

THE DOWNS

Sustainable Energy Master Plan

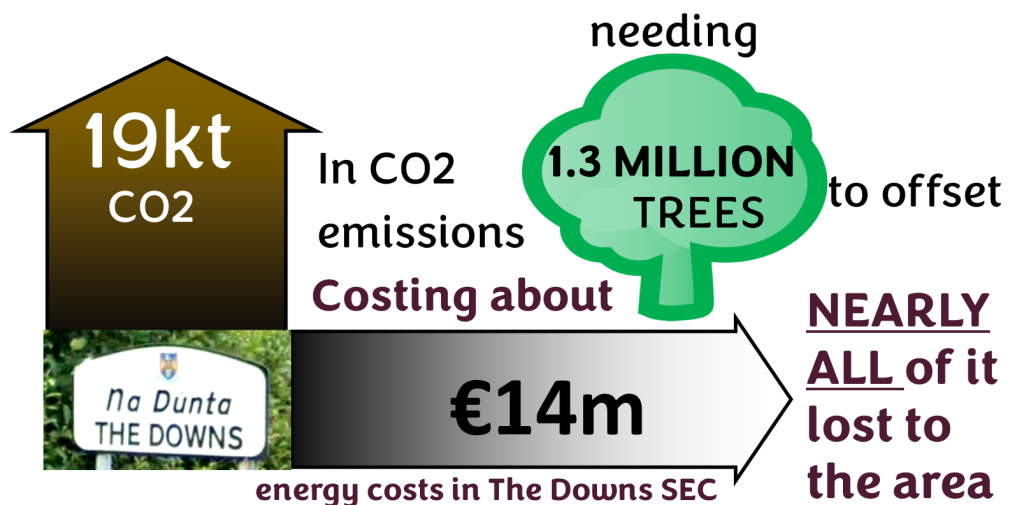
Towards Zero Carbon Energy

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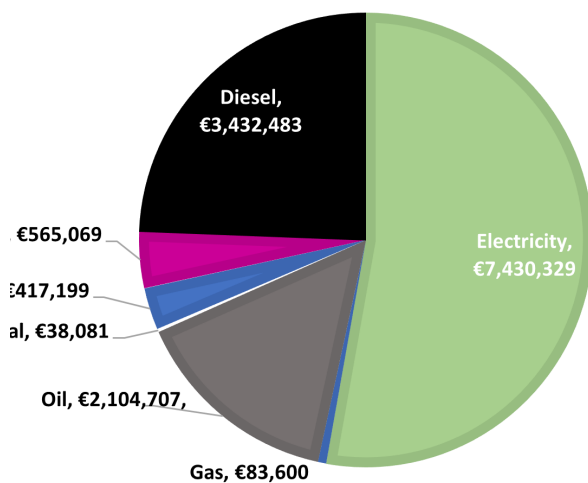


What is the total cost of energy in The Downs?

Like most communities in Ireland The Downs imports nearly all of its energy. This is largely all in the form of fossil fuels from abroad. This means the area loses a significant amount of income (approximately €14m) on energy costs some of which could be kept **here** in the community. As this energy is in the form of diesel, home heating oil and coal, this also produces a lot of pollution. All this cash and environmental can be avoided by following the steps outlined here.



■ Electricity ■ Gas ■ Oil ■ Coal ■ LPG ■ Petrol ■ Diesel



What is The Downs SEC's Energy Balance?

If we take action, we can reduce the amount of oil, coal and electricity we use to heat our homes by making them cosier and more efficient, and we can save money and reduce emissions. The same is true of community buildings and businesses—most can achieve 30% reduction with quite short payback periods <10 years. Most diesel and petrol use can be replaced by renewable electric. Clean green electricity can be produced cost effectively in homes and at our places of work without negatively affecting our environment or heritage.

