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Government consults on the continuing eligibility of geo-pressure for inclusion within the RO

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Q & A to help you understand the issue

Q: What is renewable energy?

A: The Renewables Obligation Order does not define renewable source nor set out a list of those technologies which qualify. Dictionaries define renewable energy as :
"any energy source that is naturally occurring and that cannot in theory be exhausted e.g. solar energy, tidal, wind or wave power, geothermal energy" and/or
: "a source of energy that is not depleted by use, such as water, wind, or solar power."

The UK Renewable Energy Advisory Panel (DTI 1992) defined renewable as "Energy flows that occur naturally and repeatedly in the environment and can be harnessed for human benefit. The ultimate sources of most of this energy are the sun, gravity and the earth's rotation. Geothermal heat is also regarded as renewable."

Q: What is geo-pressure?

A: It is a naturally occurring and renewable form of energy which originates hundreds or thousands of metres below ground. It is responsible for such diverse natural phenomena as artesian water, hot-water springs, geysers, volcanoes and earthquakes. It is geo-pressure which allows us to extract oil, gas and water from the ground.

A report requested by the DTI (now the BERR) and commissioned by 2OC explains how geo-pressure is constantly renewed and subject to change. In 'The nature and source of sub surface or geo- pressure' Dr Tony Batchelor states:

"One of the principal mechanisms of excess pressure is the compaction and development of seals in the sediments as they are buried.....in addition...the rocks can then be elevated by tectonic processes, lifting the trapped pressures higher up

in the sequence. Other processes such as chemical reactions, various in situ cracking reactions and volume changing actions also impact the generation of high pore pressures....All the processes are occurring at the present day in one form or another at various locations."

In summary, while planet Earth continues, so will the creation of geo-pressure. We believe this meets the renewable energy definitions detailed in answer 1 above.

Q: How are 20C planning to use geo-pressure?

A: We tap into the geo-pressure contained within natural gas reservoirs. This is 'carried' by the natural gas. It is the most economic potential source of geo-pressure in the UK because there is existing infrastructure in place. By exploiting this particular form of geo-pressure which is zero carbon we would help to mitigate the CO2 emissions caused by the burning of the natural gas. Geo-pressure does not use or burn any gas. The natural geo-pressure which drives gas into and around the pipelines and into our homes and factories is so great that it has to be reduced at pressure reduction stations across the UK. We will tap into that excess pressure and use it to drive turbines, which will produce clean electricity.

Q: But you are using gas and that's a fossil fuel, so it's not renewable energy is it?

A: No we are not and yes it is! No gas is used or burned in the process. We just use the natural pressure in the pipeline. Geo-pressure is natural, regenerating and totally carbon free.

Q: The UK has pretty well used up its gas fields, doesn't that mean geo-pressure is not renewable?

A: The UK still has significant gas and oil reserves, anything from 16 to 25 billion barrels of oil equivalent. To date, we have used 37 billion barrels from UK fields. The recent government White Paper on Energy acknowledged "fossil fuels will continue to be the predominant source of energy for decades to come." It concluded that we must "sustain and improve existing production from mature fields and improve environmental performance with specific technology development." Our geo-pressure expansion turbines do just that.

We can either choose to gain extra and clean energy from the geo-pressure that brings natural gas to end-users or not.

Q: If geo-pressure is renewable, how come you have to use compressors on the pipeline?

A: In a word: friction. When gas flows through a pipe it generates friction which manifests itself as a gradual loss in pressure the further the gas has to be transported. As Dr Tony Batchelor concludes "On long pipelines, compressors are used to compensate for the friction losses in the pipelines and to maintain the pressures, but the initial pressure always comes from the sub surface geo-pressure element." A

series of 24 compressors are used to maintain a minimum “top-up” pressure and to store surplus gas. So, the compressors’ main purpose is to manage the overall system - topping up the natural renewable pressure. As part of its climate change strategy National Grid is implementing a programme of installing electric compressors driven by green energy to top up the pressure as described above and to address its temporary storage needs in the operation of its sites.

Q: If geo-pressure is so good, why does it need a subsidy in the first place?

A: Because although we know this technology works, it is expensive to set up and without initial help from the government via the RO, we could not gain the financial support from the private sector. Extracting natural gas is profitable, but current electricity prices mean exploiting the geo-pressure is not. In other parts of the world geo-pressure is supported. This is what the RO price support mechanism is all about and why we were delighted to have won inclusion last December.

Q: Is geo-pressure being used to create energy in other parts of the world?

A: Today, there are approximately 7500 plants worldwide exploiting this naturally occurring and inexhaustible, geothermal and geo-pressure energy. The USA, Canada, Switzerland, Italy, The Netherlands and Germany make use of the source. No one is exploiting geo-pressure in the UK apart from 2OC and we believe the technology we are developing will become world-leading and make a huge contribution to reducing global carbon emissions and contribute eventually to UK export earnings.

Q: Have you any customers?

A: National Grid who own and operate the gas transmission system in the UK, and deliver gas to over 11 million homes and businesses in England, has signed a deal with 2OC to build 2 pilot projects in London. There are at least 200 brown field sites across the UK which could install our turbine and begin producing locally generated clean electricity within a very short space of time.

Q: What does the green lobby have to say about geo-pressure and 2OC?

A: They are backing us. Friends of the Earth, Greenpeace and The Climate Group, all think it’s a brilliant way to reduce the UK’s carbon emissions within a very short time and are promising to write to the BERR in our support.

Q: So, if you retain your RO status, what exactly could you do for the climate?

A: Geo-pressure will be able to deliver anything between 4 and 6.6% of the total UK goal on emissions reductions by 2020.

2OC estimates that we could deliver close to 1GW of carbon free electricity to the UK – the equivalent of the output of a nuclear power station, and save around one million tonnes of carbon being dumped into the atmosphere per year from other generating plants that use fossil fuels.

Q: So, where does all this leave geo-pressure, 2OC and the government?

A: OFGEM and the BERR (then known as the DTI) accepted in December 2006 our legal and scientific submissions that geo-pressure should qualify for inclusion within the RO. 2OC and National Grid are now collaborating to develop it. Green groups have expressed their satisfaction with this new and exciting way of generating clean electricity which is currently unexploited.

On the day the government published its Energy White Paper, Meeting the Energy Challenge, (May 23rd 2007) it also published a consultation document on the future of RO. This states:

“The Government views the eligibility of electricity generated from geo-pressure where it occurs in conjunction with fossil fuel (e.g. natural gas) as an anomaly in the legislation and wishes to exclude geo-pressure associated with fossil fuels from the RO on the grounds that it is not a renewable source of electricity. Geo-pressure not associated with fossil fuels will continue to be eligible. “

So, in December 2006 2OC wins RO status for its geo-pressure and in less than 5 months is threatened with losing it. If that should happen, National Grid say it is not financially viable.

Q: I feel strongly about this, whom should I contact?

A: The BERR is asking for opinions on geo-pressure and fossil fuels before making a final decision on whether to confirm or remove our inclusion within the RO. Responses must be received by September 6th. Your opinion counts. Please do what Friends of the Earth, Greenpeace, The Climate Group and others are doing and write to the BERR urging it to think again. Please write, fax, e-mail or phone your views to:

Stephen Clark

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