Battelle Response to NEON STEAC Spring Meeting 2025 Advisory Report

According to its Bylaws, the STEAC is "primarily an advisory body to the NEON Project and will provide strategic advice to Battelle, the NEON Principal Investigator (PI), and NEON Project staff on the planning, construction, and operation of the NEON Project and other relevant programs." This response to the STEAC report from March 31 and April 1, 2025, also combines the input of several members of the program team responsible for the execution of the NEON project. Battelle is grateful for the time and expertise that these members of the community have provided and appreciates their input.

The focus of the 2025 Spring STEAC Advisory Board meeting involved discussion of NEON evaluation, how to evolve community feedback mechanisms, considerations regarding location of Domain Support Facilities, soil sensor upgrades and continuity, and opportunities to add value to data products and NEON. We appreciated the open discussion with the STEAC in discussing current challenges, especially in relation to potential tension between open data while at the same time recognizing opportunities to sustain NEON.

STEAC Recommendations

1. **NEON Evaluation: The STEAC recommends that the new Catalyst assessment team should consider how to better define their terminology and also consider the temporal scale of their study.**

NEON Response: The Catalyst team and Battelle appreciate this suggestion and are working together to develop consistent definitions for aspects of NEON relevant to evaluation and metrics (e.g., terms such as 'user', 'partner', etc.)

2. **Evolving Community Feedback Mechanisms**

NEON Response: Optimizing community feedback is integral to the use of NEON, and we appreciate the STEAC's thoughtful input, including their discouragement to discontinue the TWG model. Given the challenge for NEON to manage the number of TWGs and the difficulty of having the specific expertise needed on a given TWG, we plan to consolidate select TWGs as appropriate to subject matter areas.

   a. **Regarding the "Contact Us" form, the STEAC recommended a ticketing system for better user experience and query tracking.**

NEON Response: The "Contact Us" Form that NEON uses is connected to an internal NEON ticketing system built in the enterprise software solution, ServiceNow. This enables internal tracking of issues and response times. We appreciate the STEAC's suggestion to enable similar functionality for the end users, and we will investigate options for implementation.

   b. **To improve response rates, the STEAC suggested to add pop-up reminders, keep surveys open longer, send congratulatory emails to authors using NEON with a survey link, and offer small incentives (gift cards) to answer surveys.**

NEON Response: We will experiment with community input using mechanisms other than surveys, including pop-up reminders, keeping surveys open longer, and positive communications to authors using NEON that include a survey link.

c. **To better capture the impact of staff participation at conferences, the STEAC suggested that post-event contact and discussion forms be required for NEON staff to fill out.**

NEON Response: We also plan to collect additional post-event contact information from NEON staff attending conferences and potentially require reporting on discussions held at scientific conferences to facilitate measurement the long-term impacts of this mechanism. This input is particularly timely, given the opportunity to further develop our internal NEONConnect tracking system and provide additional guidelines for staff.

d. **The STEAC discussed the potential expansion of this program to include undergraduate ambassadors and a badging/certificate system for recognition of "NextGen Stars". The group discussed assigning digital object identifiers (DOIs) to tutorials that users generate and submit as a way to follow the 'train the trainers' work of the postdoc ambassadors.**

NEON Response: Regarding the NEON Ambassadors, we appreciate the ideas to expand the program in the future and the mechanisms to additionally appreciate the individuals involved. NEON is eager to build on the Ambassador program, and to explore all options for promoting Ambassadors' work. Providing DOIs for the tutorials is an interesting idea that we have previously considered for tracking and versioning purposes, and this idea presents another potential benefit. To that end, we will evaluate the logistics, associated costs, and feasibility of tagging NEON tutorials with DOIs. The current scope of NEON outreach and engagement focuses primarily on the graduate level and higher, but we provide support to RCNs and other community efforts that engage undergraduates. We encourage the community to pursue such funding opportunities that leverage NEON to reach even more ecologists in training.

e. **The STEAC recommends pursuing a ChatBot option for enhancing community feedback, potentially increasing ease of use of the NEON data repository, while also generating analytics that would allow NEON to improve accessibility and interest in NEON products.**

NEON Response: We appreciated the STEAC's many suggestions of how to enhance community feedback in lieu of standing up a new NEON community forum, for example, on Slack. Consistent with the STEAC suggestion, we are actively developing a prototype Chatbot/AI tool to potentially increase discoverability of NEON data and generally make access of NEON documentation and other assets easier for the community.

