Middlebury Environmental Council

2023 Report to President Patton

May 15, 2023

Members of the 2023 Middlebury Environmental Council

STUDENTS	Year
Adia Smith	2025
Amanda Manoogian	2023.5
Anna Saviano	2022.5
Annabella (Bella) Lucente	2025
Annie Muggia	2023.5
Claudia Etrillard	2025
Corinne Lowmanstone	2024.5
Duncan Kreps	2024
Dylan Schmeling	2024.5
Elli Revenaugh	2026
Emilia Zenker	2026
Emily Hogan	2024
Emily Kuperstein	2024
Jasper Pearcy	2026
Julianna Minerva Martinez	2024
Kayden Lemee	2026
Khalid Alomran	2025
Leni Lemos	2023
Lily McGovern	2025
Maxwell Homans	2023
Patrick Connolly	2025.5
Peter Mans	2026
Samuel Medina	2025
Tiffany Li	2026
William Hinkle	2026

STAFF

Elizabeth Spencer, Advancement

Jack Byrne, Environmental Affairs at Franklin Environmental Center

James Zieger, Facilities Services

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Minna Brown, Environmental Affairs – Climate Action Capacity Project

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Middlebury Environmental Council 2023 Report

Section 1: Leveraging Sustainability Subcommittee Report

Committee members: Karen Bartlett, William Poulin-Deltour, Minna Brown, Dylan Schmeling, Emily Kuperstein, Julianna Martinez, Kayden Lemee, Khalid Alomoran, Leni Lemos, Maxwell Homans, Samuel Medina, Tiffany Li

With additional support from: Max Zeltsar, Patrick Wickstrom, Evelyn Lane, Aiden Pape, Skyler Brown, Tara Federoff, Natalia Schwein, Adela Langrock, and Jack Byrne

1. Committee Assignment

Middlebury conducts a tri-annual audit using the Sustainability Tracking Assessment and Rating System (STARS) developed by the Association for Advancement of Sustainability in Higher Education. We are one of 1,106 higher education institutions who use this tool and 576 have earned a STARS rating. Our most recent submission in July, 2022 was given a Gold rating. We use this assessment tool to track to identify areas where we are doing really well, as well as areas where we want to focus energy for improvement, especially on our overall sustainability and climate action efforts.

This committee will work with the Sustainability Solutions Lab and interns to: 1) help inform the greater College community about our STARS report and where we did well and where we'd like to improve; and 2) more specifically, focus on an effort to work with academic departments to adopt appropriate learning outcomes that integrate sustainability considerations into their subject matter where it is not present. This effort will also coordinate with the Climate Action Capacity Program to help support their efforts to engage and support students and faculty to build capacity for addressing the climate crisis.

The committee will become familiar with the STARS report and coordinate with the Sustainability Solutions Lab and interns and the Climate Action Capacity Program to inform the Middlebury community of its contents and results where we have opportunities to improve and to solicit feedback about how some of those gaps could be addressed. In partnership with the SSL and CACP and others, they will also develop and implement strategies for how to integrate sustainability learning outcomes across the curricula at Middlebury.

2. Summary

Middlebury already does a lot to ensure that climate change and sustainability are key parts of both the curriculum and operational priorities of the College. However, along with our own curricular groundings, in both reviewing our STARS report and key suggestions from the Sustainability Solutions Lab, we recognize that it is increasingly important for us to clarify those educational and experiential opportunities, and to be bold in furthering our institutional leadership. For example, while we know that close to 20% of our courses cover sustainability topics based on our STARS submission, we don't have a great way for students to access that information to chart their paths through the course catalog. We also don't have adequate ways for faculty to submit and celebrate the innovative ways they are integrating these topics or for us

to identify gaps in the curriculum that would round out our interdisciplinary climate and sustainability coverage. Lastly, we don't have a consistent way to ensure that students include these topics in their academic pursuits at Middlebury, even if many of them do. Thus, this committee sought to assess some of the ways in which other schools are approaching these issues, identify the efforts already underway that could be better highlighted and supported, and give a better sense of receptivity, demand, and barriers to further integration, while exploring areas where we could make a real difference.

Our key findings and recommendations include:

- While we are still a leader, comparable schools are confronting similar challenges and offer some jumping off points for future work, including some examples of distribution requirements, incentives, and effective communications strategies.
- We have much to share about individual courses and interest and adoption of interdisciplinary topics. We can use the Energy2028 website and other media to do this, and should continue to expand our participation in the annual Climate Change Teach-In.
- Narrowing in on the best, most effective, and efficient ways to catalog our courses in ways that has faculty buy-in and helps students find the courses that best match their interests is a major challenge, but a combination of student course data analysis, 1:1 conversations, and faculty and student surveying could yield a much richer set of course navigation resources for the community.
- While complicated, moving toward a well-supported distribution requirement (that does not put additional undue burden on faculty teaching already oversubscribed courses) has broad support from students. Given the number of courses already offered and the fact that the vast majority of students opt in to these courses, barriers to implementation would be lower than expected. Focusing on a certificate/credential program and incentives and support structures for faculty could be effective onramps to getting us closer to this goal, and are worthwhile in their own right.