The Downs SEC Sustainable Energy Plan

The Downs Sustainable Energy Community (SEC) supported and funded by the Sustainable Energy Association of Ireland, commissioned a full study of the energy uses of all sectors of The Downs, Killucan, and Coralstown and the surrounding areas. This study also measured the carbon emissions produced by this energy use. Energy Co-operatives Ireland carried out onsite surveys of homes community, and other public buildings. The study also examined energy use in business, community and transport. **FULL REPORT AT:** energyco-ops.ie/the-downs/ including **all references and resources for this document**

Achieve Sustainability in your home

Our research found that the homes of The Downs SEC produce higher emissions than the average in Ireland:

The average home in The Downs SEC uses 26,042 kWh of energy each year. This is well above (by 27%) the national average of 20,424 kWh/yr. Some of this is due to the relative size of homes in the area (which are also detached houses and thus exposed on all sides) as well as the lack of availability of natural gas which is much less carbon intensive than most other home heating fuels. Many homes in the SEC were built 2001-2010 when energy efficiency regulations were lax. It is now time to future proof these homes for the generations to come.

The financial and sustainability benefits of upgrading a home from G BER to A2 BER

Step	Item	Action	BER post action	Energy Costs Post Action	CO2 emissions post action
0	Current State	No Upgrades	G	€6,316.48	27,639
1	Insulation Attic	Upgrade Attic Insulation to 300mm+	F	€5,126.46	22,432
2	Roof Insulation	Flat Roof Insulation	E2	€4,342.98	19,004
3	Internal Insulation	Insulated Plasterboard internally on original stone walls	E1	€3,793.19	16,597
4	External Insulation	Extension Walls	D1	€3,042.05	13,311
5	Windows	Change Single Glazed Windows to < 1.1 w/m2k or better	D1	€3,870.69	16,937
6	Secondary Heating System	Remove Range Cooker	D1	€2,980.12	13,040
7	Heating System	Air to Water Heat Pump for heating and hot water	B1	€1,696.60	7,424
8	Photovoltaic	6 PV Panels to South facing roof 2.19 kWp	A2	€1,027.71	2,453

This G-rated home (the lowest) can be upgraded to an A2 rating saving up to €5,288.77 per year in heating costs and 25,186 kg of CO2 emissions following the actions recommended by our survey of a typical home in The Downs SEC area

There are grants available based on set grants per measure, this can be grant funded by SEAI. Full List of Grants Amounts available at this link:

seai.ie/grants/community-grants/overview/

Taking a grouped, staged approach to improving the energy efficiencies of the SEC's homes will enable the community to move forward rapidly to sustainability. There are improved grants and efficiencies to be achieved through the Community Energy Grant system where 10 homes or more are retrofitted alongside community buildings and SMEs

Cutting Emissions in Transport

The Down SEC's proximity to Mullingar can make switching to less polluting cars much easier than you think

There are about 1800 private cars in the SEC. An estimated 69% are diesel with 27% petrol and 4% other (probably EVs). The vast majority of journeys travelled by Westmeath drivers are within the range of EV batteries, park and ride in Mullingar can meet the demands of nearly all the remainder of trips. A closer look at your actual driving distances just [using google timeline](#) can show you just how feasible transferring to an EV can be for you.

Removing Carbon and NOx from transport



Diesel Vehicles

These are vehicles powered by fossil fuel use (petrol or diesel). They are due to be phased out from the European market from 2035.

Diesel engines emit high levels of pollutants from significant amounts of nitrogen oxides (NOx), particulate matter (PM), and sulfur dioxide (SO2), which contribute to poor air quality. These pollutants are associated with respiratory problems, cardiovascular diseases, and other health issues.

Older diesel vehicles may lack proper emission control technologies altogether. The emissions for a diesel SUV are approximately **200 g CO₂/km**



Hydrotreated Vegetable Oil (HVO)

HVO is a type of renewable diesel fuel that is produced by hydrotreating vegetable oil. It can be used as a direct replacement for fossil diesel in diesel engines.

