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Submitted to **Consultation on a Scottish Energy Strategy: The future of energy in Scotland**
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## About You

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**Are you responding as an individual or an organisation?**

Organisation

**What is your organisation?**

**Organisation:**
Wind Farm Analytics Ltd

**The Scottish Government would like your permission to publish your consultation response. Please indicate your publishing preference:**

Publish response with name

**We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish Government to contact you again in relation to this consultation exercise?**

Yes

## Questions

**1 What are your views on the priorities presented in Chapter 3 for energy supply over the coming decades? In answering, please consider whether the priorities are the right ones for delivering our vision.**

**1What are your views on the priorities presented for meeting our energy supply needs?:**
The five priorities listed in section 66 include 3 good priorities and 2 bad priorities.

Bad priorities are (a) continuing support of North Sea hydrocarbons as a source of fuel – this is bad because we should not be using any hydrocarbons as fuel and we do not need to – hydrocarbons should stay in the ground; and (b) supporting demonstration and comercialisation of carbon capture and storage – this is bad because CCS is not viable in terms of economics, technical efficiency, pollution or climate safety – CCS is a misleading dishonest excuse to carry on burning fossil fuel and CCS is only an experimental technology, totally immature, risky and inappropriate for a national energy policy. The basic problem is that even if you did capture 100 years of all the world's carbon dioxide in an underground cavern then one day there will be an earth quake or a malfunctioning oil and gas industry valve and it will suddenly seep out catastrophically through.

Does Scotland want to be misleading and dishonest? Building policy on a lie will come back to bite you.

Good priorities are (c) exploring the role of new energy sources in Scotland's energy system, (c) increasing renewable energy generation and (e) increasing flexibility, efficiency and resilience of the energy system. It should be clear that the very best way to achieve both (d) and (e) is to deploy large scale pumped hydro energy storage which is ideally suited to Scotland, tried and tested technology, cheapest for consumer, and has the correct scale to handle variable renewables without any significant carbon emissions of its own.

I would like to say that the draft energy policy is good in many ways, especially in recognising the whole system challenges including transport and heat, but the policy does need improvement by rebalancing the emphasis further toward renewable energy and pumped hydro energy storage as well as pure green hydrogen networks independent of fossil fuel and the CCS myth.

**2 What are your views on the actions for Scottish Government set out in Chapter 3 regarding energy supply? In answering, please consider whether the actions are both necessary and sufficient for delivering our vision.**

**What are your views on the actions set out which support these priorities?:**
Refering to all of the oil and gas industry support actions listed on page 32 - these actions should be removed because we should be happy for cessation of oil and gas recovery; since the oil and gas industry has had it so good for the last century and if they are really worth so much money then Scottish and UK government should not be supporting them in any way; the reason for human existence is not purely to earn revenue; we have to recognise by now that human

progress requires cessation of oil and gas recovery and that alternative technologies already exist; we can thank the fossil fuel industry including coal, oil and gas for the positive aspects of industrialisation and assisting our heating and cooking but its now time to move on and encourage our fossil fuel engineering expertise into pure renewable engineering. If not then you are holding back Scotland and the UK in the coming centuries.

The only fossil fuel action worthy of government policy should be “assist fossil fuel companies in employing staff working 100% of their time on renewables – this could be done by reducing employers national insurance contributions for every new job working strictly 100% on renewables”.

Refering to climate support actions on page 35 – its is high time that government relaised that green hydrogen is fully demonstrated and viable clean transportation technology and can be cheaper per mile than diesel but the hydrogen must come from renewable energy, not fossil fuel and pure hydrogen pipelines are needed since the hydrogen must remain pure for efficient hydrogen fuel cells; we don't need demonstrator projects, we need bulk roll out and by doing this now we can gain economic advantage – an improved action for hydrogen would be
“commit to 25% of publically procured vehicles including police, NHS, council vehicles to be hydrogen fuel cell vehicles powered with green hydrogen from local renewable energy, and to build one green hydrogen filling station per population centre of 50000 people by the year 2020 connected by pure green hydrogen pipeline to renewable energy source electrolysers (such as at local wind farms); also to open up these green hydrogen filling stations to the public and to business”

