0		0.0	0									
Wharehou	Cooling	kBtu/sf	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1									
Wharehou	Space Heat, Gas	kBtu/sf	2.2	0		0.0	2.2	7.6	0		0.0	7.6									
Wharehou	Space Heat, Elec	kBtu/sf	0	1		1.0	0	0	4.7		4.7	0									
Wharehou	DHW, Gas	kBtu/sf	0.5	0		0.0	0.42	0.5	0		0.0	0.42									
Wharehou	DHW, Elec	kBtu/sf	0	0.2		0.4	0	0	0.3		0.4	0									
Wharehou	BACK CHECK EUI		8.8	7.4		7.5	8.7	14.4	11.3		11.4	14.2									
Wharehou	TOTAL	kBtu/sf	8.8	7.4				14.4	11.3												

Wharehou Htg		0.11	0.05	13	7		0.38	0.235	26	21	Wharehou	15	10				
Wharehou Clg + Fan		0.025	0.025	3	3		0.03	0.035	2	3	Wharehou	3	3	30	148	23	8
	SWH only	0.5	0.2	34	27	9	0.5	0.3	14	9	6						
	HVAC	2.7	1.5	136			8.2	5.4	194								
SWH + cooling/fan/pump		1	0.7	34			1.1	1	7								
	Heat only	2.2	1	136			7.6	4.7	201								
Hotel	Equipment Int.	kBtu/sf	22.2	22.2		22.2	22.2	22.2		22.2	22.2						
Hotel	Equipment Ext.	kBtu/sf	0	0		0.0	0	0		0.0	0						
Hotel	Equipment Refrig.	kBtu/sf	0	0		0.0	0	0		0.0	0						
Hotel	Lighting Int.	kBtu/sf	3.6	3.6		3.6	3.6	3.6		3.6	3.6						
Hotel	Lighting Ext.	kBtu/sf	0.9	0.9		0.9	0.9	0.9		0.9	0.9						
Hotel	Fans	kBtu/sf	6.4	6.4		6.4	6.4	7.3		7.3	7.3						
Hotel	Pumps	kBtu/sf	0	0		0.0	0	0		0.0	0						
Hotel	Cooling	kBtu/sf	5.7	5.5		5.5	5.7	5.6		5.3	5.3						
Hotel	Space Heat, Gas	kBtu/sf	0.6	0		0.0	0.6	1.3		0	0.0						
Hotel	Space Heat, Elec	kBtu/sf	0.8	1		1.0	0.8	2.1		2.7	2.7						
Hotel	DHW, Gas	kBtu/sf	22	0		0.0	18.53	22		0	0.0						
Hotel	DHW, Elec	kBtu/sf	0	10		17.6	0	9.1		17.6	0						
Hotel	BACK CHECK EUI		62.3	49.7		57.2	58.7	65.1		51.2	59.6						
Hotel	TOTAL	kBtu/sf	62.3	49.7			hiE FF SWH	65.1		51.2	hiE FF SWH						
Hotel	Htg		0.07	0.05		1	1	0.17		0.135	3						
Hotel	Clg + Fan		0.605	0.595		10	12	0.645		0.63	10						
	SWH only	22	10	193	133	59	22	9.1	198	143	56						
	HVAC	13.5	12.9	10			16.3	15.3	15								
SWH + cooling/fan/pump		34.1	21.9	196			34.9	21.7	203								
	Heat only	1.4	1	6			3.4	2.7	11								
									197.2143								
		35.5	22.9	0.202247					7.286974								
		34.1	21.9	0.195827													