



IRRINOVA DAREK

Irrinova Darek enables the renovation of dwellings to reach the dual aims of saving energy in homes and turning these into cost-effective sustainable units. The renovations can be tailored to the dwelling's specific needs and are flexible such that several energy efficiency measures, integration of renewable energy sources and associated interventions are possible.

Key renovation features:

- Energy performance 20% better than Nearly Zero Energy Buildings
- Reduces energy required for heating to Passive house levels
- Reduces energy required for cooling.
- Reduces the energy required for Lighting
- Enable the integration of renewable energy sources.
- Reduces energy required for domestic hot water

ELIGIBILITY TECHNICAL CRITERIA:

1. Overall Energy Demand

When renovated, the Property must achieve an overall energy demand that is 20% better than Nearly-Zero Energy Building (NZEB) levels.

- The maximum energy demand is determined as calculated by the Asset Energy Performance Certificate (EPC).
- The property should have a renewable energy contribution. The type of Renewable Energy Source (RES) should be as defined in NZEB definition. (Solar, renewable Biomass, portion of heat-pump air-conditioning, portion of heat-pump water heating energy, re-use of water resources, Wind)



Table 1: Extract from NZEB Plan: Requirement for NZEB for residential buildings from the Minimum Energy Performance Requirements as of 1st July 2024

Overall Primary Energy Demand for Dwellings kWh/m ² . yr		
Building Category	Major Renovations	
	Without RES	With RES ¹
Terraced House	70	40
Fully Detached Villa	70	40
Fully Detached Bungalow	70	40
Semi-Detached Villa	60	40
Ground Floor Maisonette	75	75
Mid-Floor Flat	60	60
Top Floor Flat/ Maisonette	80	65

Table 2: Energy class requirement of 20% improvement over NZEB level for eligibility of grant shown in Table 1

Building Category	Terraced House/ Fully Detached Villa/ Fully Detached Bungalow	Semi-Detached Villa	Ground Floor Maisonette	Mid-Floor Flat	Top Floor Flat/ Maisonette
20% improvement over Minimum renovated level without RES	56kWh/m ² . yr	48kWh/m ² . yr	60kWh/m ² . yr	48kWh/m ² . yr	64kWh/m ² . yr
20% improvement over Minimum renovated level with RES	32kWh/m ² . yr	32kWh/m ² . yr	60kWh/m ² . yr	48kWh/m ² . yr	52kWh/m ² . yr

¹ These values are indicative targets The above indicated Primary Energy Demands shall be taken as a minimum target, however, should these not be achievable, a report shall be compiled by a recognised and competent warranted professional, explaining why these figures cannot be achieved, and through a calculated exercise, explain what the best achievable target for each individual scenario is. Bridging of the remaining gap in the Primary Energy Demand, between declared and required, at the time of property construction, shall be achieved through communal renewable systems once these are available.



2. Delivered energy demand for space heating

The calculated delivered energy demand for space heating should not exceed **15kWh/yr.m²**. The energy demand should be calculated taking into consideration the efficiency of the heating system as 1.

Example: Space heating Delivered Energy (6.87kWhr/yr.m²) is less than 15kWhr/yr.m² When efficiency of heating system is set to 1. Therefore Eligible as illustrated in following screenshot from EPRDM.

Project Details Overall Dwelling Dimensions Opaque Inputs Glazed Inputs Ventilation Hot water Systems Renewables Results						
Systems	Delivered Energy	Primary Energy	CO ₂ Emissions	Delivered Energy	Primary Energy	CO ₂ Emissions
	[kWh/yr]	[kWh/yr]	[kgCO ₂ /yr]	[kWh/yr.m ²]	[kWh/yr.m ²]	[kgCO ₂ /yr.m ²]
Space Heating	680.2	2346.7	597.22	6.87	23.72	6.04
Space Cooling	984.28	3395.76	864.2	9.95	34.32	8.73
Water Heating	1419.17	4896.15	1246.04	14.34	49.49	12.59
Pumps, Fans, etc.	14.6	50.37	12.82	0.15	0.51	0.13
Lighting	353.33	1219	310.23	3.57	12.32	3.14
Renewables and Energy Saving Technologies						
Photovoltaic	0	0	0	0	0	0
Wind Turbine	0	0	0	0	0	0
Second Class Water	0	0	0	0	0	0
Other	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total	3451.59	11907.99	3030.5	34.89	120.36	30.63
EPRDM	120.36	[kWh/yr.m ²]		<input type="button" value="calculate"/>		
DCER	30.63	[kgCO ₂ /yr.m ²]				