Refering to support actions for Carbon Capture and Storage (CCS) on page 36 – CCS technology is considered totally unviable by many from the point of view of ecomomics, efficiency and climate safety – many of us believe it is just a trick to carry on burning fossil fuel and to make the consumer pay even more; if there is any action worthy of government policy then as an important safeguard it must be:
“Employ independent academic scrutiny of CCS efficiency and on any CCS research projects funded by government require open data reporting and independent inspection of the quantity of fossil fuel input and quantity of carbon dioxide sequestered in order to properly assess CCS viability or lack of viability”.

Refering to support actions for onshore wind on page 40 it would be helpful for lowering consumer cost as well as decarbonisation whilst simutaneously improving protection of areas of natural beauty to:
“further establish a number of strategic large scale regional planning zones where cheap onshore wind and large scale cheap pumped hydro energy storage are expressly encouraged whilst simutaneously setting up equal land area equivalent zones of protected natural beauty where such developments are not appropriate. This should be done strategically and sensitively balanced with regard to the natural environment as well as the natural energy resource.”

refering to actions listed on page 50, in particular on pumped hydro energy storage: “reiterate the proposal for the UK Government to implement a ‘cap and floor’ regime to provide a more appropriate regime for PHS and work with key stakeholders to realise the opportunities and overcome the barriers to deploying new PHS capacity in Scotland”...

It is correct and important to support pumped hydro and actually this is the single most important thing for Scotland's energy system right now. However, the mention of “cap and floor” as a possible support mechanism is very bad because it is anticompetitive and therefore costly to the consumer and gives the false impression that energy storage, needed by renewables, has to be expensive. The following text explains a viable and costed alternative mechanism which will incentivise large scale pumped hydro investment whilst actually reducing cost to the consumer.

The cap and floor pricing which is mentioned without any detail in the draft Energy Strategy may not be so great for pumped hydro and our energy system security because the cap and floor mechanism will end up eliminating price signals. For instance a cap and floor on annual revenue would mean that if the revenue cap is earnt by end of March then there is no incentive for the asset owner to operate any further for the rest of the year. In fact the logical asset owner would keep their machines idle for the rest of the year so as to avoid wear and tear and reduce long term O&M costs. If a revenue floor is set too high then the asset owner may not operate their machines at all. If a revenue cap is too low then it will disincentivise investment. If a revenue floor is too low then it might as well not be there. If a revenue cap is too high then it does not protect the consumer as intended. The setting of appropriate cap and floor levels is an arbitrary and risky approach.

We must support investors but ensure response to market price signals all year round:
Wind Farm Analytics agrees that we need to assist with long term certainty for energy storage investors because the present market is not delivering cost effective large scale energy storage such as pumped hydro which has long construction times before revenue flows as well as uncertainty in future market price conditions. We need a support mechanism which assists competitive investors to deploy large scale energy storage but leaves them free to trade in the market where price signals will encourage the competitive deployment of energy storage. The great thing about energy storage is that it responds very well to market price signals and system need – when price is low then energy storage will store and when price is high then energy storage will deliver.

Competitive auction rounds lowering cost for consumer:
Government wants to deliver value for the consumer and a suggestion of how to achieve this is to employ competitive auction processes and large scale Energy Storage Capacity Market (ESCM). The auction should competitively minimise the required support price per MWh of energy storage capacity. Its also important for renewable energy generator owners and achieving decarbonisation targets that we deploy the cheapest energy storage, otherwise renewable energy generators may suffer reputational damage by being blamed for grid instability and higher costs for the consumer thanks to unnecessarily expensive energy storage (such as large scale lithium batteries, although these may have their place for some specific services such as enhanced frequency response which already had its own auction). Note that a cap and floor system cannot be deployed in a fair auction-style competition because an auction competition requires a single price parameter (such as support price per MWh of energy storage capacity) whereas cap and floor together constitute two prices. A competitive auction should establish who will build the energy storage for the least investment support per MWh of capacity.

