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Climate and Planning Unit

# Essex 'Net Zero' Policy Guidance: Essex Renewable Energy Offsetting Framework

To support Requirement 4 of the Essex 'model'  
Policy NZ1: Net Zero Carbon Development  
(in operation)



# Net Zero Policy Guidance: Renewable Energy Offsetting Framework

To support the implementation of Requirement 4 On-site Renewable Energy Generation of the Essex ‘model’ Policy NZ1: Net Zero Carbon Development (in operation) - or equivalent policy in Essex Authorities individual Local Plans.

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## Background

Essex Authorities, led by the Climate and Planning Unit at Essex County Council, have established a [Planning Policy Position for Net Zero Carbon Development Homes and Buildings in Greater Essex](#) (published on the [Essex Design Guide](#)). It contains 2 'model policies', one addressing operational carbon emissions and the other tackling embodied carbon emissions from new build development.

The model policy - NZ1 'Net Zero Carbon Development (in operation)' - is being embedded into Local Plans and other planning documents across Greater Essex. The Policy requires all new buildings to be designed and built to be Net Zero Carbon in operation in a way which prioritises a fabric first approach to ensure total energy use is minimised, achieves operational energy balance and aligns with local and national climate targets.

There are five requirements that must be met for a development to be net zero carbon in operation and comply with the policy, and these cover:

- Requirement 1: Space heating demand limit
- Requirement 2: Fossil fuel free
- Requirement 3: Energy Use Intensity (EUI) limits
- Requirement 4: On-site renewable energy generation
- Requirement 5: As-built performance confirmation and in-use monitoring

This guidance document supports part of the implementation of Requirement 4 in Policy NZ1 (or equivalent policy in Essex Authorities' Local Plans).

## Applicable Development

The Policy NZ1 applies to all new build development – residential (1 dwelling and above) and non-residential (100m<sup>2</sup> and above). To ensure accurate energy information is provided with planning applications, predictive energy modelling (such as Passivhaus Planning package (PHPP) or the Chartered Institution of Building Services Engineers (CIBSE) Technical Memorandum 54 (TM54)) should be used for all major development<sup>1</sup> proposals.

To support the transition of small / medium developers who may have not yet invested in predictive energy modelling software, the 'Essex Energy Tool (SAP Conversion)' has been developed as an interim measure. This tool can accommodate the outputs of the Building Regulations compliance software (known as SAP – Standard Assessment Procedure) and turn them into an appropriate format to indicate whether compliance with the policy requirements has been achieved. It will be available to download from the [Essex Design Guide](#).

For residential minor development<sup>2</sup> proposals (under 10 dwellings), applicants may also use predictive energy modelling or the Essex Energy Tool as outlined above, or if they wish they can choose to follow the 'minimum standards approach' which sets out the fabric and systems specifications that the development must be designed and built to (see specifications listed in [Appendix C of Report 2: Essex Net Zero Policy – Summary of policy, evidence and validation](#)

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<sup>1</sup> Major Development proposals are defined as follows: a) housing development - where 10 or more homes will be provided, or the site has an area of 0.5 hectares or more; and b) Non-residential development - an additional floorspace of 1,000m<sup>2</sup> or more, or a site of 1 hectare or more.

<sup>2</sup> Minor Development proposals are less than 10 dwellings or less than 1000m<sup>2</sup> of additional floorspace.

[requirements, July 2023](#)). By following this approach (i.e. without an energy model), minor applications do not have to report the space heating demand, energy use intensity or offset contribution but they do need to re-confirm on completion the specifications that the development has been built to and the solar photovoltaic system installed.

Therefore, this guidance is applicable to all major new build development and only minor residential development proposals where a predictive energy model is used.

## Policy Requirement 4 – On-site renewable energy generation

Policy requirement 4 of policy NZ1 seeks to maximise renewable energy generation on-site. The aim is that the amount of renewable energy generated matches or exceeds the predicted annual average energy demand of the building. This means that an operational energy balance is achieved on-site, and the building / development is net zero carbon (in operation) from the point of occupation.

The policy sets out two routes for calculating the renewable energy provision required from a development to be policy compliant.

- **Route a)** requires renewable energy generation to match the predicted annual energy use of a building.
- **Route b)** sets a minimum amount of renewable energy generation to be achieved in a year based on the building footprint.

Whichever calculation results in the greater amount of solar PV renewable electricity generation is the route that must be achieved (refer to [Page 34 of Report 1: Essex Net Zero Policy Study – technical evidence July 2023](#) for a worked example of this).