Emissions for HVO are said lower than those of diesel and can be used in trucks and tractors. However, it should be noted that HVO is a short term solution which will need to be replaced by other solutions in the future: from newer biofuels, to high performance EVs, to fuel cell heavy duty vehicles.



Battery Electric Vehicles (EV)

These are vehicles powered by a battery that does not include any fossil fuel use (petrol or diesel). Even cheap EVs have a range of 220km or more and cost from **about €21,000 new**. We recommend **an information campaign to increase take-up of EVs**.

Emissions relating to an EV come from the carbon intensity of the local electricity supply. If the EV is charged at home from PV panels, the CO₂ emissions are effectively zero

An EV can save you money AND reduce your carbon footprint

Comparing an EV costing €21,000 (with a 220km range) with a similar diesel car costing €35,000 shows that the **EV is cheaper to run by €760 per year**. Over a 10-year lifetime, **you could save €20,500 by switching to an EV**. You can compare costs and savings for a range of EVs over Diesel vehicles at [this link](#)

PV opportunities that are ready to go

The natural heritage and beauty of The Downs is something that must be protected when it comes to proposing to generate power here. It is not currently feasible that all the energy the area needs can be produced locally by the community. However, there may be a case for smaller, community-led generation that suits the environment here to meet some of the energy needs renewably.

A significant proportion of a reduced electrical demand (achieved through efficiencies and retrofits) can be met through: **Medium Scale Community Photovoltaic (PV) and Micro-Scale PV**

Neighbouring Community PV Projects

Mullingar Energy Co-operative already have a PV project in the pipeline and are being supported by the SEAI expert mentor programme. Export Capacity on the grid at present is limited to 4.7MW at the 38kV substation at Ballinderry which would serve a project in Marlinstown which is adjacent to the SEC. But more than this capacity would probably not be available for a project in The Downs. The Downs' SEC should reach out to Mullingar Energy Co-operative to support the Marlinstown project.

A more *distributed* approach to PV roll-out in The Downs, Coralstown and Killucan would be better suited to the SEC. This means PV on homes, community and commercial buildings, and on farms. These will add up to a very substantial money and carbon savings and could go ahead right now without relying on grid upgrades or time-consuming planning applications

Commercial and Community PV

Based on our survey of the built environment in the SEC area, between homes, farms, SMEs and community buildings, we have identified an achievable target of **2,975 kW** of local energy generation capacity on the roofs in the SEC.

The PV opportunity for domestic users is explained on the next page. Here we look at the opportunity of the SEC's businesses, community buildings and farms to benefit financially and sustainably from PV installations.

Planning is not generally needed for rooftop installations of under 50m²—on farms, businesses, schools and community buildings (if they take up less than 50% total roof area). This would provide for between 8-10kW for each building—enough to reach the SEC sustainability targets on page 8.

There are grant supports for these type of installations (see this resources page) and the payback period at 4-5 for PV is very favourable at the moment.

Solar PV system	Grant value
1kWp*	€900
2kWp	€1,800
3kWp	€2,100
4kWp	€2,400
5kWp	€2,400
6kWp	€2,400
7kWp - 20kWp	€300/kWp
21kWp - 200kWp	€200/kWp
201kWp - 1000kWp (1MWp)	€150/kWp

PV and Cattle?

There are huge opportunities for farms to lower their carbon footprint by medium scale onsite PV: tis now includes dairy as well as sheep farmers. There are grid payments available for excess generation, but you will need to consume at least 20% of the power you generate. Dave Foran's Co Waterford dairy farm uses a bifacial 27kW PV system. 74% of the energy generated was consumed on the farm: guaranteeing considerable cost and carbon emissions savings, achieving payback in just **four years**¹

[How dairy's solar fence captures energy at peak demand LINK](#)

1: This was 2019-2023.



