**10/11/2019: Soil Health**

Cat Buxton and Didi Pershouse, members of the PES Working Group sharing a seat for the Vermont Healthy Soils Coalition, started off the webinar series with a presentation on the importance of healthy soil. In this webinar, Cat emphasized that improving soil health contributes to a wide variety of ecosystem services such as flood mitigation, water purification, greenhouse gas reduction, and local temperature regulation. Didi then outlined the potential for developing a bipartisan narrative focused around farmers creating a “soil sponge.” This term refers to the fact that healthy soil has a strong matrix of biologically formed pores that enable the soil to better absorb and retain water and nutrients. Both presenters suggested that a PES system could pay for soil health based on avoided costs. For example, if the reduction in the forecasted costs of flooding damage from better land management could be calculated, farmers could be compensated accordingly.

**10/23/2019: PES Program Design**

Jon Winsten is an agricultural economist and independent consultant and is working with NRCS through CIG in the first stages of designing a pay-for-performance system in Vermont. He has also worked with the NGO Winrock on PES systems nationally and internationally since 2001, including a pilot study in Missisquoi River Basin ten years ago. His webinar emphasized that PES systems should be simple, cost-efficient and motivating to farmers. Jon advocated for a system that models the effects of various practices, allows farmers to choose which of those practices to implement, and then pays farmers for their “performance” based on the modeled results of those practices. He argued that such a system reduces risk on the farmer and is most motivating and cost-effective. This system was the foundation of the pilot program started in Vermont in the late 2000s. In his presentation, Jon further explored the tradeoff between scale and cost of measuring Ecosystem Services performance and recommended that in-stream measurements at the scale of small watersheds would be a good compromise.

**10/28/2019: Comprehensive Assessment of Soil Health**

Heather Darby, an agronomy and soil science specialist at UVM Extension, presented this webinar on the merits and limitations of the Comprehensive Assessment of Soil Health (CASH). Heather was involved in the creation of CASH, which she feels is one of the longest-standing, most comprehensive, most user-friendly tests for soil health available. She informed the PES Working Group that although she feels that CASH is an excellent tool for informing management decisions on farms, it would have its limitations as the foundation of a PES program. Heather doesn’t believe there is enough evidence to correlate soil health metrics and ecosystem services outcomes. However, she suggested that an in-depth pilot study could build off past VT soil test results and take CASH measurements alongside other measurements, such as runoff and erosion rates, to calibrate models of ecosystem services. Heather further advised that any PES system based on CASH should be built on RAP compliance for payment, since CASH metrics don’t inherently capture the implementation of practices required by that rule. Heather also commented that CASH is less expensive than most possible PES measurement systems, which she appreciates since she harbors a concern that the money PES systems spend on measurement and administration would cut too much into the potential payments to the farmer.

**11/1/2019: Learning from Global PES Systems**

Jim Salzman, professor of Environmental Protection and Law at UCSD, is an expert on global PES systems and a co-author of a peer-reviewed paper titled “The Global Status and Trends of Payment for Ecosystem Services” in the journal Nature. In this webinar he shared some takeaways from his research and this article, which identified over 550 active PES systems around the world. Jim informed the Working Group that most successful PES systems are publicly funded and those that aren’t are privately funded by a single large corporate stakeholder. Almost all pay for practice. These trends are because those types of systems are simpler and simpler systems are much more likely to be successful. Jim also counselled that the Working Group pay attention to the political and social implications of the design of a PES system and advised the group to be intentional in their choices. He advocated that the Working Group “reverse engineer” a PES system and start by defining their goals for such a system, followed by the funding source and the restrictions that would provide, and moving towards defining the actual mechanism at the end of the process.

**11/8/2019: Farmer-Led Measurement and Synthesis**

Abe Collins is a Vermont-based grazing consultant and the co-founder of LandStream, a measurement technology and consultancy company. He presented this webinar on his vision of a comprehensive landscape-scale sensing system that would provide a platform for farmers to measure the ecosystem services of their farming practices across a variety of metrics in the landscape. He advocated strongly that farmers should lead the development of a PES system since they are the key stakeholders and are uniquely able to grow natural capital. Abe declared that current models and measurement for ES performance are inadequate to inform payment and advocated for a more synthesized, landscape-scale approach. He sees the need for a pilot project that performs in-depth, comprehensive measurements on at least 6 pilot farms, compares these results to remote sensing data and farmer observations, and builds a synthesized model for landscape function that could be used for PES going forward.

**12/3/2019: Ecosystem Services Marketplace**

Chris Kopman oversees the PES efforts at Newtrient, a company which has made a proposed protocol for PES. In this protocol, on an annual basis program administrators would model the effects and costs of field-specific practice outcomes, farmers bid on the funding they want to implement those practices, the program administrators review applications based on Return on Investment in $/lb, selected farmers implement, and then a third party verifies implementation before payment. Chris explained that modelling performance would enable the most money to be paid to farmers and that 3rd party verification of implementation would allow the program to certify reductions and issue payment. Chris advocates for modeling with the Farm-PREP tool, which is farm/field specific, calibrated to VT, and runs off NRCS-Apex. He also advocates for a pilot program but stipulates that it should focus on an outcome for which there is both demand and modelling capability. He explained that nutrient runoff fits those categories, while soil health and carbon sequestration are as-yet inadequately modelled. Chris further pointed out that although private markets offer long-term promise and some companies have stated interest in private PES, their stated goals tend to be closer to 2030 or 2050, which might be too long.