# Key Comments from Expert Dialogue on the USE IT Act & Carbon Capture Policy

Senator John Barrasso (R-WY), chairman of the Senate Committee on Environment and Public Works, reintroduced S. 383, the Utilizing Significant Emissions with Innovative Technologies (USE IT) Act, in February 2019. "America should reduce emissions through innovation, not punishing government regulations," Sen. Barrasso said. "The USE IT Act advances that goal."

The USE IT Act has bipartisan support from thirteen cosponsors—five Republicans and eight Democrats. It would support carbon utilization and direct air capture research, as well as expedite permitting for carbon dioxide pipelines to transport carbon dioxide to where it is used or stored.

The OurEnergyPolicy (OEP) expert community engaged in an online discussion on the USE IT Act, as well as carbon capture, utilization, and storage (CCUS) and carbon capture and sequestration (CCS). This document features comments from that discussion. Follow hyperlinks to view full comments and expert profiles. Read the entire discussion at http://bit.ly/2HuyiJN.

## Comment Highlights

"The bipartisan USE IT Act is a strong and necessary step in enabling market-driven carbon capture."
– ***Darren Goode***, *Communications Director, ClearPath* - Full Comment

"Senator Barrasso should be commended for this sensible, bipartisan proposal."
– ***Robert Grant***, *Director of International Policy, U.S. Chamber of Commerce* - Full Comment

"I believe the most important aspect of the act is stimulation and support of new uses of carbon in $CO_2$."
– ***Brian Gallagher***, *Owner/CEO/Managing Member, Ecotonics Inc.* - Full Comment

"I'd prefer the USE IT Act over doing nothing but not over a sensible carbon price."
– ***Brent Nelson***, *Associate Professor, Northern Arizona University* - Full Comment

"Carbon capture…on a massive scale is required to reduce net emissions to zero."
– ***Dan Miller***, *Managing Director, The Roda Group* - Full Comment

"Creating a market for $CO_2$… presents an additional financial incentive for creating it in the first place."
– ***Ken Dragoon***, *Managing Consultant, Ecofys* - Full Comment

"It's hard for me to imagine any use of captured $CO_2$ that would be large enough…. Sequestration/ storage is the only realistic option."
– ***Roger Arnold***, *Systems Architect, Silverthorn Engineering* - Full Comment

## 1. USE IT Act Support & Suggestions

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| **USE IT Act is a strong step for market-driven CCUS, allowing the U.S. to lead globally** | "**The bipartisan USE IT Act is a strong and necessary step in enabling market-driven carbon capture and realizing its benefits for American consumers, while also addressing climate change.** The scope of support on and off Capitol Hill for it is unusually broad, especially for a climate/clean energy proposal. **It's a great example of a politically and technologically pragmatic step** toward both addressing climate change/expanding clean and reliable power and **allowing the U.S. to lead the world in a technology that will be increasingly needed as China, India, and other developing nations particularly step up their fossil fuel generation.** Bravo to Sen. Barrasso and others who are leading the effort." Full Comment<br>– ***Darren Goode**, Communications Director, ClearPath* |
| **CCUS needs support to become commercial** | "**Senator Barrasso should be commended for this sensible, bipartisan proposal. Carbon capture, utilization, and storage continues to need government support to become commercial**, and most practical people realize that for energy security, as well as environmental reasons, we need to have more options available to broaden the energy mix." Full Comment<br>– ***Robert Grant**, Director of International Policy, Global Innovation Policy Center, U.S. Chamber of Commerce* |
| **Regulatory risk creates a large business disincentive; exemption for CCS test wells needed** | "Senator Barrasso, **Congratulations on developing bipartisan legislation that can help bridge the gap between current carbon capture technologies and a capture and utilization industry that can truly make a difference solving the immense global emissions problems we currently face**.<br><br>The price signal generated by 45Q tax credits is a start for new investment, but **the regulatory risk currently at play via the EPA, which administers the drilling practices regulation, still creates a large disincentive for businesses and investors interested in advancing the technology**. Development and deployment of new energy technology can take a generation (25–30 years) to move from initial deployment to material impact on an economy or ecosystem, so time is of the essence.<br><br>What is clear is that with private capital investment being key to successful deployment of any energy technology, **investment risk must be curtailed as much as legitimately and reasonably possible early in the development cycle.** As such, for the technology to advance, an **exemption for CCS test wells—specifically for Underground Injection Control Class VI geologic storage wells—needs to be written into law.**<br><br>Only then can the ambitions that the USE IT hope to embody be reached in a time frame that matters." Full Comment<br><br>– ***William Murray**, Federal Energy Manager, Energy Policy, R Street Institute* |