Multiple auction rounds allow adjustable strategic planning:
The possibility of multiple auction rounds enables whole system long term strategic planning for energy security and accomodating existing and future renewable generators on the grid, as well as enabling electrification of heat and transport. A first round in 2018 might call for 1000 MW x two days storage duration = 48000 MWh energy storage capacity. A second round in 2019 might call for 3000 MW x 48 hours =144000 MWh. A third round in 2020 might call for 6000 MW x 48 hours = 288000 MWh. In this example we would then be able to handle 2 days without 10 GW of wind capacity. Its just an example and grid strategists could obviously tune it as required. There is certainly a need for large scale bulk energy storage as demonstrated by many of our largest wind farms dumping between 10-30% of their annual energy through curtailment when the grid cannot handle their variability – some of those individual wind farms are dumping many

thousands of MWh in a single night which is well beyond the capacity of the world's largest lithium battery, recently reported as 120 MWh.

No money required up front:
What does this cost? Imagine that the average lower (winning) auction price was £5000 per MWh energy storage capacity. We could imagine the winner(s) might be tried and tested, long life (75-100 year), large scale (such as 1000 – 100000 MWh per single installation) pumped hydro energy storage but the auctions can welcome all energy storage methods – if alternative or innovative energy storage systems can be cheaper for the consumer then let them compete in the auctions. Imagine one or many pumped hydro projects were offered to be built for the first auction of 48000 MWh. This would imply the auction winning competitive investors would get £240 million support toward constructing 48000 MWh capacity. Imagine the actual construction costs were £1200 million for 48000 MWh, then £240 million investor support would amount to a 20% capex reductiion. No money is required up front! I suggest that the money is paid monthly or annually over ten years of operation. If the support for this 48000 MWh is £240 million then this amounts to £24 million per year for ten years, or £500 annually per MWh of energy storage capacity, paid over ten years.

How would investors be paid?
Energy Storage Use of System (ESUoS) charging can be introduced in proportion to annual metered MWh. So all generators attached to the grid will share equally the cost of energy storage in proportion to their annual energy generation. Transmission and Distribution Network Use of System charges (TNUoS/ DNUoS) are shared by all, so why not energy storage? Energy storage is just as important to our energy security as the transmission and distribution network so lets share the cost through an Energy Storage Use of System (ESUoS) charging system. Also, it is argued that energy storage should be exempt from transmission and distribution Use of System charging, although this is a separate issue. The investors would be paid by the relevant ESUoS funds raised at the end of each year/month of operation (for the first ten years I suggest as a reasonable investor timeline). Most importantly the operational asset owner will trade their asset freely (without any constraint except some basic safeguards such as they must be connected only in GB and not France) in the markets responding to price signals as efficiently as possible to determine whether the unit will store or deliver.

What does it cost?
Let us imagine average GB power is 40000 MW through the year – this is a ballpark figure although may have reduced a bit in recent years. There are 8760 hours in a year so this equates to approximately 350 million MWh of generation. Therefore the annual cost of our first auction of 48000 MWh energy storage capacity would be £24 million shared between 350 million MWh of generation, ie £0.06857 per MWh (less than 7 pennies per MWh).

What effect would this have on consumer bills?
EU statistics show that the GB consumer pays around £165 per MWh. Therefore if this cost was passed onto the consumer directly it would only amount to £0.06857/£165 or 0.042% on the electricity bill. Similarly if we increased the energy storage capacity from 1 GW to 10 GW for 48 hours then the cost would still only be a minor fraction of the electricity bill at 0.42%. This is an insignificant cost considering the benefits.

