

To: David Egan,  
Commission for Energy Regulation  
By Email

Dear Mr. Egan,

We welcome the move by ESB to offer a feed in tariff to domestic micro-generators, and the opportunity to make the following submission on the matter to your office.

We believe it is wrong that the ESB seeks to “*link this payment to the economic cost of procuring such electricity in the wholesale market*”, and that a mechanism should be found whereby the purchase price can receive further support, as happens with other renewable power such as offshore wind, wave and tidal power.

While the proposed rate of 9c is an interim tariff only, such a low rate sends the wrong signal to the micro-generation industry in Ireland and elsewhere, and we will be stuck with this tariff for almost two years until the end of 2010.

While there may be a fear that introducing a higher interim tariff would make it impossible to reduce it later, there are precedents in other countries where a very high tariff was introduced to encourage an emerging technology, but later participants in the market became obliged to work at a lower tariff, as equipment costs fell in a growing market (see example below in relation to Spanish photovoltaics).

### ***Ireland's opportunity to be a major player in the micro-generation industry***

Micro-generation presents a tremendous opportunity for Irish industry, and that we urgently need to introduce support mechanisms for that industry, including a generous feed in tariff.

There is a move towards renewable energy worldwide, but many possible technologies are already quite mature in other countries, effectively scuppering any hope of Ireland becoming an industry leader. For example, wind generation is already dominated by countries such as Denmark, USA, Germany and Spain; solar photovoltaic is dominated by the USA and China in terms of module production, and within the EU by Spain and Germany in terms of installation and ancillary products.

Ireland needs to look for other niche industries, including tidal and wave power. Micro-generation should also be included in this category for the following reasons;

- 1) We have a relatively high percentage of one-off houses where domestic wind and micro-hydro can be installed, so we should have a strong home market.
- 2) We have some of the best wind conditions in Europe. A turbine that withstands our Atlantic coastal conditions would be favourably looked at in other EU markets.
- 3) We already have favourable planning laws for domestic wind turbines in Ireland.
- 4) This is not a heavy industry. Ireland already has companies capable of manufacturing most of the components competitively – towers, blades, controllers etc.

However, if we are to maximize the possible opportunities for Ireland to be a major player in micro-generation, we need strong support measures in our home market. The proposal from ESB does not offer such a support, and would only make micro-generation financially viable in areas with high wind speeds.

### **Cost by comparison with UK**

Northern Ireland offers a more generous feed-in tariff, as do many parts of the UK, where the feed-in tariff is made up of two components – a tariff for all electricity exported, and a ROC (Renewable Obligation Certificate) for all electricity produced *regardless of whether this is exported to the grid or used by the householder*. To the best of my knowledge, in Northern Ireland, the present feed in tariff is 7.4p/KwHr and ROCs are 4.5p/KwHr, giving a total payment of STG 11.9p for all exported electricity.

However, there is a further £0.045p for all electricity produced and used within the home. With a retail price of 15.06p for electricity, this gives micro-generators a total saving of STG 19.45p for electricity they use themselves.

This is therefore equivalent to €0.22c for every KwHr used in the home, and €0.135c for every KwHr exported, compared to a proposed saving in the Republic of €0.16c for home use and €0.09c for export. This is an increase of between 37.5% and 50% on the rates currently proposed by ESB.

Furthermore, the UK and Northern Ireland benefit from lower VAT rates on renewable energy systems, further improving the return on investment offered for micro-generators.

### **Proposed price will encourage sale of cheap and unreliable turbines**

At present there are two main types of micro-generator available in Ireland. Relatively high cost (€6,000 to €8,000 per Kw) machines well made and produced in Europe or USA and very cheap, but unreliable turbines produced for the Chinese home market, often offered at €1,000 to €2,000 per Kw.

The cheaper turbines are usually erected on light towers using guy wires which require regular maintenance, the towers are not adequately galvanized to ensure long life, and the survival speed is lower than should be used in Ireland. In some cases where these turbines have been installed, blades and even entire turbines have sheared off with potentially disastrous consequences.