Dave Foran with PV installer contractors [Sunstream](#)



Teagasc PV on farms guide: [LINK](#)



[Frequently Asked Questions on Solar Photovoltaics](#)



[Solar PV for Business Best Practice Guide](#)

Micro Generation:

A domestic solar PV system consists of a number of solar panels mounted to your roof (or in your garden or adjacent field) and connected into the electrical loads within your building. Solar PV systems are rated in kilowatts (kWp). A 1kWp solar PV system would require 3 or 4 solar panels on your roof needing about 2.5m² of space.

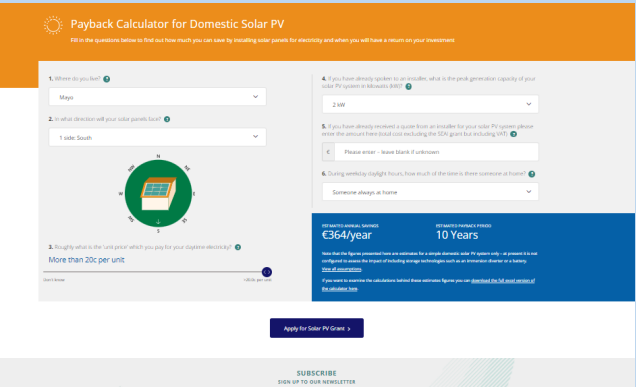
Since a consumer pays approximately €0.31 per kWh to their electricity provider, a 3kWp PV panel system (if the home is occupied during the day) could save the homeowner about €637 per year. There would also be an additional payment from the Clean Export Guarantee (CEG) Tariff (of approximately €140 per year in this case). On an installation costing €4,800 (nett of SEAI grant of €1,600) this would achieve a simple payback of 6.1 years. There is a significant grant incentive available from the SEAI for PV installation for homeowners. The full details are available at [this link](#).

SEAI PV Grants for Homeowners: these are reducing every year, so act now.

Value	Example
€700 per kWp up to 2kWp	€1400 for 2kWp solar panels
€200 for every additional kWp up to 4kWp	€1600 for 3kWp solar panels
Total Solar PV grant capped at €1800	€2400 for 4kWp solar panels

Any excess electricity produced can be stored in a hot water immersion tank or in a battery. It can also be used to power an electric car that is parked during the day at the home. It can also be exported from the house into the electrical network on the road outside your home.

The great additional benefit from a home installed PV system is that it reduces carbon emissions as well: in our 3kW example, it would reduce carbon emissions by over 909kgs CO₂, equivalent to planting 64 trees.



The SEAI has a useful Calculator that shows payback period for typical installations, customisable by county, size of system and retail price of electricity. It is available at this [LINK](#)

Economics of a 3kWp System in The Downs			
System Cost (with grant)	Annual Savings & Rebate	Payback Period	Lifetime** Profit
€4,800	€777/year*	6.1Years	€11,604

*It is not assumed that the homeowner will consume all the electricity. This is based on a cost of €0.32/kWh unit electricity and a price for supply to grid of €0.25 per unit electricity with half used in the home and half exported.

**A typical PV System has a 25-year lifespan. This does not include any increase or decrease in cost of electricity over the period which would increase the lifetime profitability.

Individual actions for homeowners

...some quick and easy sustainability 'wins' to save you energy and money as well as reducing carbon emissions

Step 1: Do Your Own Audit:

Check windows, external doors, vents, floor spaces, fireplaces, and stoves with a stick of incense: and track down and eliminate draughts.

Check insulation levels in attic, basement, walls (including the meter box), and floors.

Check your boiler and stove; what age are they? When were they last serviced?

Collect energy bills and scrutinise them over a year or 2.

To save money in the short term see if you need to change your electricity supplier.