3. Introduction

Our Committee's goal was to explore how to make it easier for students to access sustainability and climate topics in the Middlebury curriculum. While many opportunities exist, and students often choose Middlebury because of its history, reputation, and commitments to climate and sustainability, based on our STARS report score (the comprehensive standard for higher education sustainability reporting), work done by Sustainability Solutions Lab (SSL) students over the summer of 2022, and our overall goal of continuous improvement, we knew there were some key areas to focus on. Notably, while our dedicated faculty continue to incorporate sustainability and climate change into their courses in innovative ways, our STARS report did not reflect this, both in terms of how we articulate and report on a concrete commitment to integration, and on how we assess student sustainability learning. While addressing some of this could certainly improve our STARS scores, we wanted to go to the root of this challenge to consider how we could take advantage of our baseline better, while finding ways to deliver on the promise of Energy2028's education pillar.

As we began our work, we discussed a variety of approaches, starting with the summer 2022 SSL proposal that urged departments to make a pledge to offer relevant courses. This had promise, but with faculty, staff, and student input, we recognized that given faculty and fiscal constraints, as well as a lack of incentives, support resources, and an ability to define a timeline, we first pivoted to a plan of having 1:1 discussions with faculty from various departments. With limited time and bandwidth from our Committee and faculty, we began diving into research on our end, leading us to the approach described below. Throughout the rest of the year, we analyzed:

- how other comparable schools are approaching curriculum integration,
- some of the ways in which we can understand what we're already doing (and celebrate those stories),
- how to assess demand on campus,
- and what we might do in the future.

4. Current trends beyond Middlebury

As we considered how we might assess and propose next steps for our own climate and sustainability integration, we knew we also wanted to see what comparable schools are doing. This was especially important as we thought about the areas of improvement in our STARS rating around interdisciplinary curriculum coverage and sustainability learning assessments for students. How were other schools approaching these topics, knowing that it can be hard (and not often appropriate) to mandate curricular efforts? We looked into the efforts other colleges of similar size and scope to Middlebury are taking to improve their focus on sustainability, both through operational action as well as greater access to courses with a focus on sustainability. The results point to a general acknowledgement that the issue of sustainability and climate change must be addressed; however, many fail to set out concrete steps/aims or go into particular detail about their goals (see our analysis for details). We were encouraged to see that Middlebury is a distinct leader while also noting some key opportunities to improve.

Colleges that express concrete aims share similarities to Middlebury's own goals, with the two main areas of improvements (which also relate to the STARS certification process), being improvements in course offerings (with additional certification being available to students following the completion of certain requirements), as well as general systematic improvements in areas such as energy consumption, carbon emissions, and other such items. Given our focus on curricular integration in this subcommittee, notable aims from other schools in the former category include:

- Amherst College claims to have aims to improve access to sustainability in its curriculum through "experiential learning" but fails to set out concrete aims.
- Connecticut College reports to have implemented sustainability into its curriculum, with:
    - 10.7% of courses are related to sustainability
    - 78% of departments offer at least such course

    - 18% of research is related to sustainability
    - 4 degree programs related to sustainability
- Wesleyan also has various ongoing initiatives, with current efforts including:
    - 10% of courses are focused on sustainability or related topics
    - 89% of campus departments offer at least 1 sustainability course.
    - Offering an Environmental Studies certificate (distinct from major)
    - Furthermore, they aim for other curricular improvements: by 2030, 80% of the student body will have taken one climate/sustainability-related course or workshop
- However, only broad approaches are mentioned about further improvements.

Based on this analysis, it is possible to evaluate Middlebury's position and abilities to make similar improvements. Indeed, while Middlebury generally shows signs of doing well in comparison to other similar colleges, the main aspects in which we see potential for improvement include:

- Working together with the faculty to implement curricular improvements, by increasing the available number of courses with a focus on sustainability.
- The creation of another optional distribution requirement that targets sustainability-related courses.
- A certification for climate related coursework to encourage students to take these.