To provide flexibility for circumstances that may arise where it is not technically feasible for development proposals to achieve Requirement 4, then the policy includes an energy offsetting mechanism.

This means that applicants will, as a last resort, be allowed to offset the residual amount of energy demand not matched by on-site renewable energy generation (as calculated as per Route a)) by making a financial payment into the ECC administered Essex Renewable Energy Offset Fund.

The Renewable Energy Offset Fund will be used to fund additional renewable energy generation capacity elsewhere in the local plan area or County but preferably as near as practicably possible to the initial development. The offset mechanism is purposely limited in role and scope and is only intended for use as a last resort. It is therefore anticipated that limited funds would be transferred through it, but any funds that are collected would be used to provide rooftop solar PV installations by eligible applicants (see 'Who can apply' section below), for example, public amenity buildings.

## Energy Offsetting Tariff

Evidence shows that it is technically feasible at reasonable cost for most building typologies to generate sufficient energy to match or exceed its predicted annual total energy use and thereby achieve an operational energy balance on-site.

However, there may be limited circumstances, where it is not technically possible to generate sufficient renewable energy on-site to match the predicted annual average energy demand, for example, potentially a high-rise (over 15 storey) block of flats. In those cases, renewable energy generation on-site should still be maximised and then the offsetting mechanism would justifiably be triggered to deliver the residual amount of renewable energy generation offsite via a contribution to the Essex Renewable Energy Offset Fund and therefore enable these developments to achieve policy compliance.

The offset mechanism is expressed as a renewable energy offset and the price is set in £/kWh, which will be reviewed at least every 3 years and updated for Essex and published on the [Essex Design Guide](#). The price (as of July 2023) is set at £1.35 per kWh (published on page 36 of the [Report 1: Essex Net Zero Policy – Technical Evidence Base, July 2023](#)) and has been calculated using a robust methodology based on the cost of providing roof top solar PV in Essex and incorporating a 20% allowance for administering and managing the funding process.

The calculation of the contribution required will be made at the point that a planning application is determined using the most up to date offset price (£/kWh) for Essex.

### Example offsetting contribution calculation

The following examples demonstrate how to calculate the energy offset contribution required in circumstances where the renewable energy generation on the building does not match the annual predicted energy demand.

**Table 1A: Overview calculation** of an offset payment for a scenario where a proposed development of 11 terraced houses has site specific constraints of orientation and shading which limit generation. The calculation is made for each individual dwelling. An example for 1 dwelling is set out below:

Type of Development	Development of 11 Terraced Houses
Calculation basis	An individual dwelling
Gross Internal Floor Area	95m <sup>2</sup>
Total Energy	35 kWh/m <sup>2</sup> /year
Annual Energy Consumption	3325 kWh/year
Onsite renewables	3150 kWh/year
Energy Deficit	3325 – 3150 = 175 kWh / year
Offset tariff	£1.35 per kWh
Offsetting Payment	<b>£236</b> (plus monitoring of planning obligation fee)

**Table 1B: Detailed calculation** steps of an offset payment for a scenario where a proposed development of 11 terraced houses has site specific constraints of orientation and shading which limit generation. The calculation is made for each individual dwelling. An example for 1 dwelling is set out below:

	Description	Calculation	Meaning
Step 1	Calculate the building's annual energy consumption	Energy Use Intensity = 35 kWh/m <sup>2</sup> /year Gross Internal Floor Area = 95m <sup>2</sup>  EUI x GIA = Annual energy consumption 35kWh/m <sup>2</sup> /year x 95m <sup>2</sup> = 3325 kWh/year	The installed solar PV system will have to generate 3325 kWh/year to match annual energy consumption.
Step 2	Calculate if the required PV system can fit on the building	Assume a single PV Panel generates 450kWh per year. Assume each panel has an area of 2.6m <sup>2</sup>  Divide required generation 3325 kWh/year by 450 kWh/year to find out how many panels are needed.  3325 kWh / 450 kWh = 7.3 panels (rounded down to 7)  Multiply the area of 1 panel (2.6m <sup>2</sup> ) by 7 panels to gives the total area required (2.6x7=19 m <sup>2</sup> )  Work out how much roof space is available to accommodate a PV system. In this example of a terraced house, due to site constraints affecting orientation and shading, there is limited suitable roof space available, only 17.5m <sup>2</sup> .	Meeting the building's annual energy consumption of 3325 kWh would require a total PV area of 19m <sup>2</sup>  The area of PV that fits on the roof = 17.5m <sup>2</sup> (equivalent to 6 panels generating 3150 kWh/year).  The required system cannot fit on the building, therefore there is a shortfall between the amount of energy that can be generated and the amount of energy consumed.
Step 3	Calculate the shortfall in the building's renewable energy generation to match the building's annual energy consumption	Work out the difference between the annual energy consumption and the predicted annual energy generation from the rooftop PV system that can fit on the roof. 3325 - 3150 = 175 kWh per year	There is a shortfall in renewable energy generation of 175 kWh per year.
Step 4	Calculate offset contribution	Work out the offset contribution by multiplying the shortfall in generation by the latest offset tariff (as of 2024 the tariff is <b>£1.35 per kWh</b> ).  175 kWh x £1.35 per kWh = <b>£236</b>	The Offset contribution for the dwelling is <b>£236</b> plus any planning obligation monitoring fee(s).
Step 5	Whole Site Offset Contribution	Calculate whether an offset contribution is required on other dwellings within the proposed development. If there are more dwellings requiring an offset contribution to achieve policy compliance then add these together to provide the total offset contribution required for the whole development.	Add together offset contributions required from other dwellings in the development to give the total offset contribution for the whole site.