If a price is set by ESB which rules out the viability of higher cost turbines, the industry will offer lower cost turbines which will give the micro-generation a bad reputation, and will make it difficult for indigenous industry to gain a foothold in the market.

### **Costings based on our own experience in developing a turbine**

There are many Irish companies looking to develop domestic wind generators, components of which can be manufactured cost-effectively here.

Our own business, Turbotricity, is a start-up company which intends to produce a mid-range turbine, using Irish made towers and controllers, and gradually moving to manufacturing other components in Ireland (blades, generators and possibly grid-tied inverters). We aim to launch a robust and reliable 2.5Kw turbine for domestic users at an installed price of between €11,000 and €12,000 including VAT (€4,400 to €5,000 per Kw). We do not believe that a high quality turbine can be produced at a price much lower than this for the scale of production currently available. As the market grows, this situation may change, but that is the position that exists at present.

We will aim to offer this turbine into overseas markets. Ironically, at the prices proposed by ESB, we will find it more difficult to sell into our home market. Thus manufacturers in the UK and elsewhere will have a competitive advantage by having a better market on their own doorsteps.

### Likely Payback Times

We are still developing power curves for our turbine, but for the purpose of this exercise, we have used the power curve of another EU manufactured 2.5kw system which sells at around €20,000. If our power curve is similar, the following would be the figures for;

- Annual output,
- Value of that power if half was used by the household at 16c/KwHr and half exported at 9c/KwHr
- Payback time in years if half was used by the household and half exported at 9c/KwHr, based on installed price of €11,500

(These figures do not allow for maintenance)

Mean Wind Speed (metres/sec)	5	5.5	6	7	8	9
Annual Output (KwHr/Yr)	3877	4871	5866	7854	9643	11234
Value of Power 50% at 9c, 50% at 16c	€485	€609	€733	€982	€1,205	€1,404
Payback time 50% at 9c, 50% at 16c	24	19	16	12	10	8

It can be seen that even if we can meet an installed price of €11,500, a payback time of 16 to 19 years will apply to most sites, severely restricting potential sales. For other suppliers selling such a turbine at prices in the region of €20,000, the figures would be as follows;

Mean Wind Speed (meters/sec)	5	5.5	6	7	8	9
Annual Output (KwHr/Yr)	3877	4871	5866	7854	9643	11234
Value of Power 50% at 9c, 50% at 16c	€485	€609	€733	€982	€1,205	€1,404
Payback time 50% at 9c, 50% at 16c	41	33	27	20	17	14

For comparison, we show below the payback times in years for the following situations (based on our own turbine at an installed price of €11,500);

- The current offer from ESB of 9c
- Feed in tariff of 12c as applies to offshore wind
- A feed-in tariff similar to the UK, where ROCs and tariff combine to an average of €0.22c for electricity used and €0.13½c for electricity exported

Mean Wind Speed (meters/sec)	5	5.5	6	7	8	9
Payback time 50% at 9c, 50% at 16c	24	19	16	12	10	8
Payback time 50% at 12c, 50% at 16c per offshore REFIT	21	17	14	10	9	7
Payback time 50% at 22c, 50% at 13.5c as in N. Ireland	17	13	11	8	7	6

For the Northern Irish market, domestic wind turbines are a far more acceptable investment in areas with lower wind speeds.

### **Examples where other countries introduced strong incentives initially**

Spain saw a niche to develop a solar photovoltaic industry, and introduced a feed-in tariff of 44c per KwHr, though that tariff was not fully indexed. The industry has now grown to the point where the new round of equipment is being introduced with a lowered tariff in the region of 31c per Kw Hr, and further rounds will see this price lowered continuously until the technology is mature enough to be at grid parity.

Germany, Greece and Italy have also had similar high initial feed in tariffs, though sometimes these were not indexed.

### **Cost compared to offshore and onshore wind farms**

The proposed tariff of 9 cents is only marginally above the level offered to large scale wind farms, even though micro-generation puts no burden on the grid (and is already restricted to a percentage of local substation capacity).