5. Our current baseline

3.1 Individual course highlights

We know we are not starting from zero here at Middlebury, and in order to make recommendations about where we could focus going forward, it was important to look at what we are currently doing and celebrate and share out those efforts. There is more to be done, but one of the challenges currently facing the College is a lack of awareness and recognition of existing opportunities. Many courses already cover climate change and sustainability topics as well as provide deep experiential learning experiences connected to the specific goals and broad intentions of Energy2028. Some of these include:

- Frank van Gansbeke's "Sustainable Finance" course has students analyze how Middlebury could better report its sustainability approaches
- Dan Suarez's "Theories of Change" course helps students understand how to think of how organizations approach climate action
- Rebecca Gould's courses on religion and ecology connect faith and sustainability
- Environmental Studies 401 Community Engaged Practicum
- Jonathan Miller-Lane's "Education in the Anthropocene" First Year Seminar
- Julien Weber's "French Eco-Fictions"
- Christopher Star's "Apocalypse When"

We'd like to highlight these and other existing courses while also offering ways for students to better connect to courses they may not be aware of, and encourage new ways of covering these topics.

3.2 Understanding the broader course landscape

As we work to showcase some individual courses, we know that many students find it difficult to know which courses (beyond some of the more obvious ones) might make connections to climate and sustainability within and across disciplines. Poring over the course database with one's own guesses yields unreliable results, so one of the things we worked on in partnership with Climate Action Fellows Max Zeltsar and Emily Kuperstein (also a member of this Environmental Council group) was to start reviewing our courses more thoroughly. Over the past year, we have been working to find and implement new ways of analyzing the course offerings. While current course catalogs have tags relating to distribution requirements, department names, and writing level, they lack information about specific environmental, political, or social issues covered. Some course descriptions provide this information, but others do not. Addressing those topics in course offerings could help students when they go to select courses, professors or departments in deciding what new courses to offer or old ones to take away, and higher level academic supervisors and deans in determining the success of a department's course offerings and diversity of topics available to students. While those of us working with the Climate Action Capacity Project and Energy2028 are especially concerned with the inclusion of sustainability or environmentally focused curriculum, these missing course tags could also be important for those concerned with racial injustice, economic imbalance, gender inequality, and more. Having more data about the courses offered at Middlebury and the accessibility that students have to those courses (number of seats in a class, prerequisites, etc.) is valuable data that could go a long way in bettering the course offerings here at the college.

Together, with the rest of the Climate Action Fellowship group, we have done some preliminary work to create potential new tags that courses could be surveyed for. These include, "Environmental Justice Focus", "Experiential Learning", "Racial Justice Focus", "Gender and Sexuality Focus", "Environmental Resource Focus", and "General Climate Issues Focus". While this is only a rough idea for potential tags that courses could have, we believe strongly in creating a diversity of tags to give students, professors, department heads, and deans the most information and data possible in terms of course topic diversity and offerings. With these tags that we created, we ran sample analyses of 4 departments here at Middlebury College to test the effectiveness of tags (see our trial database for more detail). All courses from the Environmental Studies, Biology, History of Arts and Architecture, and French department were analyzed and tagged based on their course description. Even with just these 4 departments we found that the tags were able to give valuable insight that was easy to produce about the topics that each department covers effectively and potential places that departments could improve the diversity of topics they cover. Through this type of analysis, other departments could look into how they effectively address certain political or social issues and where there is room to potentially improve what they address for the students who take their courses. We recognize that cataloging courses with additional tagging would represent challenges in terms of both data gathering (and competing and perhaps conflicting views) and maintenance, but we find that

having a better sense of the offerings across disciplines would be enormously helpful, and we are encouraged to see unexpected examples show up in our analysis that could broaden our understanding of how classes are already covering these frameworks and issues.

3.3 Low-barrier integration: Climate Change Teach In

Beyond this effort to create a simpler way to celebrate relevant courses, give a better sense of how climate and sustainability topics are covered, and make it easier for students to find courses, we also know there's room to incentivize more integration. One of the ways we've seen success in highlighting current offerings and encouraging more has been through participating in the World Wide Teach-In on Climate and Justice alongside hundreds of other education institutions globally. While we have joined this effort for several years, this year's March 27-March 31 Climate Teach-In was devoted to incorporating conversations about climate solutions and justice into as many classrooms as possible, encouraging student and faculty leadership. Organized by a group of Economics and Environmental Studies faculty with the support of Middlebury's Climate Action Capacity Project and Franklin Environmental Center at Hillcrest, the teach-in inspired support from dozens of faculty across many disciplines for increasing climate-related material in their classes. Professors responded to a survey sent out afterwards (see survey results) with praise for the campus-wide event, success stories from their teach-ins, and ideas for further integration of climate change in future work.

Professors across languages, social sciences, and STEM subjects deliberately confronted climate issues with their students, and many highlighted grappling with climate justice, discussing how societal inequality plays a major role in our response to climate change. In Professor Gregg's course, "History of Economic Thought," she wrote that in years past climate change never came up, but now "as part of the Climate Teach-In this unit has become permanent," showing how promoting climate awareness through events like the teach-in can have lasting impacts on course material. Some professors even offered new course ideas, such as Physics Professor Hess' "Physics of Energy Technology," which he is hoping to launch after consulting with the Environmental Studies program. The Climate Change Teach-In highlights the ever-growing population of faculty passionate about climate change, giving them the opportunity to engage their students in important climate conversations. While spending a few minutes covering these important topics is not enough, coupled with a CTLR faculty discussion on how to integrate these conversations in class, the Teach-In has given faculty the chance to try things out, and has yielded ongoing integration over the last several years.

