

<b>SINGLE HOUSE Guideline Floor Heating</b>		Existing house min. insulation		Existing house upgraded insulation		New house standard insulation		New house energy efficient	
Country and City	HDD°C	W/m <sup>2</sup>	per year kWh/m <sup>2</sup>	W/m <sup>2</sup>	per year kWh/m <sup>2</sup>	W/m <sup>2</sup>	per year kWh/m <sup>2</sup>	W/m <sup>2</sup>	per year kWh/m <sup>2</sup>
<b>ASIA</b>									
<b>China</b>									
Beijing	1940	32.7	43.1	24.5	31.3	20.4	25.0	12.3	11.9
Shanghai	681	11.5	15.1	8.6	11.0	7.2	8.8	4.3	4.2
<b>Korea</b>									
Seoul	2084	35.1	46.3	26.3	33.7	22.0	26.8	13.2	12.8
<b>Japan</b>									
Nagasaki	411	6.9	9.1	5.2	6.6	4.3	5.3	2.6	2.5
Tokyo	883	14.9	19.6	11.2	14.3	9.3	11.4	5.6	5.4
<b>AUSTRALIA</b>									
Melborne	1298	21.9	28.9	16.4	21.0	13.7	16.7	8.2	7.9
<b>CANADA</b>									
<b>Alberta</b>									
Calgary	4931	83.1	109.7	62.3	79.6	51.9	63.5	31.2	30.2
Edmonton	5649	95.2	125.6	71.4	91.2	59.5	72.7	35.7	34.6
<b>British Columbia</b>									
Vancouver	2913	49.1	64.8	36.8	47.0	30.7	37.5	18.4	17.8
<b>Quebec</b>									
Montreal	4280	72.1	95.2	54.1	69.1	45.1	55.1	27.0	26.2
Quebec	5007	84.4	111.4	63.3	80.9	52.7	64.5	31.6	30.6
<b>Manitoba</b>									
Churchill	9063	152.7	201.6	114.6	146.4	95.5	116.7	57.3	55.5
Winnipeg	5565	93.8	123.8	70.3	89.9	58.6	71.6	35.2	34.1
<b>Northwest Territories</b>									
Mould Bay	12885	217.2	286.6	162.9	208.1	135.7	165.9	81.4	78.9
Yellowknife	8294	139.8	184.5	104.8	133.9	87.4	106.8	52.4	50.8
<b>Ontario</b>									
Toronto	3858	65.0	85.8	48.8	62.3	40.6	49.7	24.4	23.6
<b>EUROPE</b>									
<b>Austria</b>									
Vienna	2946	49.7	65.5	37.2	47.6	31.0	37.9	18.6	18.0
<b>Belgium</b>									
Antwerp	2878	48.5	64.0	36.4	46.5	30.3	37.1	18.2	17.6
Brussels	2869	48.4	63.8	36.3	46.3	30.2	36.9	18.1	17.6
<b>Bulgaria</b>									
Sofia	2928	49.3	65.1	37.0	47.3	30.8	37.7	18.5	17.9
<b>Czech Republic</b>									
Prague	3672	61.9	81.7	46.4	59.3	38.7	47.3	23.2	22.5
<b>Denmark</b>									
Copenhagen	3604	60.7	80.2	45.6	58.2	38.0	46.4	22.8	22.1
<b>Finland</b>									
Helsinki	4889	82.4	108.7	61.8	79.0	51.5	62.9	30.9	29.9
<b>France</b>									
Le Mans	2447	41.2	54.4	30.9	39.5	25.8	31.5	15.5	15.0
Lille	2920	49.2	64.9	36.9	47.2	30.8	37.6	18.5	17.9
Lyon	2286	38.5	50.8	28.9	36.9	24.1	29.4	14.4	14.0

<b>SINGLE HOUSE</b>		Existing house		Existing house		New house		New house	
<b>Guideline Floor Heating</b>		min. insulation		upgraded insulation		standard insulation		energy efficient	
