

biofuelwatch



**Friends of
the Earth
Tayside**

Forth Energy's proposed biomass power station for Dundee: A closer look at the company's claims about air quality impacts, sustainability, efficiency and jobs, and why this is happening

Background:

Forth Energy, a joint venture of SSE and Forth Ports, wants to build a large biomass power station at the Port of Dundee, which would burn around one million tonnes of wood. Most of the wood is to be shipped in. The final decision on the planning application will be made by the Scottish Government. Dundee City Council's vote, however, will be crucial: If Councillors object to the plans, then the application will go to a local public inquiry, where all evidence will be heard and considered in detail. If Councillors decide not to object then the application could be approved any time by the Energy Minister, without any inquiry.

Back in 2010, Dundee City Council's Planning Committee first considered the application and voted to request further evidence on air quality impacts before deciding whether or not to object. Forth Energy has now submitted a further assessment on (some) air quality impacts. A new consultation period has been opened, which ends on 16th May 2013, and the Policy and Resources Committee is expected to vote on the proposal in June. The new documents can be found at <http://www.forthenergy.co.uk/dundee-consent-application-addendum2.asp>.

Air Quality:

Biomass power stations emit a large range of pollutants, some of which are linked to respiratory and heart disease and strokes, and others that are linked to cancer and birth defects. According to figures released by the previous UK government, biomass expansion in the UK is expected to lead to the loss of 340,000 to 1.75 million life years by 2020 just because of the additional small particulates which will be released¹.

In Vermont in the US, a 50 MW biomass power station which only burns untreated virgin wood is the state's single biggest source of pollution, emitting 79 different pollutants, according to the Environmental Protection Agency.² Forth Energy's application states that the plant may burn up to 30% waste wood, which could be chemically treated. Burning chemically treated wood releases even more toxins, such as compounds that contain copper, cadmium or arsenic.

How is the air quality situation in Dundee at present and how does it affect public health?

All of Dundee has been declared an Air Quality Management Area, which means that the Council is obliged to take measures to reduce pollution levels, specifically those of nitrogen dioxide (NO₂) and small particulates (PM₁₀). This is because legal EU and UK emission limits are being continuously breached at different sites across the city. Since 2006, when the Air Quality Management Area was first declared in order to monitor and reduce NO₂ levels, those

¹ <http://www.publications.parliament.uk/pa/cm200809/cmhansrd/cm091110/text/91110w0010.htm>

² <http://planethazard.com/phmapenv.aspx?mode=topten&area=state&state=VT>

levels have actually increased at three out of four sites that have been consistently monitored.³

According to NHS Tayside statistics, Dundee has a higher death rate from respiratory disease than Angus and Perth & Kinross, and the prevalence of these diseases in Dundee is around double that found in rural areas of Tayside.⁴ According to the findings of the World Health Organisation, levels of nitrogen dioxide and particulates at various locations in Dundee are so high that they can be expected to cause ill health and premature deaths.

Why is pollution still a concern when Forth Energy promises to invest in mitigation technology which would to reduce pollution:

No power station this size would be allowed to operate without mitigation. Yet even if Forth Energy was to use technology classed as 'Best Available Technique', significant amounts of nitrogen dioxide, small particulates and other pollutants would still be released. The biomass power station in Vermont referred to above also uses 'Best Available Technique'. However this certainly does not mean that the levels that can be achieved can be classed as "safe."

Forth Energy claims that its new air quality assessment 'proves' that the power station would have no significant effect on pollution levels in Dundee. How reliable is this?

Back in 2011, Dundee City Council requested a new Air Quality assessment after SEPA had concluded: "*If air quality in the vicinity of the development does not improve as anticipated in the addendum to the Environmental Statement we are likely to be unable to grant a PPC [i.e. an operating] Permit*". Air quality clearly has not improved. Instead Forth Energy has been using some dubious methods to hide the true impact which its power station would have on pollution levels. Here are two of the 'technical problems' with the assessment:

+ Forth Energy is sticking by its original predictions of how many particulates the power station would emit: around 624 kg every year.⁵ This is less than half as much as the particulates which a much smaller biomass plant, Steven's Croft near Lockerbie, emitted in 2011.⁶ Yet Steven's Croft uses exactly the same technology to reduce small particulate emissions as Forth Energy plans to use!⁷ Furthermore, Forth Energy contradicts itself by predicting that a lot more fine ash will be emitted through the smokestack than is considered in its air quality assessment. By using such a completely unrealistic figure for particulate emissions it has been able to 'show' that the power station would have little effect on particulate levels.