6. Existing Demand

In addition to celebrating what Middlebury is already doing, we must acknowledge that demand exists for further integration of environmental and sustainability on campus. Climate Change is always the top result for "most pressing issue" in the Campus' Zeitgeist survey and many students choose Middlebury explicitly for its environmental and climate commitments and reputation. At the same time, Environmental Studies is the second most popular major, and courses fill up quickly. Many students report choosing different majors because they have not

been able to take ES courses. They also reiterate that climate and sustainability are not exclusive to the Environmental Studies program coursework, given the intersectional nature of the topics.

Beyond past and anecdotal evidence, Middlebury students and professors alike have demonstrated demand for increased sustainability integration, most recently through a campus-wide survey in the fall conducted by Professor Berazneva's "Climate Change Economics" class, which included Committee members Maxwell Homans and Leni Lemos. From a sample of more than 1,200 students, faculty, and staff, the survey found that over 70% of students and professors support adding a sustainability distribution requirement, with that percentage rising to over 77% for female constituents (see survey results and this Campus article for more details). A previous analysis done by the Climate Action Capacity Project found that most students do take a climate/sustainability-related course during their time at Middlebury, and we know they generally want to. We recognize that a distribution requirement is deeply challenging politically (and potentially logistically), but we also know that students are looking for these classes, and would largely support ensuring that it is a part of the experience of all Middlebury students. The Middlebury community wants to increase the offerings of sustainability-focused classes; the school must do better to highlight existing courses and introduce new ones to support the academic passions of students and professors.

7. Proposals and Recommendations for Further Research

Moving forward, a variety of next steps are important, and given our reviews of the data, would be welcomed, if complicated. These include:

- An easily navigable list of relevant courses with subcategories across disciplines. This could be achieved using a few approaches - likely a combination of:
    - Student intern/departmental student expansion of our course database work - both to pull courses from more departments, but also to solidify the categories. One potential idea would be to create a finalized set of tags and then poll professors (along the lines of the below survey idea) based on the courses they teach to see what topics are officially being addressed in each class. Another direction this could go would be to change the Course Response Form so that students could give their input on what they feel is being effectively addressed or covered in their courses. From those surveys, administrators could gain a comprehensive picture of what topics are being covered across the Middlebury curriculum, especially should those methods be combined. Departments could do their own analyses of what topics they may want to better address, new distribution requirements could be created to make sure students are getting an education that is diversified not just in terms of academic subjects but also in terms of social issues and ability to address them, or students could use new tags in course selection to be able to better choose courses that interest them.
    - A survey of faculty to indicate which of their courses (and research and mentoring efforts) do/could integrate these topics to give credit for their work without adding a burden, making assumptions about course content, or asking

for additional work. We propose this draft survey, but expect that, in partnership with Adela Langrock, pulling actual course listings into the Survey through Qualtrics would be most helpful.
        - This survey would need to be sent by an institutionally recognized representative or group, and the timing would be key. We think that the EAC or Dean of Academic Affairs would be the best options for this. We could also see this tying in to course submission cycles.
        - The result would be an annually updated, filterable spreadsheet (or visually appealing database) of relevant courses. This would also make reporting for STARS and other avenues much simpler.
        - **NOTE:** We see significant potential for this if it were done at a higher level that allowed faculty to indicate how their courses connect to various Middlebury-wide initiatives like Conflict Transformation, Project-Based Learning, and MiddData.
    - Coupling 1:1 outreach and conversations with faculty about highlighting their courses in a database and in storytelling efforts
- Continued participation and leadership in the Climate Teach-In with greater institutional buy-in
- Expanded understanding of demand for specific types of courses, elements of a degree requirement, etc., following up on the Climate Change Economics survey.
    - This should also include an expanded analysis of demographics of survey respondents
- Faculty leadership and engagement (perhaps through the EAC) with a discussion of a degree requirement
- A non-degree-related certificate on climate and sustainability (currently in progress with the Climate Action Capacity Project)
    - Connected to student learning assessment (see SSL draft) to ensure we're helping move the needle for students during their time
- Exciting and compelling storytelling efforts that showcase faculty leadership and student excitement
- "Green dreaming" opportunities for faculty, staff, students, alumni, and community members to get creative and innovative, and just have some breathing room to explore what we'd like a Middebury education to include
- Incentives to more clearly support ways for the community to engage with this work

Middlebury Environmental Council 2023 Report

Section 2: South Street Solar Committee Report

I. Committee Goals

A. Evaluate the benefits and drawbacks of developing trails and recreational pathways around the site, considering both community and environmental effects.