## 1. USE IT Act Support & Suggestions *(cont.)*

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| **How will power generation be compensated for installing CCUS? How will $CO_2$ pipelines be funded?** | "Senator Barrasso, Thank you for all your work on the Environment and Public Works Committee…. **Carbon capture and its transport for enhanced oil exploration benefit [the] oil and gas industry the most.** It puts a huge onus on Power Generation to install this costly equipment. **How will they be compensated** for that? What percentage of the $CO_2$ emissions that are captured will be utilized for enhanced oil exploration? **How will the pipeline structure that transports the $CO_2$ to the gas and oil fields be funded, will it be a P3 structure, government funded, or will it end up being charged back to the rate payers? There is already significant opposition to any pipeline structure.** States are being proactive and requiring environmental impact studies, **how will the FAST Act address this?**…." Full Comment<br>– ***Farangmeher Ghadiali***, *Plant Engineer, Panda Stonewall* |

## 2. Additional Policy Suggestions

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| **Cap and trade** | "Senator Barrasso, Perhaps the **least cost, least restrictive way to meet climate goals, an approach once championed by Republicans and even some in the fossil fuel industry is a Cap and Trade approach**. This brings market forces to bear directly on the central issue: the need to reduce carbon emissions. It has been employed successfully in several regions, both in the U.S. and abroad. The **two specific areas where the USE IT Act might be counterproductive** are: 1) **Capturing and sequestering carbon emissions is not the least cost means of reducing emissions** (far cheaper to prevent the emissions in the first place; and 2) **Creating a market for $CO_2$ effectively presents an additional financial incentive for creating it in the first place**. Both emission Cap and Trade and Carbon Tax approaches can be made revenue neutral by returning funds back to tax payers and/or energy users. I think either is a better approach than USE IT." Full Comment<br>– ***Ken Dragoon***, *Managing Consultant, Ecofys* |
| **$CO_2$ neutral trade-off structure** | "[I suggest] that Senator Barrasso explore maintaining the coal industry by **establishing a $CO_2$ neutral trade-off structure** by first subsidizing the replacement of fossil fuel burning end uses while examining the feasibility and costs of $CO_2$ release reduction processes…. By far, **the greatest low-carbon future challenge we face lies in getting the carbon out of the end use sectors**. This entails…hundreds of millions of fossil fueled space heaters and hot water heaters, etc." Full Comment<br>– ***Herschel Specter***, *President, Micro-Utilities, Inc.* |

## 2. Additional Policy Suggestions *(cont.)*

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| **Emissions collection fee** | "In the longer term, we should consider proposals, e.g. Klaus Lackner at Arizona State, to **treat carbon emissions as 'waste,' imposing a fee for 'collection'** that would help to **drive penetration of Direct Air Capture into the market**." Full Comment<br>– ***Wil Burns***, *Co-Director, Forum for Climate Engineering Assessment* |
| **Direct incentives for sequestration** | "While $CO_2$ utilization is a great initial application for CCS and DAC [direct air capture], such applications cannot scale to the levels needed, so **direct incentives for sequestration are also required**…." Full Comment<br>– ***Dan Miller***, *Managing Director, The Roda Group* |
| **Price on carbon, carbon fee and dividend** | "**Putting an actual price on carbon would help create economic incentives** for carbon capture and utilization (while not favoring that approach to carbon management over others, such as nuclear/renewables/ storage). In the meantime, **continued R&D funding on CCS and direct air capture** should continue to be pursued. **I'd prefer the USE IT Act over doing nothing but not over a sensible carbon price**." Full Comment<br>– ***Brent Nelson***, *Associate Professor of Mechanical Engineering, Northern Arizona University*<br><br>"**There is no market for sequestering $CO_2$ because we value the damage it does to society at zero.** If we put a significant price on carbon, there will be incentives to stop using fossil fuels and capturing and sequestering $CO_2$ when the use of fossil fuels still makes sense." Full Comment<br>– ***Dan Miller***, *Managing Director, The Roda Group*<br><br>"**Current market forces cannot support the large additional cost attendant to wedding CCS with current energy/industrial based systems**, much less the *much* higher cost of Direct Air Capture. The support provided under the proposed piece of legislation doesn't change that calculus much either. **What is necessary is to:**<br>**a.) Establish a realistic price on carbon that captures externalities in a honest and comprehensive fashion**; this needs to include the impacts of our emissions globally, not simply in the U.S., if we're going to meet our obligations under the Paris Agreement in an equitable fashion;<br>**b.) Implement a cap and dividend plan**…that scales up to conform roughly with the price of carbon. Only then will we provide the kind of meaningful incentives that will spur commercial enterprises to embrace CCS or Direct Air Capture." Full Comment<br>– ***Wil Burns***, *Co-Director, Forum for Climate Engineering Assessment*<br><br>"I agree with those who favor a **price on carbon**, thinking of it as **disappearing user fee** if the revenues are used to increase the availability of renewables. This particular proposal also proposes giving priority to low income and high pollution areas." Full Comment<br>– ***Joanne Ivancic***, *Executive Director, Advanced Biofuels USA* |