The tariff is significantly below that offered for offshore wind farms, even though such systems only offer limited potential for Ireland to develop niche markets. We should be prepared to offer greater subsidies to micro-generation where there is potential for Irish industries to become market leaders.

### **Likely nett cost to ESB arising from Micro-generation**

The only downside to a high feed-in tariff is the cost of power which would ultimately have to be passed on to consumers. But this figure is going to be relatively small in the case of micro-generation in Ireland, particularly wind and micro-hydro.

At present, if we compare the impact on electricity prices resulting from a typical 100mw offshore windfarm in an area with a mean wind speed of 9 m/sec, this would be the equivalent of at least 200mw of micro-generation, or 80,000 houses with 2.5kw turbines installed where they will be exposed to lower mean wind speeds.

Even in Ireland, with its relatively high percentage of one-off houses, it is unlikely that we will ever see 80,000 houses with their own wind turbines. Thus the impact of micro-generation in Ireland is never likely to match the impact caused by a single offshore wind farm.

### **Possible multi-tariff for small / large turbines to favor smaller ones that export less**

Smaller turbines cost more per Kw capacity than larger ones. For example one EU producer has three turbines – 2.5kw, 6kw and 15kw and their approximate guide prices for installed systems is as follows;

	<b>2.5kw</b>	<b>6kw</b>	<b>15kw</b>
<b>Guide price installed</b>	€19,700	€31,700	€65,000
<b>Price per Kw</b>	€7,880	€5,283	€4,333

Even for micro-generators, there are economies of scale, and this could perhaps be reflected in a multi-tier feed in tariff. In the above case, the capital cost of the equipment for 15kw is almost ½ of the capital cost for a 2.5kw machine. Thus there could be one rate set for generators below say 4kw (or the 16A limit for single phase under G83) and a lower rate for micro-generators using second and third phases.

This would reduce the temptation for householders to install larger generators than they require, simply to achieve the economies of scale, often exporting a large percentage of the power produced during off-peak hours.

### ***Consider non-indexation or part indexation of high initial tariff***

There are two possibilities open to CER here.

- 1) Introduce a very attractive tariff to encourage the market initially, but cap the availability of this tariff to the first say 10,000 installations, after which a new tariff might be introduced. This is what happened with solar photovoltaic systems in Spain, and was successful in building a new industry there.
- 2) Introduce an attractive tariff, but with the understanding that this tariff will not be indexed, or will be indexed at only 50% of the consumer price index. While this was resisted in relation to wind farms, it is different in a domestic setting because some indexation will come from savings on the retail price of electricity used by the household itself.

### ***Long term encouragement for in-house demand side management***

In the long term, it should be possible to use Smart Metering to encourage demand side management so that a minimum of electricity is being exported at off-peak hours. However, in order to build an industry which would develop such systems, incentives should be offered now by offering a very high tariff at peak hours, and a correspondingly lower tariff between midnight and 8.00am.

Again, the development of demand side management systems is a niche industry in which Ireland could become a key player, and such incentives could easily be introduced for micro-generators at this stage by offering an alternative tariff for those willing to implement such technology. This might encourage Irish manufacturers to develop systems in a niche which will eventually be required in other countries.

I see no reason to postpone the development of such a tariff in advance of the results of smart metering. We already know the wholesale price trends at different times and could introduce a variable feed in tariff at this stage.

### ***Other issues not related to feed in tariff;***

We would also welcome the opportunity to raise the following issues in relation to this proposal;

#### ***Annual payment restricts cash flow***

We object to the payment being made annually. There is no reason why meters cannot be self-read (as often happens anyhow when the householder is not at home). In other jurisdictions, payment is made quarterly.

#### ***Should be open to all customers***

We also see no reason why such a tariff should be available to domestic customers only. Small industrial users should also be given access to this system, provided that the output is within the limits of G83.

I hope these suggestions will be useful to CER in assessing a suitable price regime for micro-generation.

Yours sincerely,

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Quentin Gargan.