In fact the increased flexibility offered by large scale energy storage and avoidance of curtailment waste, as well as better utilisation of existing grid, would probably end up saving the consumer considerably. For instance, the Carbon Trust and Imperial College London have produced a report indicating that increased flexibility through large scale energy storage such as pumped hydro could save the UK consumer between £2.4 billion per year (equivalent to around £50 savings per average consumer bill) and £7.0 billion per year.

**3 What are your views on the proposed target to supply the equivalent of 50% of all Scotland's energy consumption from renewable sources by 2030? In answering, please consider the ambition and feasibility of such a target.**

**What are your views on the proposed 2030 target of 50% of Scotland's energy consumption being met by renewable energy?:**
Fifty percent of all energy (including heat and transport) by 2030 is a great target. We should just be clear that this will be directly achieved by increased renewables combined with pumped hydro energy storage, and with pure green hydrogen transport allowed a level playing field (by providing the consumer a green hydrogen refuelling option) with battery electric or transport, and with district heating and electrification of heat. All this is tried and tested reliable technology – very straightforward, clean, local, economically beneficial and honest.

**4 What are your views for the development of an appropriate target to encourage the full range of low and zero carbon energy technologies?**

**What steps can be taken to make Scotland the first place in the UK to see commercial development of 'subsidy-free' renewables?:**
Look, academic and industrial research and innovation is all well and good. However, government policy needs to be strategic and logical. There is a lot of rubbish spoken about being "technology neutral" and "not picking winners" but this is not strategic. We should pick the best technologies and recognise which are better than others.

For instance its all well and good to back lithium battery energy storage for very fast enhanced frequency response services on the grid, but for bulk energy storage lithium batteries just don't cut it – the largets lithium battery in the world was recently reported as 120 MWh whereas many of our individual large wind farms are dumping thousands of MWh in a single night due to wasteful curtailment instructions – this is one reason why we should make the logical technology choice of pumped hydro which is cheap, tried and tested technology with the correct scale.

Therefore we should specifically incentivise pumped hydro whilst leaving the door open to new innovations in energy storage. Similarly onshore wind is tried and tested low carbon low cost and we should find a way to deploy more of it now whilst keeping the door open to alternatives such as wave and tidal by funding research and development.

Lets pick what's best now, but leave the door open to innovations to be proven!

**5 What ideas do you have about how the onshore wind industry can achieve the commercial development of onshore wind in Scotland without subsidy?**

**What are your views on the future of thermal generation in Scotland, with a particular focus on repowering Scotland's existing thermal generation sites?:**
Incentivise pumped hydro energy storage and especially (electrically) co-located wind pumped hydro energy storage. An economic support mechanism which will deliver actual savings for the consumer and assist decarbonisation will be Energy Storage Capacity Markets and Energy Storage Use of System charges. This is described in detail

Establish numerous strategic planning zones around the country for wind pumped hydro, but for every quare kilometer of such zones make sure to protect an equivalent square kilometre as national park or similar protective designation which will be free of energy development and overhead lines.

### 6 What are your views on the potential future for Scotland's decommissioned thermal generation sites?

**What are your views on the role of hydrogen in Scotland's energy mix and what can government do to support this?:**
Where possible convert them into zero emission district heating centres.

Convert turbines into green hydrogen turbines energy storage and for electricity generation and simultaneously capture the heat for district heating.

Incorporate green hydrogen storage tanks, no need for dirty leaky underground caverns – large conventional hydrogen storage tanks will be fine, above ground or under ground.

Where possible convert them into green hydrogen chemistry such as green ammonia production for agricultural fertiliser.

### 7 What ideas do you have about how we can develop the role of hydrogen in Scotland's energy mix?

**What are your views on the on the four priority areas for a transformation in energy use?:**
As above we need an equal playing field for hydrogen transport by allowing the consumer to refuel hydrogen fuel cell electric vehicles (FCEVs) with their 3-minute refuelling time and 500 mile range, as well as battery electric vehicles (BEVs). Anyone can plug in a BEV to the infrstructure and government has spent millions on fast charging points but there is no refueling infrastructure for superior hydrogen vehicles.