B. Develop a plan for possible trail/recreational path locations.

C. Develop interpretive signage content and graphics along the site, containing information of the values/histories of the land, the principles of the Energy2028 initiative, climate action guidance, and information on how the legal and regulatory processes played into the decisions made regarding the site, among other topics.

II. Executive Summary

Our assignment was to evaluate the benefits and drawbacks of developing recreational trails around the solar site, to develop a plan for the trails, and to develop interpretive signage content and graphics to be placed at the site. We solicited the feedback of local stakeholders and experts to inform our process and decisions. We found several benefits including that trails would promote student wellness, connect the College to the local community, and provide opportunities for experiential and outdoor learning. Drawbacks of building trails include making ecological restoration of the site more difficult, potential conflict with local residents over drawing more foot traffic to a neighborhood, and potential safety risks due to the fact that the site is used for hunting and agriculture. In collaboration with Mike Moser, Matt Curran, and VHB, we created a design for a rustic trail that links to the TAM and meanders through the College-owned lands surrounding the solar site. The trail includes an elevated look-out to view the Green Mountains, footpaths through hayfields and wetlands (with a portion being accessible pavement), and opportunities for an outdoor classroom, interpretive signage, and art installations. We generated several ideas for content to be included on signage at the site and suggest that developing signage at the site could be the focus of a future class at the College or an EC committee. We strongly recommend that indigenous justice becomes a central focus for this project as it moves forward. We also recommend that a future solar site committee investigate the opportunities for art installations, pollinator habitat, and ecological restoration at the site.

III. Full Committee Report

A. Land Acknowledgement

We restate the land acknowledgement made in the 2022 Solar Site Committee final report: In considering the development of this site, we acknowledge that this land was stolen from the Abenaki, the traditional caretakers of this land. This site and the adjacent lands are of particular importance to this community's heritage as they were one of the first sites of settlement. Through our recommendations we hope to encourage more thoughtful stewardship of Middlebury's lands and bring to light the historical and cultural significance of this area.

B. Benefits and Drawbacks of Creating Trails

There are a variety of benefits to developing trails around the solar site. First, trails around the solar site, especially if connected to the TAM as planned, would promote student wellness by offering a free, nearby, and accessible space for students to walk, jog, run, contemplate, and more. Second, the trails would connect the College to the local community by creating a shared recreational space. Third, an outdoor classroom would enhance student learning by providing an experiential (or simply open-air) learning environment. Finally, the plan for the trails at the solar site offers continued use of the land to the many neighbors and existing users of the land, including the equestrian users associated with Eddy Farm.

However, we have also identified potential drawbacks to developing trails around the solar site. Developing trails at the solar site demands some degree of permanence; it would be more difficult to do complete ecological restoration of the site following the creation of trails. In addition, the trails would draw more foot traffic to the area, which abutting neighbors may dislike. Furthermore, some of the land at the solar site has been traditionally, seasonally used for hunting, an activity that would not be compatible with the usage of trails for walking, running, and other recreation. Lastly, there are some safety concerns about tractors and other farm vehicles crossing through the site to access adjacent farmland.

In their 2021-2022 final report, last year's South St. Solar Site Committee also described benefits and drawbacks to development of the site in greater detail.

C. Trail Plans and Design Process

The bulk of the South St. Solar committee's work this past year was centered around developing a map for a potential outdoor recreation trail around the solar site currently undergoing construction. To begin, we developed initial goals as a committee for what we wanted the trail to accomplish: to showcase Middlebury College's newest solar installation, to increase community and student engagement with College lands, and to educate visitors about the surrounding landscape, land uses, and history of the land.

We began our work with an initial site visit to learn about the land we were working with and to develop initial ideas for trail routes. Then, through collaboration with Director of Facilities Mike Moser and Director of Business Services Matt Curran, we worked with VHB, an engineering firm working on the solar site construction, to develop a high quality trail. The initial draft (Figure 1) started with a loop around the solar field as the central focus (due to the scale and type of solar array, the site will be fenced in, prohibiting walking between the panels), and added several other important features. First, a trail spur up to a local high point offers a great view of the Green Mountains and an overhead perspective on the solar site. Second, a connecting branch to the Trail Around Middlebury enables trail users to access the site from the TAM or incorporate the South St. trails into a longer hike. Third, we suggested a short ADA-accessible paved trail that will branch off from our parking area (proposed on an existing cleared patch of land, in an effort to be as minimally invasive as possible). An important consideration of our trail design process was how people of all ages and abilities would be able to use the trail. We determined that making the entire length of the South St. trail ADA-accessible would be impractical given the terrain and long-term maintenance requirements; instead, for the majority of the trail, we opted instead for a traditional rustic footpath similar to that of the TAM. A dirt trail is also appropriate because it allows for multiple uses, including Eddy Horse Farm, who can continue to use the lands for riding, something we decided was a priority. However, a short

section of paved trail leading from the parking lot would be a welcome addition, enabling those of all abilities to see the site and benefit from the trail.