In the example set out in Tables 1a and 1B above, the calculation is made on an individual terraced dwelling that forms part of a development of 11 homes. In this scenario, to work out the offset contribution for the development as a whole, the calculation is carried out for each dwelling and if an offset contribution is required on some or all of the dwellings, then this is added up to give the total offset contribution for the development.

Blocks of flats can be treated as a single unit, for the purpose of calculating the offsetting payment. High rise blocks of flats (15 storeys or more) are likely to trigger the use of the offsetting mechanism. Tables 2A and 2B below provide a worked example for this typology.

**Table 2A:** Overview of offset payment calculation for high rise blocks of flats

<b>Type of Development</b>	<b>High Rise (15 storeys) Blocks of Flats</b>
<b>Gross Internal Floor Area</b>	15,500m <sup>2</sup>
<b>Total Energy</b>	35 kWh/m <sup>2</sup> /year
<b>Annual Energy Consumption</b>	542,500 kWh/year
<b>Onsite renewables</b>	115,200 kWh/year
<b>Energy Deficit</b>	542,500 - 115,200= 427,300 kWh / year
<b>Offset tariff</b>	£1.35 per kWh
<b>Offsetting Payment</b>	<b>£576,855</b> (plus monitoring of planning obligation fee)

**Table 2B:** Detailed calculation steps of offset payment for high rise (15 storey) blocks of flats

Step	Description	Calculation	Meaning
<b>Step 1</b>	<b>Calculate the building's annual energy consumption</b>	Energy Use Intensity = 35 kWh/m <sup>2</sup> /year Gross Internal Floor Area = 15,500m <sup>2</sup>  EUI x GIA = Annual energy consumption 35kWh/m <sup>2</sup> /year x 15,500m <sup>2</sup> = 542,500 kWh/year	The installed solar PV system will have to generate 542,500 kWh/year to match annual energy consumption.
<b>Step 2</b>	<b>Calculate if the required PV system can fit on the building</b>	Assume a single PV Panel generates 450kWh per year. Assume each panel has an area of 2.6m <sup>2</sup>  Divide required generation 542,500 kWh / year by 450 kWh/year to find out how many panels are needed.  542,500 kWh / 450 kWh = 1206 panels  Multiply the area of 1 panel (2.6m <sup>2</sup> ) by 1206 panels to gives the total area required (2.6x1206=3136 m <sup>2</sup> )  Work out how much roof space is available to accommodate a PV system. In this example of a high rise block of flats, the roof space has been reduced by 30% to allow for access and maintenance. The roof area available for Solar PV is 668m <sup>2</sup> .	Meeting the building's annual energy consumption of 542,500 kWh would require a total PV area of 3,136m <sup>2</sup>  The area of PV that fits on the roof = 668m <sup>2</sup> (equivalent to 256 Panels generating 115,200 kWh/year).  The required system cannot fit on the building, therefore there is a shortfall between the amount of energy that can be generated and the amount of energy consumed.
<b>Step 3</b>	<b>Calculate the shortfall in the building's renewable energy generation to match the building's annual energy consumption</b>	Work out the difference between the annual energy consumption and the predicted annual energy generation from the rooftop PV system that can fit on the roof. 542,500 - 115,200 = 427,300 kWh per year	There is a shortfall in renewable energy generation of 427,300 kWh per year.
<b>Step 4</b>	<b>Calculate offset contribution</b>	Work out the offset contribution by multiplying the shortfall in generation by the latest offset tariff (as of 2024 the tariff is <b>£1.35 per kWh</b> ).  427,300 kWh x £1.35 per kWh = £576,855	The Offset contribution is <b>£576,855</b> plus \$106 monitoring fee(s).

