

Appendix 8 – Projected Heating Cost after Developments

total present floor area	494	(arbitrary units)
total floor area after	714	(arbitrary units)
% increase in floor area	45%	

heat loss through roof	area	insulation efficiency %	temperature inside	temperature outside	current heat loss rate	future heat loss rate
present insulated hall	334	70%	18	6	100.2	83.5
present uninsulated hall	160	10%	12	6	72	40
extension	220	75%	18	6	55	55
heat loss through current roof					172.2	
heat loss through new roof						178.5

wall before	80	(arbitrary units)
wall length after	114	(arbitrary units)

windows before	10	including foyer doors windows as 4
windows after	14	

		old	new	% rise	weighted
assume % lost through roof	35%	172	179	4%	1%
assume % lost through walls	25%	80	114	43%	11%
assume % lost through windows	25%	10	14	40%	10%
assume % lost through floor	15%	493	714	45%	7%

overall estimated rise in heating energy usage	29%
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The estimate above makes several assumptions about efficiency of current and future insulation, typical temperature differentials and the relative heat losses through roof, wall, windows and floor.

Factoring in the solar panels:

electricity actually used 2014	7600 kWh		
gas actually used 2014	2891 units		
	which is	32356 kWh	
estimated output of solar cells from manufacturers	17500 kWh	per year	
generation income	£1,908	high	depends on Energy Performance Certificate if none used
generation income	£1,717	mid	
generation income	£1,003	low	
export income	£849		
export income	£406		if we use solar electricity for own projected electrical costs
estimated lighting / electrical use per year	9120kWh		
estimated new heat lost per year	42000kWh		
cost of 42000 kWh using electricity	£5,973		
cost of 42000 kWh using gas	£1,913		
so projected costs			
for electricity	£0		solar cells generate twice projected electrical energy use
for heating if electrical	£3,659	high	
	£3,850	mid	
	£4,564	low	
for heating if gas	-£401	high	
	-£210	mid	
	£504	low	