

Carbon Capture and Storage Regional Training

The Environmental Stewardship and Outreach (EOS) Alliance, in partnership with the Pacific Northwest National Laboratory (PNNL) and the Washington State Professional Society of Engineers (WSPE), has received a nearly \$1 million dollar grant from the Department of Energy to develop a carbon capture and storage (CCS) curriculum to build a skilled workforce through regional training.

Carbon dioxide (CO₂) is a gas released through numerous manmade processes (e.g., cement plants, coal plants, pulp and paper mills, ethanol plants) and implicated as a major contributor to climate change. Leading climate change experts such as David Hawkins with the Natural Resources Defense Council and Ernie Moniz with MIT have called for our government to invest much more in CCS. They see this technology as critical to addressing climate change.

CCS is a process in which CO₂ is compressed and pumped deep underground for permanent storage in appropriate rock formations. Compressed CO₂ has been used by the oil industry for several decades to force out residual oil in a process called enhanced oil recovery. Scientists have been researching how to apply this technology more globally to permanently store CO₂. In the Pacific Northwest, a large region is blessed with having deep porous basalt formations overlain with dense, impermeable formations or caprocks that serve as multiple seals. Furthermore, laboratory research conducted by PNNL shows that CO₂ will react with the basalt and mineralize thus turning it back to rock. The field validation of these results is currently being explored.

By combining EOS Alliance's experience on coordinating trainings and educational events with PNNL's expertise in CCS and the WSPE's marketing skills and professional network, the team hopes to train a ready and able workforce in CCS. The program is currently designed to offer short lectures on different topics as a primer to CCS for which participants would receive Professional Development Hours. In addition, multi-day short courses are also envisioned with the intention of offering a certification in CCS.

Course topics could include:

- Project management
- Regulatory framework
- Public perception of CCS
- Site selection
- Site characterization
- Resource assessment
- Geophysics

- Geochemical analysis
- Geomechanical impacts
- Reservoir engineering
- Numerical simulation
- Drilling
- Carbon dioxide capture techniques
- Carbon dioxide injection
- Carbon dioxide monitoring and verification

“The CCS certificate program will provide real-life training and hands on experience from world class experts in this field,” said Erick McWayne, Executive Director of EOS. “We hope to draw a majority of students from the Pacific Northwest so they can apply new skills to where they live and work,” said McWayne.

Once there are more professionals in the marketplace with the training and skills needed to plan and implement CCS projects, the number and rate of such projects coming online will increase – a critical step to addressing global climate change.

About EOS Alliance

The Environmental Outreach and Stewardship Alliance (EOS Alliance) fosters an ecologically sustainable world through education, conservation, and restoration. EOS provides green jobs and workforce development, home energy audits and weatherization; efficiency retrofits for buildings, habitat restoration, civic leadership training, youth environmental education, and technical environmental training. EOS is based in Seattle with programs serving approximately 7,000 people per year across the United States and Canada.

About Battelle

Battelle is the world’s largest non-profit independent research and development organization. Headquartered in Columbus, Ohio, Battelle also manages or co-manages several national laboratories for the U.S. Department of Energy including [Pacific Northwest National Laboratory](#) in Richland, Washington. PNNL employs 4,250 staff, has an \$918 million annual

budget, and has been managed by Battelle since the laboratory's inception in 1965.

About WSPE

The Washington Society of Professional Engineers (WSPE) is a state society of the National Society of Professional Engineers (NSPE). WSPE is governed by a board of trustees and is organized by geographically located chapters.

WSPE performs an important function in society by seeking to protect the public safety and the licensure of professional engineers.