Step 2: Actions to save 36% of your energy costs and fossil fuel use:

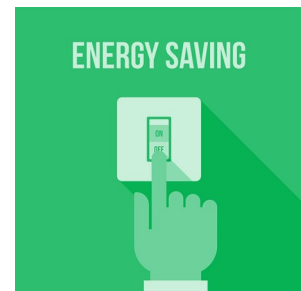
Turn everything off – don't leave on standby (2%)

Use a clothes line when possible - no tumble dryer (7%)

Wash clothes @ 30 degrees (1%)

Turn off lights when not in a room, replace bulbs with CFLs at least, or with LEDs if possible (2%).

Use oil to heat water – not electric immersion or electric shower (24%)



Step 3: Save energy by thinking about the way you control and use heat

Maintain room temperature 19°C (this can save up to €350 every year for each degree lower you heat the house)

Close the curtains at dusk to keep heat in the room that would otherwise be lost through the cold windows, and you could save up to 10% of your heating costs.

Consider fitting shelves above radiators as they redirect the warm air that rises from them back into the room.

Ventilate your house 3 to 5 minutes, a couple of times a day, instead of opening windows a little bit all day. Shut off your heating, during ventilation. This can reduce heat loss by 16%.

Bleed your radiators regularly. If there is air in your radiator your boiler burns longer. Always start with the lowest and end with the highest radiator.



Supports for Individual Homeowners

Categories of applicants to the SEAI Home Energy Grant

Individual Energy Upgrade Grants

Up to 80% of the cost of the upgrade for a typical family home with SEAI grants

Homeowners manage their upgrades including:

- contractor selection
- grant application
- contractor works
- pay for full cost of works and claim grants afterwards
- follow up BER

For homes built and occupied before:

- 2011 for insulation and heating controls
- 2021 for heat pumps and renewable system

One Stop Shop Service

Based on set grants per measure, this can be grant funded by SEAI 45 - 50% of the cost for a typical family home

A One Stop Shop contractor manages upgrade including:

- home energy assessment
- grant application
- project management
- upgrade to a minimum B2 BER
- contractor works
- homeowner pays for the works net of grant
- follow up BER

For homes built and occupied before:

- 2011 for insulation and heating controls
- 2011 for renewable systems

Fully Funded Energy Upgrade

For qualifying* homeowners in receipt of certain welfare benefits (see below)

All home upgrade costs covered by SEAI

Service is managed by SEAI and includes:

- home survey
- contractor selection
- contractor works
- follow up BER


For homes built and occupied before 2006 for insulation and heating systems


*Receiving one of the following:


- Fuel Allowance
- Job Seekers Allowance
- Working Family Payment
- One-Parent Family Payment
- Domiciliary Care Allowance
- Carers Allowance
- Disability Allowance for over six months with a child under seven


Individual energy upgrades costs and grants, average cost per measure

[SEAI, 2024](#) (from a sample of 11,600 homes—June 2024. Means values used—see [resources page](#) for reference document)


External Wall Insulation 		
HOUSE TYPE	MEDIAN COST	FIXED GRANT
Detached	€23,500	€8,000
Semi-D / End Terrace	€21,737	€6,000
Mid Terrace	€12,900	€3,500
Apartment	*	€3,000


Internal Wall Insulation 		
HOUSE TYPE	MEDIAN COST	FIXED GRANT
Detached	€10,000	€4,500
Semi-D / End Terrace	€11,000	€3,500
Mid Terrace	€6,139	€2,000
Apartment	€2,950	€1,500


Heat Pump 		
HOUSE TYPE	MEDIAN COST	FIXED GRANT
Detached	€15,600	€6,500
Semi-D / End Terrace	€15,705	€6,500
Mid Terrace	€16,500	€6,500
Apartment	€11,500	€4,500


Solar PV 		
2kWp up to 4kWp		
HOUSE TYPE	MEDIAN COST	GRANT RANGE
Detached	€9,995	€1,600 - €2,100
Semi-D / End Terrace	€8,800	€1,600 - €2,100
Mid Terrace	€8,355	€1,600 - €2,100
Apartment	€6,898	€1,600 - €2,100