## Additional Monitoring Fee

There are costs to the Council(s) which arise from the monitoring and reporting of the offset contribution made, and which are not incorporated into the energy offset tariff described above.

The Local Planning Authority (LPA) may charge a monitoring fee for planning obligations. Reference should be made to the relevant LPA to determine this fee.

In addition, as the Essex Renewable Energy Offsetting Fund will be administered and operated by Essex County Council (ECC), then Essex County Council will need to seek a standard charge towards the cost of monitoring and reporting of the relevant renewable energy offsetting planning obligation to meet legal requirements.

The additional monitoring and reporting fee for ECC is set out in the latest 'Essex County Council Developers Guide to Infrastructure Contributions' available [here](#). Reporting on obligations is made annually in the Infrastructure and Funding Statement.

## Offsetting Collection Process

The offsetting mechanism meets the legal tests for Planning Obligations (such as Section 106) in that it is:

- (i) necessary to make the development acceptable in planning terms;
- (ii) directly related to the development;
- (iii) fairly and reasonably related in scale and kind to the development.

The offsetting payment is to be secured through a planning obligation. For example, within a Section 106 agreement, it could form a pre-commencement requirement (see suggested standard Section 106 Clause at Appendix 1). It is anticipated that as an offset contribution would only normally be triggered on major development proposals then usually a Section 106 agreement would be being progressed for other matters such as affordable housing, therefore it will be straightforward to add a clause to cover offsetting contributions. In situations where there is not a Section 106 agreement being progressed then the contribution will be secured through another type of planning obligation (such as Unilateral Undertaking).

The Local Planning Authority will normally be the signatory of the Planning Obligation which covers the offsetting contribution, and therefore request the clause and will collect the payment.

It is important that any investment of cash-in-lieu contributions is spent at a similar rate as a development would emit residual energy (and therefore carbon). Given this, payment at an early point, in advance of development will help minimise the mismatch in timing between the development generating an operational energy demand and the corresponding offsetting taking effect (an important offsetting principle).

Should the LPA wish to make use of the Essex Renewable Energy Offset Fund for delivery of renewable energy projects then the payment will be transferred to the County Council. The Infrastructure Planning Team will manage the process, and ensure the money is held in the Essex Renewable Energy Offset Fund. The fund itself will be managed and administered by the Energy & Low Carbon Team at Essex County Council.

To ensure transparency, the Energy & Low Carbon Team will report every Autumn to the Infrastructure Planning Team how much money has been spent and on what projects. The Infrastructure Planning Team will incorporate the information into the [Infrastructure Funding Statement](#) published at the end of each year to monitor all monies that come through Planning Obligations (such as Section 106 agreements).



## Spending of Essex Renewable Energy Offset Fund and Administration

The fund is administered by Essex County Council.

Enquiries about this funding can be directed to: [lowcarbon@essex.gov.uk](mailto:lowcarbon@essex.gov.uk)

In some cases, funds may have to be pooled in order to be of sufficient size to fund an installation.

### Eligibility of Funding

Grants of up to £20,000 are available from the Essex Renewable Energy Offset Fund to support rooftop solar PV projects on local, non-council owned public amenity facilities. These projects will be selected from a pre-registered list of interested groups which will cover all districts in Essex.

### Who can apply

Applications for funding from the Essex Renewable Energy Offset Fund are welcome from:

- Village halls
- Scout huts
- Local charitable organisations
- Schools
- Parishes
- Community Energy Groups
- Other local public amenity facilities

As funds come in, ECC will reach out to potential project sites to advise they can apply. The projects will be chosen on a proximity to original development basis and match-funding will be encouraged.

### Outcomes

- Widen access to/and uptake of renewable energy;
- Improve self-sufficiency and reduce constraint on the local grid system;
- Implementation of measures to reduce carbon footprint and help meet net zero standards;
- Raise awareness around key climate challenges and support changing behaviours at a local level.

### Project list

ECC will ask interested, eligible parties to register an expression of interest for funding from the Essex Renewable Energy Offset Fund. Once/if money comes into the fund, ECC will reach out to those registrants to apply in full, based on their geographic proximity to the location of the development whereby the fund has come in from.

### Grant Awards

- This is a rolling programme and is not normally expected to raise large amounts of funding.
- Awards will be made on a rolling basis. Successful applicants will be notified by email, and grants awarded as quickly as possible.