It would be good if government committed to an equal number of hydrogen FCEVs as BEVs within all possible publically procured vehicles such as police, NHS, council vehicles with exemptions only where specific operational requirements merit. For instance one could require 25% hydrogen vehicles and 25% battery electric vehicles by 2020, perfectly achievable and a bit more ambitious.

No more demonstrator projects – everything has been well proven and we now need to deploy at scale!

Then open the hydrogen filling stations up to the public including private citizens and businesses.

Importantly hydrogen must be green hydrogen from local renewable generators such as electrolysers splitting water on wind farms to obtain very pure hydrogen and very pure oxygen, also useful.

Hydrogen from fossil fuel should not be allowed. Impure hydrogen cannot be allowed. It is important to transport the hydrogen using the cheap method of pure hydrogen pipeline.

The best use of green hydrogen is for green hydrogen transport. It is wrong to inject hydrogen into the natural gas grid because then this perpetuates the use of fossil fuel and renders the hydrogen impure and impossible to use for hydrogen fuel cell transport becase the hydrogen fuel cells require very pure hydrogen which cannot be viably extracted from a natural gas/hydrogen mix. Therefore green hydrogen should be transported in a separate pipeline network, or else the natural gas network should be converted to pure green hydrogen in stages, such as proposed for Leeds.

Require 50% of all new buses to be hydrogen fuel cell by 2020. Simultaneously require all local bus manufacturers to manufacture hydrogen buses in return for supply contracts. Incentivise local hydrogen fuel cell manufacturing. Incentivise local electrolyser manufacturing. Incentivise hydrogen pipeline, hydrogen compressor and hydrogen storage tank manufacture. Create jobs.

Invite and incentivise local hydrogen fuel cell vehicle manufacturing for passenger cars and other vehicles.

Capture wind farm / solar curtailment energy using electrolysers. For instance close to Glasgow we have Whitelee wind farm dumping thousands of MWh in energy every night. This can be used to generate hydrogen essentially "for free". Why don't we install 50 MW of electrolyser capacity at Whitelee, get all the buses in Glasgow running on hydrogen with zero pollution, get thousands of other hydrogen vehicles deployed. It will be cheaper per mile than diesel -w e just need the scale in order to justify initial capex costs of infrastructure. Vehicles get renewed anyway over time and hydrogen vehicles do not cost that much more and can be leased.

### 8 What are your views on the priorities presented in Chapter 4 for transforming energy use over the coming decades? In answering, please consider whether the priorities are the right ones for delivering our vision.

**What are you views on the specific actions identified under each priority area?:**
On page 58 "In addition, by 2032 the proportion of ultra-low emission new cars and vans registered in Scotland annually is expected to reach or exceed 40% by 2032" should explicitly refer to hydrogen as follows:
"In addition, by 2032 the proportion of ultra-low emission new cars and vans registered in Scotland annually is expected to reach or exceed 40% by 2032, at least half of which should be hydrogen vehicles"

It would be better if the commitments to ULEVs (ultra low emission vehicles) would explicitly provide concrete support to hydrogen fuel cell EVs (hydrogen

FCEVs) in addition to battery EVs (BEVs), including roll out of hydrogen refueling infrastructure concrete commitments such as one green hydrogen filling station per local community of 50000 people. We need a level playing field for green hydrogen.

**9 What are your views on the actions for Scottish Government set out in Chapter 4 regarding transforming energy use? In answering, please consider whether the actions are both necessary and sufficient for delivering our vision.**

**What are your views on how best to reflect the EU ambition to implement a EU wide 30% energy efficiency target to 2030?:**
It is silly to rely on battery electric vehicles as a source of energy storage for the grid because lithium batteries have high cost and low lifetime. If you try to do this then people and businesses will have to give up already limited EV driving range and their vehicles will wear out prematurely due to overcycling of the batteries. Batteries lose efficiency with even modest age such as 6 years. High efficiency is critical to cost effctive energy storage.