Total Solar PV grant is capped at €2,100

Cavity Insulation 		
HOUSE TYPE	MEDIAN COST	FIXED GRANT
Detached	€2,220	€1,700
Semi-D / End Terrace	€1,600	€1,200
Mid Terrace	€1,085	€800
Apartment	€930	€700

Roof Insulation 		
HOUSE TYPE	MEDIAN COST	FIXED GRANT
Detached	€2,492	€1,500
Semi-D / End Terrace	€1,874	€1,300
Mid Terrace	€1,703	€1,200
Apartment	€1,563	€800

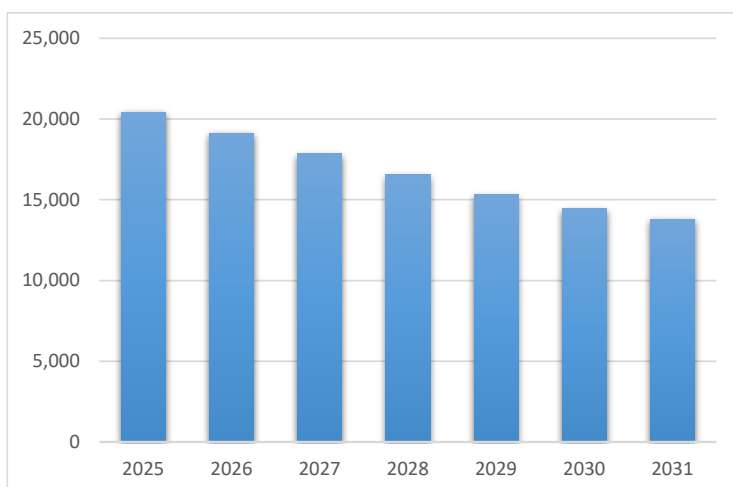
Heating Controls 		
HOUSE TYPE	MEDIAN COST	FIXED GRANT
Detached	€3,456	€700
Semi-D / End Terrace	€3,635	€700
Mid Terrace	€3,600	€700
Apartment	€2,200	€700

Building Energy Rating 		
HOUSE TYPE	MEDIAN COST	FIXED GRANT
Detached	€260	€50
Semi-D / End Terrace	€250	€50
Mid Terrace	€250	€50
Apartment	€245	€50

2030 Sustainability strategy

Emissions Reductions Each Year in tCo2/yr									
	Action	2025	2026	2027	2028	2029	2030	2031	TOT/yr
1.1	Retrofit 15% of G-C3 homes each year to B3	274	274	274	274	274	274	183	1829
1.2	15% ND Buildings upgraded each year achieving 30% energy reduction overall	158	158	158	158	158	158	105	1052
1.3	Information campaign to encourage GV owners to switch to EV Vans	207	207	207	207	207	207	138	1378
1.4	Information campaign to encourage PSV owners to switch to EVs	23	23	23	23				91
1.5	5% replacement of FF ICE domestic cars with EVs annually	133	133	133	133	133	133	89	890
1.6	Campaign for Tractors, Machinery and HGVs in SEC to switch to HVO		319	319	319	319			1276
2.1	50 homes with 3kWp installations with 116 additional homes recruited each year until a target of 745	52	120	120	120	120	120	120	773
2.2	Farms, Businesses and Community organisations install PV at power levels (kW) according to onsite demand (3-10kW)	62	62	62	62				246
	Total Emissions Reduction tCO2	908	1,296	1,296	1,296	1,211	892	635	7,534

A 7,534 reduction in tonnes of CO2 is equivalent to the emissions uptake from **538,142 trees**



Under the substantiable energy strategy outlined here, emissions from The Downs SEC's consumption of energy would be reduced to just 67% of 2024 levels.



The carbon measurements here looked specifically at emissions from The Downs' SEC energy use and do not include emission from food consumption or air travel. You may want to look at your total footprint. A good place to start is the [carbonfootprint.com](https://www.carbonfootprint.com) tools.