3. **Domain Support Facilities: The STEAC sees great engagement potential in co-location of NEON Domain Support Facilities with academic institutions and acknowledges that this may not always be feasible. STEAC members offer local connections to Battelle when the circumstances demand.**

NEON Response: Battelle appreciates the STEAC offer to provide local contacts in the event of a lease renewal, so that we can provide current and relevant contacts in the geographic area. We will review the provided contacts and explore opportunities accordingly.

4. **Upgrades and ensuring data continuity: The STEAC recommends adding a lab comparison as part of the soil sensor intercomparison plan to isolate inherent differences in the sensors themselves, considering linear and non-linear adjustments, and publishing this work once completed.**

NEON Response: We will seek guidance from the Soil Sensor TWG on the recommendation to perform an additional lab comparison of the EnviroSCAN and HydraProbe sensors and how best to undertake this comparison (e.g., the number and types of different soils that the lab comparison should involve). The results from the sensor intercomparison will be published upon completion.

5. **Sustainability of NEON**
    a. **The STEAC voted and approved a motion to recommend that NEON add a 'login' step for data downloads either via a personal ID or ORCID or Google and have a 2-month transition period during which potential users are notified of the new feature. The STEAC recommends a login only for data downloads, not for other information on the NEON website (e.g., tutorials, protocols, workshops).**

NEON Response: We appreciate the STEAC's recommendation that NEON require a 'login' step for data downloads (only). This will enable NEON to identify types of users, e.g., researchers vs. commercial providers, and provide additional user support and reporting accordingly. For instance, commercial data users find customized data of value, and NEON could support this through NEON Research Support Services (NRSS). To inform how to assess value, STEAC suggested creating a matrix of data types, the value NEON adds to each, and what value has been added by others; we are considering this approach. Related, we are communicating with NSF and stakeholders to determine the best licensing option (e.g., CCBY vs. CCBYNC) and how requiring a login would affect them.

    b. **The STEAC encourages NEON to consider exploring new ways to raise revenue via industry partnerships in consultation with the NSF to ensure that open data expectations are maintained.**

NEON Response: Battelle appreciates the STEAC's attention to the NEON mission of providing open data while exploring cost-models for particular types of services, e.g., through NRSS as described above, that would provide an income stream for NEON beyond the federal funds.

NEON currently provides a Rough Order of Magnitude (ROM) estimate to researchers for their proposals; these ROMs are 'cost-recoverable' for NEON, i.e., there is no income to the NEON program. The NSF and Battelle would need to consider changing this approach.

c. **The STEAC recommends NEON focus on more than just identifying users but also have a conversation with users about how cumbersome login is or not.**

NEON Response: As per Recommendation 5, requiring a login for downloading NEON data will enable us to identify types of users, e.g., researchers vs. commercial providers, and provide additional user support and reporting accordingly. We are engaging with users about these issues.

d. **The STEAC supports continued exploration of licensing models that reflect NEON's leadership in open science while also considering sustainability, innovation, and recognition for the work being done.**

NEON Response: Battelle intends to engage in a broader conversation with data providers and partners to align licensing strategies, and we fully agree that part of this communication is NEON clearly explaining the rationale behind any change. We very much appreciated the broad ranging discussion and varied perspectives on barriers to data access that licensing restrictions could involve.

e. **In relation to potential philanthropic or other sources of funding, the STEAC recommends considering how to market the skills and personnel of the Observatory and strategically building relationships with donors.**

NEON Response: Researchers and other data users often have needs for data that are not currently collected by NEON (e.g., acoustic or image data). New data types cannot be accommodated in NEON's scope and budget, and thus it is of interest to NEON to consider sources of additional funds. The NRSS program provides a mechanism for users to use the resources of the Observatory, including NEON scientists and other personnel. As the STEAC points out, the outside scientific community does not appear to be well informed that NEON provides these services. An action item for NEON is to prioritize making the community more aware of these services. Related, as per 5b above, NRSS services are currently cost-recoverable and do not provide funds for the Observatory; this model can be reconsidered and refined, potentially thus providing NEON a source of funds outside of the NSF. We appreciate the ideas suggested by the STEAC in relation to using NEON as an incubator and how we might make NEON overall more valuable to a broader community.