+ The amount of nitrogen dioxide (NO₂) that results from power station emissions depends on the amount of nitric oxide (NO) formed during combustion. Most companies and planners accept that of the total mixture of NO and NO₂ discharged into the atmosphere, 70 % of it will end up as harmful nitrogen dioxide. When Forth Energy ran its air quality model on that assumption, it showed that at least three nearby sites would suffer even worse breaches of EU

³ 2012 Air Quality Updating and Screening Assessment for Dundee City Council, http://www.dundee.gov.uk/sites/default/files/publications/DCC_USA-2012.pdf

⁴ Data emailed to Friends of the Earth Tayside by NHS Tayside on 28th March 2013

⁵ See Table 9.7, <http://www.forthenergy.co.uk/pdf/biomass-project-update-dundee/02%20ES%20Volume%20-%20Main%20text/Chapter%2009%20-%20Air%20Quality%20-%20FORTH%20ENERGY.pdf> We have converted the figure from g/s to kg/a based on 8000 operating hours a year.

⁶ According to SEPA, Steven's croft emitted 1,560 kg of PM10 in 2011: <http://apps.sepa.org.uk/SPRIPA/Search/ViewReturn.aspx?returnId=24576> . This is a 46 MW power station which, that year, operated at 61.5% of its capacity, i.e. 28.34 MW - less than a third the size of Forth Energy's proposed power station in Dundee.

⁷ Forth Energy plans to use filter bags, which are used at Steven's Croft, too: <http://www.power.mottmac.com/projects2/energyfromwasteandbiomassprojects/stevenscroft/>

and Scottish nitrogen dioxide standards and that those standards would be breached at two more locations for the first time.⁸ This would clearly be a strong ground for the application being refused. Forth Energy, however, then came up with an inventive argument to reduce the figure to 35 %. That way, it has made half of the toxic nitrogen dioxide from its proposed power station disappear – though only on paper.

Other forms of pollution:

Forth Energy predicts that the Dundee plant will produce 12,000 tonnes of ash each year. Much of it will be so toxic that it will need to be transported to special landfill sites. Furthermore, some pollutants will be discharged into the Tay Estuary, where they may well enter the human food chain (via fisheries). The main threat to marine life, meantime (disregarding the possibility of some accidental spillage), is thermal or heat pollution: water will be discharged at far higher temperatures than surrounding waters and such a temperature difference kills fish.

However Dundee City Councillors deferred their recommendation whether or not to approve the Biomass plant solely subject to an evaluation of air pollution.

Jobs and subsidies:

Forth Energy's Planning Statement, submitted in 2010, states that the power station, once built, would support 40 full-time jobs. It is now speaking about 70 such jobs in the media⁹, but it gives no reason for this sudden 'job inflation'.

Forth Energy expects to be eligible for subsidies, paid as Renewable Obligation certificates, and if it qualifies then those will be around £66 million a year (just for Dundee).¹⁰ This would be £1.65 million in subsidies for each of the 40 jobs promised in the planning application! £66 million a year could create many more jobs in other sectors.

In addition, reports of a major drive for tourism in Dundee, reported in the Courier on 18 April 2013, will be severely undermined if hoped-for cruise ships have to sit in the estuary alongside a massive incinerator pumping out carbon dioxide and other pollutants, and rail passengers approaching the refurbished station over the Tay Bridge have views of the new incinerator just beyond the V&A museum. This could easily result in lost business costing Dundee more than 70 jobs.

Efficiency:

When Forth Energy put in its four initial planning applications in 2010, it gave efficiency figures for just one of them – Rosyth. That power station (the same design and size as that proposed in Dundee), it said, would be just 29% efficient without heat use.¹¹ This means that more than two of every three trees cut down to fuel the power station will be entirely wasted as uncaptured heat.

Recently, Forth Energy has been presenting all of its proposed power station proposals as 'combined heat and power'. This is hardly surprising: The Scottish Government has decided that biomass power stations that size will only be subsidised if they meet that definition – and

⁸ Table 11 of the Air Quality Addendum

⁹ <http://www.thecourier.co.uk/news/local/dundee/controversial-dundee-harbour-biomass-plans-resurrected-1.81735>

¹⁰ This is based on the average price per ROC between April 2012 and March 2013, which was £41.42 and on the assumption that the power station would meet the very low requirement for being classed as 'combined heat and power' and thus attract 2 ROCs per MWh of electricity.

¹¹ <http://www.forthenergy.co.uk/pdf/biomass-project-update-rosyth/06%20S36%20Supplementary%20Information/01%20-%20CHP%20Feasibility%20Study-%20Rosyth.pdf>

without subsidies, it would not be financially viable. However, the Scottish Government also decided to make it very easy for energy companies to have power stations classed as 'combined heat and power'. They would only have to use or supply a very small amount of heat to achieve 35% efficiency or even less (half the level required by the EU). They could, in theory, use some heat just to dry woodchips.

Back in 2010, Forth Energy published a "CHP Feasibility Study" (which it was obliged to do). This showed that, unsurprisingly, there are many houses and businesses near the site which are using heat – but that a district heating network would be needed to supply such heat from the power station.