## 2. Additional Policy Suggestions *(cont.)*

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| **Price on carbon, carbon fee and dividend *(cont.)*** | "**I agree on the need to incentivize use of captured carbon**, both from direct air and from industrial processes. In my opinion, the best way to do this would be through a **Two-way Carbon Tax, under which emissions of carbon were penalized at a fixed rate (e.g. $25 per ton) and capture of carbon was reimbursed at the same rate**. Such a tax would reward all kinds of capture regardless of technology." Full Comment<br>– ***Ed Dolan**, Senior Fellow, Niskanen Center* |

## 3. Uses for $CO_2$

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| **Enhanced oil recovery** | "**Enhanced oil recovery is already a very well-established practice** and useful to the energy industry and is **a good place from which to further develop R&D and deployment** of this technology." Full Comment<br>– ***Robert Grant**, Director of International Policy, Global Innovation Policy Center, U.S. Chamber of Commerce* |
| **Cement, concrete, carbon fiber, enhanced oil recovery** | "It's true that the level of sequestration needed is an order of magnitude more than $CO_2$ reuse applications. However, some applications are not insignificant. **Cement/concrete from $CO_2$** could be several to 10 gigatons per year (10 GT of concrete is currently used each year) and **carbon fiber from $CO_2$ to replace steel** could also be several gigatons…. **Enhanced oil recovery** is currently the largest market for $CO_2$ and that's important because it is currently the only reason to develop and deploy carbon capture systems." Full Comment<br>– ***Dan Miller**, Managing Director, The Roda Group* |
| **Algal oil** | "**Congratulations on your USE IT act to develop practical uses of $CO_2$ emissions.** I believe the most important aspect of the act is **stimulation and support of new uses of carbon in $CO_2$**, which is exactly what we need and what I am trying to do with advanced systems and methods for economically growing microalgae for conversion to algal oil in my Algae Energy Farm concept…. **Zero or low-cost waste $CO_2$ (as well as certain nutrients) are essential for renewable algal oil to become a realistic substitute for declining conventional, and unreliable unconventional, supplies of crude oil**." Full Comment<br>– ***Brian Gallagher**, Owner/CEO/Managing Member, Ecotonics Inc., CA and Ecotonics LLC, FL* |
| **Calcium carbonate, biofuel, bio-fertilizer** | "Our Sidel Carbon Capture Utilization System will remove over 90% of $CO_2$ out of combusted coal exhaust…. Our sorbent reacts with the $CO_2$ and is transformed into **(1) calcium carbonate, (2) raw stock biofuel, and (3) bio-fertilizer**…. We have plans to build molds that would turn this calcium carbonate into large 'building blocks'…to be transported to those areas where these sea walls were most needed." Full Comment<br>– ***Sid Abma**, CEO, Sidel Systems USA Inc. & Sidel Global Environmental LLC.* |

