

# PROJECT MODEL: REFURBISHED WIND GENERATION (GRID CONNECTED)

LOCAL  
ENERGY  
SCOTLAND

This project model is aimed at those interested in creating a locally owned installation of one or more second-hand refurbished wind turbines on land owned by the installation owner and directly connected to the electricity grid. Project finance is expected to be provided by the land/installation owner; this should ideally be funded directly from income, savings or through borrowing related to their land or other assets, or a community share offer.

## REQUIREMENTS

There are a few things you'll need to take your project forward.

- ✓ A commitment to invest time and significant effort in the project.
- ✓ A person with responsibility for, and capacity to, administer this project.
- ✓ A mechanism to raise capital funds.
- ✓ One or more potential sites, preferably in your ownership, that:
  - has a good wind resource, perhaps verified by existing turbine(s)
  - has suitable road and on-site infrastructure for turbine construction
  - is not impacted by civil or military radar issues, and preferably designated as suitable for turbine development by planning
  - is close to grid infrastructure with potential additional capacity
  - does not have neighbours in close proximity
  - is suitably distanced from existing turbines, if applicable.

|                |  |           |
|----------------|--|-----------|
| <b>Time</b>    |  | 1-3 years |
| <b>Cost</b>    |  | High      |
| <b>Effort</b>  |  | High      |
| <b>Benefit</b> |  | Good      |
| <b>Carbon</b>  |  | Very high |



## KEY CHALLENGES

Subsidy-free wind development is high risk if costs are not minimised. You will need to meet the above requirements due to several key challenges which we have identified below.

- Income generation without subsidy depends on high energy yields and low installation costs, preferably using existing access roads.
- Complex site access can significantly increase delivery and civil costs.
- Identifying the potential to mitigate radar issues can be very costly.
- Sensitive planning issues increase the cost of development.
- Limited local grid capacity will likely mean high connection charges.
- Neighbours must take a financial stake if noise is above set levels.
- Access to finance is critical as project funding refurbished turbines is rare.
- Quickly excluding sites with challenges helps to focus on those with potential.

# ACTIVITIES

## Preparing for installation

There is a lot you will need to do before you can install a turbine. Apply to CARES for financial support during preparation and development, where eligible.

- ✓ Contract with an appropriate consultant to review the potential site(s).
- ✓ Potential viability must be determined early and should include:
  - a desktop assessment of wind resource and turbulence
  - impact between turbines, where multiple turbines are considered
  - discussing planning requirements with your Local Planning Officer
  - a desktop assessment of road and site access
  - consideration of all neighbouring properties (noise and flicker)
  - discussing grid connections with the Distribution Network Operator
  - a desktop assessment of geology and mining, if required.
- ✓ For each site, the consultant should provide a written report that includes:
  - the extent of any Environmental Impact Assessment (EIA) required
  - the potential for planning objections related to radar issues
  - suitability of ground, access and relationship to neighbours
  - the turbine type proposed, including the rationale for that choice
  - any other key risks and challenges for each site
  - an estimation of project scale, costs, programme and overall viability.

Use our [Invitation to Tender templates](#) to engage a consultant.

## Developing your project

You will need to carry out the following activities to get your project underway.

- ✓ Contract with an appropriate consultant to further develop the project.
- ✓ Develop in stages to address and mitigate risk and to reduce abortive costs.
- ✓ Seek quotes from contractors for all site development activities.
- ✓ A lead consultant and/or Project Manager's role description should include:
  - maintaining all records, budget, programme, reports and risk register
  - identifying and selecting the preferred wind turbine(s)
  - full project design and specification including civil and electrical works
  - programming and delivery of all site and habitat surveys and assessments
  - preparing and submitting a comprehensive planning application
  - preparing and submitting a grid connection application
  - engaging with the landowner and neighbours, where applicable
  - defining operations and maintenance requirements and costs (higher than for new turbines)
  - obtaining quotes and supporting the procurement of all contractors.
- ✓ Consider options for raising capital costs. This can be from a mix of sources. Some options:
  - talk to lenders about providing secured loans on existing assets
  - community organisation may seek grants and donations
  - consider crowd funding, share offers or community bonds.
- ✓ Agree a target programme with your consultant and contractor (as appropriate).

## Capital funding and income

Capital funding based only on project viability is difficult to secure for several reasons:

- refurbished turbines have limited track record to gauge risk
- good long-term Power Purchase Agreements (PPA) are not available
- short term PPAs are considered higher risk
- keeping the borrowing amount low, reduces lender interest.

Securing income will likely be through a PPA. This is because:

- short term PPA contracts often offer the best tariffs (6 months to 2 years)
- the [Smart Export Guarantee](#) is likely to be for a lower tariff
- Contracts for Difference tariffs are likely to be lower than a PPA
- direct or sleeved supply to a third party usually increases costs.

## Implementation

There are several steps to implementing your project; we have listed these below.

- ✓ Confirm funding, the mechanism for claiming and any funding conditions.
- ✓ Agree the scope of works for your consultant during construction.

- ✓ Confirm all consents are in place, and conditions discharged.
- ✓ You may need to order your turbine in advance to secure your preference.
- ✓ Confirm grid connection dates and payment schedule.
- ✓ Formally instruct your preferred installer to begin work.
- ✓ Promptly attend to queries, variations, unforeseen challenges and changes.
- ✓ At the appropriate time, close to or at completion, you should:
  - confirm your insurance cover to begin at installation completion
  - contract your operation and maintenance requirements
  - be aware that this is likely to be at higher cost than for new turbines
  - contractors may need to be pre-selected to maintain any warranty.
- ✓ Secure payment for any generation exported to the grid (your PPA).



[Community Shares Scotland](#) provides advice and support in raising community funding

[UK Government information on Contracts for Difference](#)

## HOW LOCAL ENERGY SCOTLAND CAN HELP

- ✓ **ADVICE** – We have a network of Local Development Officers across Scotland to provide regional advice and support, wherever you are.
- ✓ **RESOURCES** – Our free online resources, tools and good practice guides will help you along every step of your journey.
- ✓ **FUNDING** – we help you access the Scottish Government’s Community and Renewable Energy Scheme (CARES) support and funding.

For more information, call Local Energy Scotland on **0808 808 2288**, email [info@localenergy.scot](mailto:info@localenergy.scot) or visit [localenergy.scot](http://localenergy.scot)

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