VHB took these initial thoughts along with our preliminary sketch and created a professional trail map, including information about the landscape and important features (Figure 2). This map provided a guide for our next site visit, where we made a few adjustments to the original plan.

Our final trail proposal begins with a parking lot just off of South Street Extension. This land has already been cleared due to agricultural activity and is located close to the solar site, making it the best possible location for such disturbance. Heading to the northwest is a path that begins on an existing farm road before turning to the north towards the TAM. This connection trail bisects a farm field and a wetland before linking up to the greater trail. This linkage provides two means of accessing the South St. trail: driving and parking at the new lot or walking over to the lot from the TAM. Our main trail loop begins and ends at this lot, making it a central starting point for providing maps and trail information. The main loop features both the high point referenced earlier and a section right up next to the solar field. Visitors to the site will begin their walk by heading up a small hill towards the viewing point, where they will see the beautiful Green Mountains out over the solar site. At this location, there is the potential to create an outdoor classroom, interpretive nature installations, or other sitting space to make the site more useful to the community. Visitors will continue south along the trail after leaving this viewing point and gradually curve around the topography towards the solar site. Upon reaching the southwest corner of the solar site, the trail will hug the fence line along the south, east, and north sections of the installation. Along the south fence, there is a need for two small boardwalks over drainage troughs; however, by hugging close to the fence, the trail avoids interfering with the large wetland located to the south of the solar installation. For this section of the trail, landscaping around the solar site, signage explaining the panels as they relate to Energy 2028, as well as the panels themselves will keep visitors engaged. After working their way around the solar field, visitors will turn to the north to return back to the parking lot and complete their approximately one mile loop.

Figure 4 illustrates the proposed South St. trail in the context of the TAM and Middlebury as a whole. Similar to the existing trail leading from campus to the Knoll, the South St. trail encourages students and community members alike to walk near the solar panels. In combination with the Knoll and the TAM, we believe that the South St. trail would provide all Middlebury residents with additional outdoor recreation opportunities as well as useful and engaging information about the landscape, wildlife, and history of the land they inhabit.

Figure 1. Initial sketch of potential trail around the South St. Solar site. November 2022.

Figure 2. Initial map of South St. Solar trail based on preliminary sketches, generated by VHB. Includes description of trail and landscape features. November 2022.