- Grants are available to support capital costs for the solar PV system installation only They will not fund other project costs such as feasibility studies or ancillary costs, for example roofing costs where the roof is not immediately suitable for a solar PV system; or ancillary H&S costs
- Project should be 'shovel-ready' and meet the following criteria: planning consent and grid connections secured; 3 quotes required.
- Grants are available to support capital projects.
- Applications will be considered based upon feasibility of activities; value for money; and how activities meet the outcomes of the programme set out above
- Applications will need to demonstrate the kWh generation that they will deliver
- The Funding Panel<sup>3</sup> will reserve the right to use their sole discretion when assessing any grant applications for acceptance. Applications may be rejected, or grants awarded at a lesser level than applied for.

### Validity of Funding

Funding will be allocated on a rolling basis. Grant awards must be spent within 12 months of award.

### Demonstration of Need

Applicants must:

- Demonstrate how their activities will have an impact in meeting the programme outcomes set out above; and
- Demonstrate how their activities will improve the quality of service they provide to communities.

### Financials

All applicants must:

- Have gained necessary permissions to undertake this work as required (i.e. permissions from landlords, planning permission);
- Demonstrate financial viability and whole life costs / on-going revenue costs;
- Be fully transparent on the total project costs and where funding will be allocated as well as any in-kind support for the activity/project;
- Be transparent in the number of unrestricted reserves, and such reserves should be fully justified in formally ratified reserves policy; and
- Submit latest accounts, including the balance sheet and reserves (where appropriate).

### Project Monitoring

To ensure that grant funding is being spent diligently, ECC will seek project monitoring reports from successful applicants. Frequency and criteria for reporting will be agreed with ECC and set out in the

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<sup>3</sup> Funding Panel will comprise representatives from ECC's Energy & Low Carbon Team; Climate and Planning Unit; Planning & Sustainable Development Service; and District / City / Borough Council where contributions from developments have been received from and/or are proposed to be spent.

grant agreement upon confirmation of successful awards. The Energy & Low Carbon team will update the Infrastructure Planning Team as required.

ECC will work with the grant holder to agree reporting metrics.

ECC may request a full audit of the project's accounts (funded by the applicant) to gain financial assurance.

Information will be provided for inclusion in the Infrastructure Funding Statement (IFS) produced annually by ECC to report on the spending of all monies generated through Planning Obligations.

### Public Sector Equality Duty

The Equality Act 2010 states that public authorities must comply with the Public Sector Equality Duty and for them to consider how their policies or decisions affect people who have protected characteristics under The Act.

These protected characteristics are:

- Age, disability, gender re-assignment, pregnancy and maternity, sex, sexual orientation, race, religion or belief, and marriage and civil partnership.

Essex County Council is committed to the positive advancement of equality, fostering good relations between different groups and tackling unlawful discrimination.

When submitting applications organisations should consider how their projects and activities will help advance the following aims of the Public Sector Equality Duty and The Act:

- Eliminating discrimination, harassment and victimisation i.e. projects that seek to remove or minimise disadvantages suffered by people due to their protected characteristics.
- Advancing equality of opportunity i.e. projects that provide opportunities to those with protected characteristics
- Fostering good relations i.e. projects that encourage those with protected characteristics to participate in public life, bringing communities together to share commonalities and promote community cohesion and inclusion.

### Supporting Documentation:

Please note the following will need to be provided by applicants where relevant. For those community groups/un-constituted groups that do not have these documents/policies in place, please email: [lowcarbon@essex.gov.uk](mailto:lowcarbon@essex.gov.uk) so this can be discussed prior to an application:

- Copy of your latest accounts, including the balance sheet and reserves
- Copy of your safeguarding policy
- Copy of your volunteering policy
- Copy of insurance policy

**PLEASE NOTE:** Failure to fully complete applications or supply required documentation may make your application null and void. Completed applications are to be returned to Essex County Council. Applications should be emailed to [lowcarbon@essex.gov.uk](mailto:lowcarbon@essex.gov.uk)

## Appendix 1: Template Section 106 Definitions and Clause

To be confirmed

Published: 18<sup>th</sup> December 2024

Essex County Council:

- Climate and Planning Unit
- Energy & Low Carbon Team

**Website:**



<https://www.essexdesignguide.co.uk/climate-change/>

**Contact:** [Climateplanningunit@essex.gov.uk](mailto:Climateplanningunit@essex.gov.uk) / [lowcarbon@essex.gov.uk](mailto:lowcarbon@essex.gov.uk)