High efficiency tried and tested long life cheap pumped hydro should provide our cost effective energy storage whilst allowing competition in case someone can develop a new technology capable of competing but it won't be lithium batteries except for very specialised enhanced frequency response service which has nothing to do with the necessary bulk energy storage.

Please do not dream about electric vehicles providing the needed bulk energy storage. Its not viable or cost effective. Also lithium supplies are not local or infinite.

**10 What ideas do you have about what energy efficiency target we should set for Scotland, and how it should be measured? In answering, please consider the EU ambition to implement an energy efficiency target of 30% by 2030 across the EU.**

**10:**
Fossil fuel plant, gas boilers and combustion engines are very inefficient.

Some people question efficiency of wind turbines or solar panels but please take note that efficiency may be desirable but is much less important in relation to a resource which is locally abundant, zero cost and will never run out (such as wind or solar power).
Whereas for fossil fuels which are expensive and will run out and may require export of national wealth to an insecure foreign supplier then efficiency certainly is important.

District heating systems can will improve domestic heating efficiency greatly.

**11 What are your views on the priorities presented in Chapter 5 for developing smart, local energy systems over the coming decades? In answering, please consider whether the priorities are the right ones for delivering our vision.**

**What are your views on the priorities presented for delivering a smarter local energy system?:**
Local and community are not mathematically well defined. We have a concept about our locality and community but our neighbour may have different ideas.

For instance people living near a remote wind farm are directly impacted by its visibility but people in a distant city are also impacted in terms of overall pollution, cost of energy and decarbonisation of our energy system. Where do you draw the line? Direct line of sight? 10 km radius? Nearest 1000 residents as the crow flies? Nearest 100? Its not easily defined. Some developments have very few neighbours and some devlopments have many.

Ultimately we are all one community and therefore it is arguably simpler that local community benefits could be made available to all and it is therefore not a local bribery mechanism to help get projects through planning. Why has it become the norm that a wind farm developer has to produce a community fund? Its almost like an additional tax or cost of doing business. Why are we taxing renewable energy businesses like this and not other businesses?

**12 What are your views on the actions for Scottish Government set out in Chapter 5 regarding smart, local energy systems? In answering, please consider whether the actions are both necessary and sufficient for delivering our vision.**

**What are you views on the specific actions identified under each priority area?:**
Smart local energy systems should also include pumped hydro energy storage and green hydrogen transport such incentivising and requiring green hydrogen ferries and bus services using locally generated green hydrogen.

**13 What are your views on the idea of a Government-owned energy company to support the development of local energy? In answering, please consider how a Government-owned company could address specific market failure or add value.**

**What role do you see for a potential Government owned energy company that would add value to the current landscape supporting the development of local energy?:**
If establishing a government owned energy company then one can consider a government owned transmission and distribution network company since these electrical grid networks are local monopolies anyway. Why should local monopolies get paid huge amounts of money paid for by the public and then pay dividends to private shareholders?

If one supports free markets then competition is essential and monopolies have to be avoided. Therefore the transmision and distribution grid companies are not free market companies and can easily be taken into public ownership. This will eliminate risk of conflict of interest and profiteering at the expense of the public. This would also enable strategic planning and investment for our collective energy security.

**14 What are your views on the idea of a Scottish Renewable Energy Bond to allow savers to invest in and support Scotland's renewable energy sector? In answering, please consider the possible roles of both the public and private sectors in such an arrangement.**

**What are your views on the need for a Scottish Renewable Energy Bond, the potential structure, and the role of both the public and private sector in such an arrangement?:**

I agree we should have a renewable energy national savings mechanism.

Everyone should have equal opportunity to invest in profitable wind farms whereas there is an ongoing hoovering up of the wind farm assets by the financial elite and savvy investors who obviously aim to deploy their capital logically and invest in profitable schemes, who can blame them? Meanwhile old age pensioners, financially unsophisticated or small time savers without trading accounts are getting ripped off by banks paying close to zero interest on savings accounts.