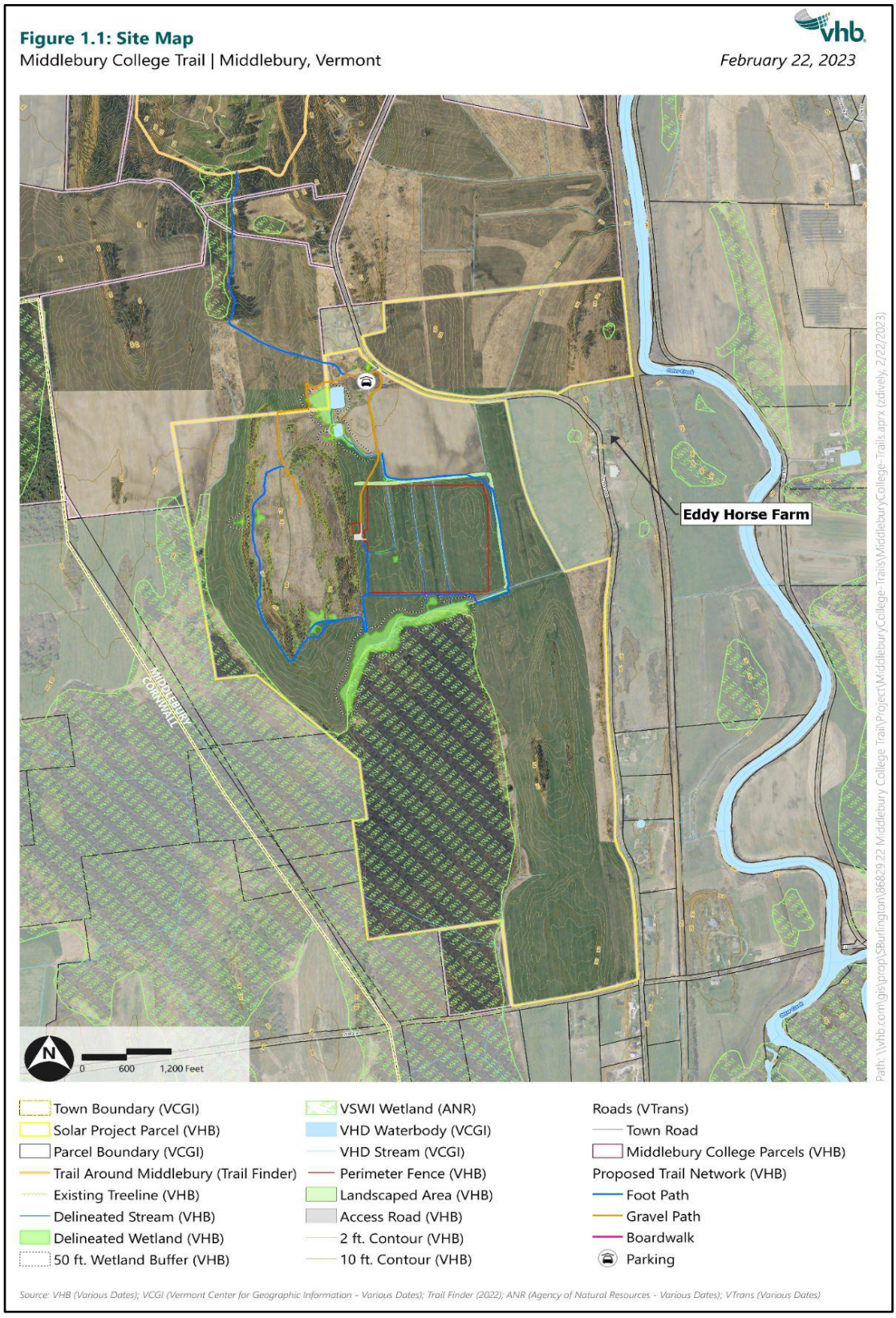

Figure 3. Latest draft of South St. Solar trail after site walkthrough. February 2023.