## 4. Role of CCUS in Addressing Climate Change

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| **CCUS is necessary on a massive scale to keep warming below +2°C; no use of $CO_2$ will be enough** | "**Carbon capture (including direct air capture [DAC]) on a massive scale is required** to reduce net emissions to zero then have 10+ gigaton of *negative emissions* starting around mid-century in order to have a chance of keeping warming below +2°C…. **Promoting the development and deployment of CCS and DAC are essential to any climate safe scenario**." Full Comment "**New high-value but relatively low-volume applications could also be important to drive the development and deployment of early carbon capture systems**…. There are no other material incentives to build carbon capture systems…. This is not a fault of enhanced oil recovery; it is a fault of policymakers who have not put proper incentives in place…." Full Comment<br>– ***Dan Miller**, Managing Director, The Roda Group* |
| **No use of $CO_2$ will be enough to impact climate change; sequestration is the best option** | "**It's hard for me to imagine any use of captured $CO_2$ that would be large enough to matter.** There are certainly viable uses, and more might be developed, but they are tiny niches. One could as well claim that drinking water is a way to address the problem of spring floods. **The largest potential use of $CO_2$ would currently be for enhanced oil recovery from mature oil fields.** It's an order of magnitude larger than any other use, but even that market could absorb only a tenth of the $CO_2$ that we generate. **Sequestration/storage is the only realistic option, as far as I can see.**" Full Comment<br>– ***Roger Arnold**, Systems Architect, Silverthorn Engineering* |
| **CCUS should not enable continued coal use** | "**CCS should not be used to continue the use of coal power plants**. They are already not cost-effective compared to renewables and adding CCS will just make them less cost-effective. In addition, the health impacts of coal power exceed the value of the electricity produced so coal power has *negative* social value…even before accounting for the climate impacts!" Full Comment<br>– ***Dan Miller**, Managing Director, The Roda Group* |
| **CCUS could enable continued use of coal** | "Coal needs to be used to produce America's electricity as we have over **600 years of high-quality coal available**…." Full Comment<br>– ***Sid Abma**, CEO, Sidel Systems USA Inc. & Sidel Global Environmental LLC.* |
| **CCUS can make coal clean, but it needs incentives & sequestration infrastructure** | "**There are ways to burn coal that have zero emissions, so long as one is sequestering the $CO_2$ stream.** I'm thinking of oxy-fuel combustion and chemical looping combustion. They're not being developed, because development is costly and **there's no incentive**. For one thing, **we haven't made an inch of progress in deploying the sequestration infrastructure** that would have to be in place for zero-emission coal technologies to make sense." Full Comment<br>– ***Roger Arnold**, Systems Architect, Silverthorn Engineering* |

## 4. Role of CCUS in Addressing Climate Change *(cont.)*

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| **Investing in CCUS projects and $CO_2$ pipelines does not make sense** | "Having worked on carbon capture projects (and their twin, coal gasification), **my experience has been that these projects fail miserably. The economics are just not there, and the additional infrastructure expenditures required do not justify the capital expenditures**…. What are you going to do with all that $CO_2$? There are only very limited and situational applications for such a process. Unless you are right on top of a fracking operation, there is absolutely no point. **Building interstate pipelines for $CO_2$** is just plain silly. You are transporting a commodity which has barely any value—if any value…." Full Comment – ***Bill Klun***, *Senior Advisor, MJ Beck Consulting* |
| **CCUS is costly but not impractical** | "It's a valid observation that bolting on post-combustion carbon capture from flue gases onto existing power plants is costly and impractical. We've leapt from there to the conclusion that CCS, in general, is impractical. We ignore the fact that **a major part of overall $CO_2$ emissions derive from processes that either already produce pure $CO_2$ waste streams, or could be modified to do so at very low cost**. Those processes include production of aluminum, portland cement, ethanol, and hydrogen. Those account for about a quarter of anthropogenic carbon emissions. For those processes, capture of $CO_2$ is not an issue. It's right there, at the point of production. But it needs to be piped somewhere for sequestration in a depleted oil field or in a deep saline aquifer." Full Comment – ***Roger Arnold***, *Systems Architect, Silverthorn Engineering* |
| **Geological sequestration & $CO_2$ pipelines are safe** | "Opponents will claim that geological sequestration is too risky, that it hasn't been adequately researched. They're blowing smoke. **The research is solid. Injected $CO_2$ will never escape from well-chosen sites. It will be mineralized.** The sites *do* have to be selected with care, but surveys have found no shortage of them. And **$CO_2$ pipelines do have to be built with safety measures to prevent ruptures** from flooding low lying areas with suffocating $CO_2$. **But the risks are minor** in comparison to others we're happy to live with." Full Comment – ***Roger Arnold***, *Systems Architect, Silverthorn Engineering* |
| **Support needed to develop direct air capture tech** | "In terms of **Direct Air Capture, we also need much more funding of basic R&D to help us reduce costs** and make it a potentially viable technology from a market perspective. **Direct Air Capture may be critical in helping us address emissions from sectors that are particularly difficult to de-carbonize** (and where CCS is not that pertinent) including the transportation sector and cement." Full Comment – ***Wil Burns***, *Co-Director, Forum for Climate Engineering Assessment* |

Quotes in this document are excerpts from comments posted in the online discussion, "USE IT Act: Reducing Emissions Through Carbon Use Innovation, Not Regulation," March 18–29, 2019. The discussion opened with a piece by Senator John Barrasso (R-WY), Chairman of the Senate Committee on Environment and Public Works, as prepared for OurEnergyPolicy.

Seventeen (17) energy professionals from the OurEnergyPolicy registered expert community commented, with a total of 27 comments.

Read all the comments in the online discussion: http://bit.ly/2HuyiJN.
Access this document online at http://bit.ly/38208qE.

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