Country and City	HDD°C	W/m <sup>2</sup>	per year kWh/m <sup>2</sup>	W/m <sup>2</sup>	per year kWh/m <sup>2</sup>	W/m <sup>2</sup>	per year kWh/m <sup>2</sup>	W/m <sup>2</sup>	per year kWh/m <sup>2</sup>
<b>Germany</b>									
Berlin	3343	56.3	74.3	42.3	54.0	35.2	43.0	21.1	20.5
Frankfurt	3085	52.0	68.6	39.0	49.8	32.5	39.7	19.5	18.9
Hamburg	3395	57.2	75.5	42.9	54.8	35.8	43.7	21.5	20.8
Munich	3596	60.6	80.0	45.5	58.1	37.9	46.3	22.7	22.0
Stuttgart	3351	56.5	74.5	42.4	54.1	35.3	43.1	21.2	20.5
<b>Greece</b>									
Athens	99	1.7	2.2	1.3	1.6	1.0	1.3	0.6	0.6
<b>Ireland</b>									
Belfast	2937	49.5	65.3	37.1	47.4	30.9	37.8	18.6	18.0
Dublin	3113	52.5	69.2	39.3	50.3	32.8	40.1	19.7	19.1
<b>Italy</b>									
Genoa	883	14.9	19.6	11.2	14.3	9.3	11.4	5.6	5.4
Rome	902	15.2	20.1	11.4	14.6	9.5	11.6	5.7	5.5
<b>Luxembourg</b>									
Luxembourg	3410	57.5	75.8	43.1	55.1	35.9	43.9	21.6	20.9
<b>Netherlands</b>									
Amsterdam	3037	51.2	67.5	38.4	49.0	32.0	39.1	19.2	18.6
<b>Norway</b>									
Bergen	4069	68.6	90.5	51.4	65.7	42.9	52.4	25.7	24.9
Oslo	4272	72.0	95.0	54.0	69.0	45.0	55.0	27.0	26.1
<b>Portugal</b>									
Lisbon	588	9.9	13.1	7.4	9.5	6.2	7.6	3.7	3.6
<b>Russia</b>									
Moscow	4990	84.1	111.0	63.1	80.6	52.6	64.2	31.5	30.5
<b>Spain</b>									
Barcelona	986	16.6	21.9	12.5	15.9	10.4	12.7	6.2	6.0
Bilbao	1248	21.0	27.8	15.8	20.2	13.1	16.1	7.9	7.6
Madrid	1484	25.0	33.0	18.8	24.0	15.6	19.1	9.4	9.1
<b>Sweden</b>									
Stockholm	4433	74.7	98.6	56.0	71.6	46.7	57.1	28.0	27.1
<b>Switzerland</b>									
Bern	3312	55.8	73.7	41.9	53.5	34.9	42.6	20.9	20.3
Geneva	2946	49.7	65.5	37.2	47.6	31.0	37.9	18.6	18.0
Zurich	3216	54.2	71.5	40.7	51.9	33.9	41.4	20.3	19.7
<b>United Kingdom</b>									
Aberdeen	3647	61.5	81.1	46.1	58.9	38.4	47.0	23.0	22.3
Birmingham	3199	53.9	71.1	40.4	51.7	33.7	41.2	20.2	19.6
Cardiff	2962	49.9	65.9	37.4	47.8	31.2	38.1	18.7	18.1
Glasgow	3410	57.5	75.8	43.1	55.1	35.9	43.9	21.6	20.9
Liverpool	3013	50.8	67.0	38.1	48.7	31.7	38.8	19.0	18.4
London	2668	45.0	59.3	33.7	43.1	28.1	34.4	16.9	16.3
Manchester	3097	52.2	68.9	39.1	50.0	32.6	39.9	19.6	19.0
Newcastle	3469	58.5	77.2	43.8	56.0	36.5	44.7	21.9	21.2
<b>SOUTH AMERICA</b>									
<b>Argentina</b>									
Buenos Aires	1352	22.8	30.1	17.1	21.8	14.2	17.4	8.5	8.3
Ushuaia	4472	75.4	99.5	56.5	72.2	47.1	57.6	28.3	27.4
<b>Chile</b>									
Santiago	1351	22.8	30.0	17.1	21.8	14.2	17.4	8.5	8.3