The screenshot shows the EPRDM software interface with the following data:

Category	Input	Value
Lighting	Proportion of Low Energy Lighting Installed	0.8
Lighting	Energy Required for Lighting	353.33
Space Heating	Efficiency of Heating System (COP)	1
Space Heating	Enter Manufacturer and Model Name	
Space Heating	Energy Required for Space Heating [kWhr/yr]	680.2
Space Heating	Fuel for Space Heating	Electricity
Space Cooling	Efficiency of Cooling System (EER)	2.8
Space Cooling	Enter Manufacturer and Model Name	
Space Cooling	Energy Required for Space Cooling [kWhr/yr]	984.28
Space Cooling	Fuel for Space Cooling	Electricity
Water Heating	Efficiency Water Heater	1
Water Heating	Energy Required for Water Heating [kWhr/yr]	1419.17
Water Heating	Fuel for Water Heating	Electricity
Electricity for Pumps and Fans	Chilled Water Circ Pump Rated Power	
Electricity for Pumps and Fans	Heating Water Circ Pump Rated Power	
Electricity for Pumps and Fans	DHW Circulating Pump Rated Power	
Electricity for Pumps and Fans	Cooling Water Pumps Rated Power	
Electricity for Pumps and Fans	Ventilation System Rated Power	20
Electricity for Pumps and Fans	Watts	
Electricity for Pumps and Fans	Is a Timer/Control System Installed?	--
Electricity for Pumps and Fans	Is Pump Inverter Controlled?	--
Electricity for Pumps and Fans	Total [kWhr/yr]	14.6

calculate

Screenshot of EPRDM showing energy less than 15kWhr/yr.m² when efficiency is set to 1.

15kWh/yr.m² is the maximum heating demand required to achieve **Passive House levels**. This requirement is intended to ensure that the building is able to conserve energy effectively and independently from the ability to heat and cool the spaces efficiently with an efficient heating or cooling system and independently from the ability of the building to use Renewable energy sources to reduce the overall energy demand.

3. Delivered energy demand for space Cooling

Maximum calculated energy for space cooling of less than **15kWh/yr.m²** taking into consideration the efficiency of the actual system to be installed.

In the case of buildings where the renovated building is not intended to have a cooling system installed, the efficiency entered in the EPC should be the default efficiency for EPCs without a cooling system. i.e. efficiency of 2.8.

This requirement is intended so that the renovated building takes into consideration overheating. The installation of an efficient cooling system will benefit the building in that it requires less energy to cool and may also be used as an efficient heating system. The installation of a system with very high efficiency is being incentivised since the renovated building can achieve the maximum cooling energy demand more efficiently.



4. Minimum energy performance Requirements

The renovated building must achieve minimum energy performance requirements document F part 1 and 2. If the renovation being undertaken is considered as major renovation as defined in Legal Notice 47 of 2018, the requirements in Document F for buildings undergoing major renovation are applicable.

5. Lighting

Any new lighting installed should be energy efficient as required by minimum energy performance requirements as stipulated in Technical guidance document F part 2. The renovated building must have a proportion of Energy Efficient lighting of 0.8 (80%) or more. The Proportion of energy-efficient lighting should be calculated on the number of circuits as stipulated in EPRDM methodology.

Existing inefficient energy-efficient lighting should be reduced even if this is not otherwise required by existing document F or NZEB plan. Efficient lighting is required since lighting provides inefficient indirect heating and could enable buildings to reach heating requirements (2.) in an inefficient way. Since energy-efficient lighting is typically a very cost-efficient way of reducing CO2 emissions, inefficient lighting should be reduced. 20% is being permitted since, in some cases, halogen lights in recessed fittings within false ceilings may not easily be replaced.

6. Domestic Hot Water

It is not compulsory to install a solar water heater or a heat-pump water heater. This scheme incentivises the installation of such systems since building with SWH an HPWH can achieve NZEB levels more easily. Separately whenever a SWH or a HPWH is installed there is an additional grant of up to €1000.00.