Why don't we have a nationally publicised saving rate of 5% based on revenue from approved projects, perhaps within strategic development zones, or perhaps required for all future projects getting through planning. The 5% rate should be accessible for every citizen of the country. It could be possible to limit the annual input as for an ISA savings account. It can be a kind of “CARES-Green-ISA” or “Scottish-Green-ISA”.

It could be a kind of medium term bond but small savers may need instant access account options, so other financial designs can be possible – surely the financial experts in Edinburgh or elsewhere can come up with a good scheme so that ordinary people can get a decent return on their logical investments.

It might be better if all participating shared ownership funds would be a common national fund so as to avoid any kind of local bias to projects in relation to local wealth and local population concentration. The participating projects need only pay the interest rate of 5% to the scheme on any funds received from the scheme, plus a small administative charge which should be kept to a minimum such as 0.25%, typical in efficient fund management. The overall fund can be a central pot applied nationally in proportion to the MW capacity of participating generation schemes.

This is not a tax on renewable energy but actually a national investment allowing community benefit and encouraging ordinary citizens to benefit from strategic infrastructure investment through a national savings scheme paying good interest.

**15 What ideas do you have about how Scottish Government, the private sector and the public sector can maximise the benefits of working in partnership to deliver the 2050 vision for energy in Scotland?**

**How can Scottish Government maximise the benefit of working in partnership with the public and private sector bodies?:**
The green hydrogen economy, district heating, pumped hydro and renewable energy all offer numerous job opportunities, cost reductions and other economic opportunities inluding exports if this partnership can be properly cultivated. This will achieve benefical transition to a low carbon future and maintain Scotland's position amongst the leaders of this transition rather than losing its position by being encumbered by the vested interests of the past.

**16 What ideas do you have about how delivery of the Energy Strategy should be monitored?**

**Do you have a view on the way in which the Energy Strategy is monitored?:**
In particular backing the experimental and uncertain CCS technology is very risky and all claims must be independently checked by academics, as well as requiring open data from any CCS projects for public scrutiny. Public money must not be tricked out of us just so that oil and gas companies can pump CO2 into depleting oil fields for enhanced oil recovery so that they can carry on with the economy and pollution of the past.

**17 What are you views on the proposed approach to deepening public engagement set out in Chapter 6?**

**What are you views on the proposed approach to deepening public engagement under the Energy Strategy?:**
The public should be aware that pure renewable energy and pumped hydro energy storage, green hydrogen transport and electric/district heating is a 100% green option available to us.

The public should be aware that mythical and unviable CCS is not needed and this is being driven by fossil fuel interests.

## Strategic Environmental Assessment (SEA) Questions

**18 What are your views on the accuracy and scope of the information used to describe of the SEA environmental baseline set out in the Environmental Report? (Please give details of additional relevant sources)**

**To what extent does the Environmental Report set out an accurate description of the current baseline? (Please give details of additional relevant sources):**
No comment.

**19 What are your views on the predicted environmental effects as set out in the Environmental Report?**

**19:**
No comment.

**20 What are your views on the proposals for mitigation and monitoring of the environmental effects set out in the Environmental Report?**

**20:**
No comment.

## Evaluation

**Please help us improve our consultations by answering the questions below. (Responses to the evaluation will not be published.)**

**Matrix 1 - How satisfied were you with this consultation?:**
Very satisfied

**Please enter comments here.:**
Thank you for the draft which is quite well thought through apart from to much faith in experimental unproven CCS technology and too much weight given to fossil fuel interests.

It would be better to have more concrete proposals regarding support for pumped hydro such as Energy Storage Capacity Market competitive auctions funded by cost effective Energy Storage Use of System charges.

It would be better to have more concrete proposals for the roll out of large scale green hydrogen transport and refueling infrastructure.

**Matrix 1 - How would you rate your satisfaction with using this platform (Citizen Space) to respond to this consultation?:**
Very satisfied

**Please enter comments here.:**
Thank you.