However, installing a district heating network needs significant capital investment and Forth Energy has not offered to help pay for one. Nor has anybody else – and local authority budget cuts would make it impossible for Dundee City Council to carry the cost. There is no single big 'heat customer' nearby – if Forth Energy was to, for example, supply heat to a nearby swimming pool, that could at best improve the efficiency from 29 to 29.3% - i.e. it would make no real difference. Even if it could supply heat to the nearby Nynas oil refinery, this would at best amount to less than 7 MW of heat according to Forth Energy's own figures.

Sustainability and climate impacts:

Forth Energy says that it will, at least initially, import up to 90% of the wood. Its application would allow it to burn wood from anywhere in the world, although in the short term, most of it is likely to come from the southern US and Canada.

In the southern US, the last remaining, highly biodiverse and carbon-rich forests are currently being cut down for biomass as well as for pulp and paper. Once logged, they are being turned into monoculture tree plantations which support little or no biodiversity but deplete soil and water. Those could soon be plantations of genetically engineered eucalyptus, which will pose an even greater threat to natural forests and which use vast amounts of water – in a region suffering from ever worse droughts already.

In Canada, state governments are allowing logging companies to cut ever more wood, thus destroying the country's biodiverse forests and releasing their carbon at an ever faster rate. Companies claim that clearcutting then burning beetle-infested wood is sustainable, yet many studies show that this prevents forests from re-generating in future and releases far more carbon than leaving infested forests alone.

Forth Energy says that it will be buying wood certified as 'sustainable', but under the schemes it cites, even clearcutting oldgrowth forests, wiping out biodiversity, logging watersheds and other highly destructive practices have all been certified as 'sustainable'.

It has not yet signed any contracts for 'sustainable' timber supplies, and will have to secure these in a global marketplace where demand is growing fast. As demand is met in one place, this puts pressure on other places to supply timber, rather than growing food or remaining as natural forest. Poor communities are pushed off their traditional lands as governments sell it off to big companies. This is well documented with the rush to biofuels, stimulated by European regulations. Pressure to grow trees and crops for fuel for export has displaced and impoverished communities, resulted in destruction of tropical forests, and contributed to rising global food prices. Yet all indirect social, environmental, climate and economic impacts are ignored in the sustainability criteria proposed by Scottish Government.

Carbon Debt

Per unit of electricity, biomass power stations emit around 50% more carbon dioxide from their smokestacks than coal power stations. Those smokestack emissions are being ignored because it is argued that new trees will grow back and re-absorb all that carbon dioxide. Yet even if this was to happen – of which there is no guarantee – it takes minutes to burn a tree

yet decades for a new one to mature. Many scientific studies show that the impacts on the climate are even worse than those from coal power stations for a period of several decades. Figures recently released by DECC confirm this¹². Yet the Scottish and UK Governments accept that emissions must be brought down rapidly if we are to have any hope of avoiding the worst impacts of climate change – we cannot afford to increase them further for decades to come.

For more details about the impacts of biomass power stations on forests and climate, see http://www.biofuelwatch.org.uk/2012/biomass_myth_report/ and a list of scientific studies at <http://www.biofuelwatch.org.uk/resources-on-biomass/>.

So if it's such a crazy idea, why is it happening?

For the companies concerned, it makes obvious sense, as they will get a reliable source of profits for 25 years, and Forth Ports will make good use of its port facilities. But this only works with the subsidies provided from household energy bills, thanks to the Scottish Government's recent dramatic shift in policy.

That policy states that "*wood-fuelled biomass should be used in small heat only and CHP applications, off gas grid, at a scale appropriate to make best use of both the available heat, and of local supply*" (source – Scottish Government). The biomass plants proposed by Forth Energy would be precisely the opposite – large scale, mostly for electricity production, highly inefficient as a result, using imported timber, in urban locations already on the gas grid.

Despite its obligations to promote improvements in air quality, and reduce carbon emissions, Scottish Government has backed itself into a very tight corner. It has renounced further development of nuclear energy (for good reasons), and has made a political commitment to generate 100% of electricity demand from renewable sources by 2020. This is to demonstrate its world-leading position on climate change and its faith in the growth of the renewable energy sector, which is to be applauded in principle. Unfortunately it is starting to look unrealistic as commercial realities slow the development of offshore wind energy. So biomass is now looked at as one way of helping achieve this target (and, as Energy Minister Fergus Ewing told the Scottish Parliament on 16 January this year – "People expect us to keep the lights on").

But the Government is not being honest with the public – the Minister still repeats the previously-stated policy, whilst pushing through changes which are completely contrary to it. He will leave a legacy of expensive and inefficient power stations, adding to already dangerous levels of air pollution, by burning timber from abroad, and thereby contributing to climate change, disruption of communities, and loss of biodiversity. All paid for by the public through our energy bills.

The people of Dundee need to tell their elected representatives that this is unacceptable. The price of sticking to a rash political commitment made in the heat of an election campaign is too high – in terms of our health, our energy bills, and our impacts on the environment and people around the world.

19 April 2013

¹² See http://www.foe.co.uk/news/this_changes_everything_39485.html