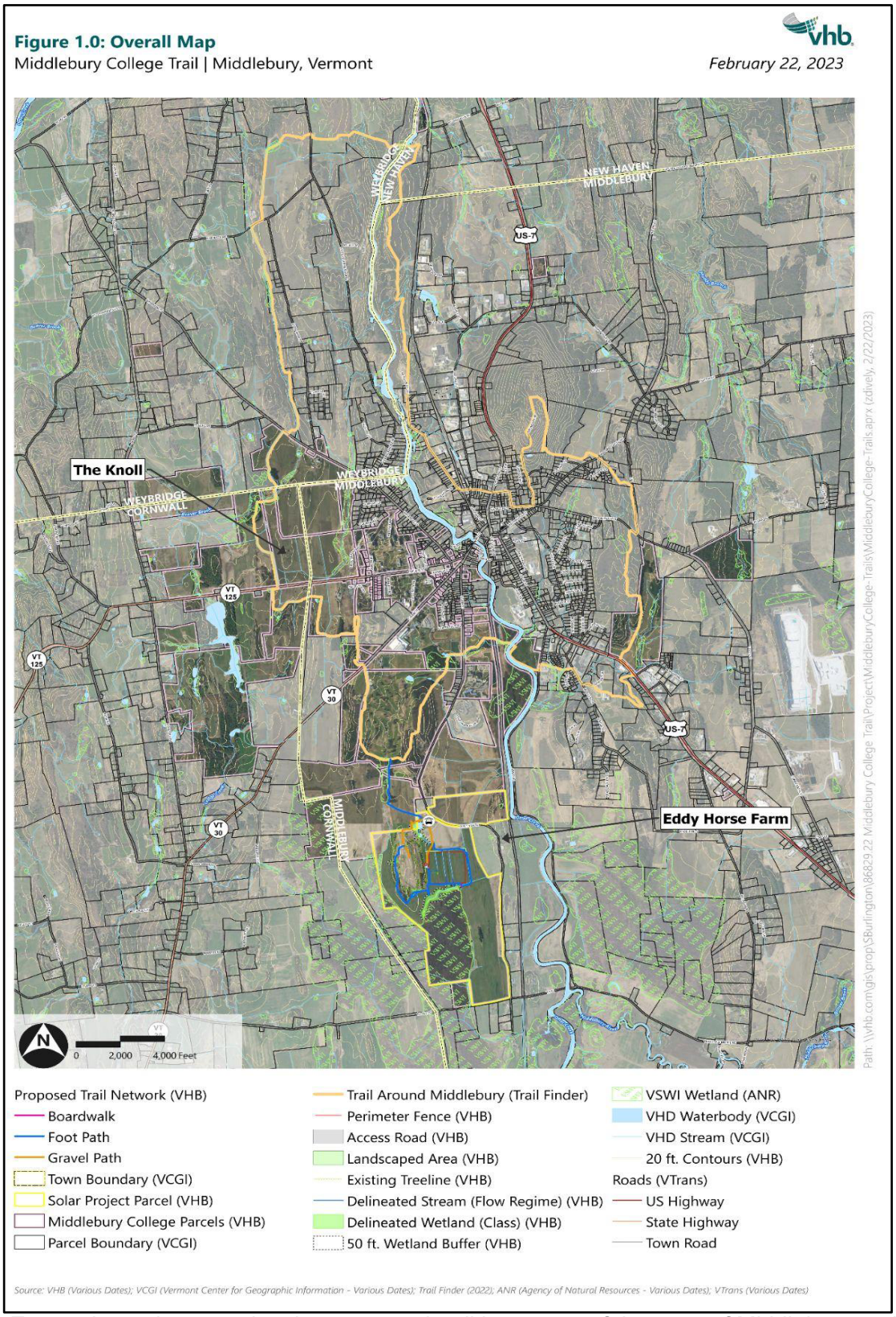

Figure 4. Zoomed-out site map showing proposed trail in context of the town of Middlebury and Trail Around Middlebury (TAM).

D. Community Outreach

Throughout the duration of our committee's work, we have sought the feedback of local stakeholders about the development of the site. These stakeholders include staff and faculty of the College, as well as town residents. We recognize the importance of community involvement in this controversial project. Below are summaries of the interviews we have conducted:

Michelle McCauley– Provost, Executive Vice President, Professor of Psychology, conservation psychology focus. Professor McCauley focused on the interpretive signage element of the trail design, particularly how to design the signage to be maximally engaging and effective. She provided us with many helpful suggestions regarding signage from a conservation psychological perspective.

Mike Roy– Neighbor to the solar site and Dean of the Library. Dean Roy suggested constructing a pedestrian bridge that would cross to Creek Road and thus create a 6 mile loop, making the community more bike and pedestrian friendly. However, he mentioned that other neighbors (e.g. Prof. Amy Morsman) would not be in support of this idea. He also noted that the Lussier family owned the land for a long period of time and they would be a good resource (along with the Shelburne Museum) for past land use information. Dean Roy supported the idea of the TAM connection.

Eddy Farm– Local, non-profit horse farm and home of the Middlebury Equestrian team. Eddy Farm expressed their concerns about the installation of the solar site as they currently use that land for horseback riding. They have expressed desire for the trail construction to consider ongoing horse accessibility. The committee has expressed this desire to VHB as well as the Business Services and Facilities Services departments at Middlebury. Molly Witters (class of 2001) wrote a letter on behalf of Eddy Farm (this letter will be accessible to future committees in our shared drive folder).

Middlebury Area Land Trust (MALT)– Maintains and oversees the TAM trail network. The committee reached out to MALT in connection with our plan to install recreational trails and connect to the TAM. MALT responded positively to the idea. We have been given the contact of Executive Director Jamie Horton to continue developing this portion of the project.

Barbara McCall and Smita Ruzicka– Associate Vice President for Student Health and Well-being and VP of Student Affairs, respectively, have expressed interest in the possibility that this project could help facilitate more outdoor opportunities for student use.

Jeff Howarth– Associate Professor of Geography and member of the Middlebury Conservation Commission. Professor Howarth has actively expressed his distaste for the solar site project because building on this site removes, to some degree, the possibility of ecological restoration of lands that were previously Valley Clayplain Forest. Prior to European settlement, this forest community was common in the Champlain Valley but it is now rare due to conversion of land for agriculture. Further alteration of these lands by creating trails further reduces the possibility of restoration back to Clayplain forest. While he makes many valid arguments, they were more relevant to the siting of the solar array than to our committee goals (designing trails and community engagement).

Mike Kiernan– Director of Bee The Change. Mike is eager to create pollinator habitat around the solar array. Though, according to Mike Moser, this would need to wait until after the invasive parsnip removal (grazing sheep) has been completed approximately five years after the

completion of the solar site. This will be an important consideration further down the line, but is not something that we can take actionable steps towards at this time.

Megan Brakely– Associate Director of the Knoll. Megan has done a great deal of work building a partnership with the Abenaki community as it pertains to decolonizing agriculture and indigenous justice. She has offered to share documents with a faculty or staff member on the next Solar Site committee. She has suggested these contacts: the indigenous justice group that is currently forming on campus, Chief Don Stevens of the Nulhegan Band of the Coosuk Abenaki Nation, and the Land Acknowledgement committee (Mark Orten is the chair).

E. Signage

While our committee was originally tasked with developing interpretive signage and graphics for the solar site and its trails, we ended up not having time in this academic year to fully complete this goal. However, we made progress by reaching out to the Communications department at Middlebury, and they explained that we would need to have more content prepared before we could begin a formal process of working with them on the signage. However, we identified several people to reach out to when we are ready (Matt Jennings, Gregorio Amaro, and Kristina Simmons).

We have generated ideas for signage topics, including:

1. Land Acknowledgement, different from the College's wording.
2. Information on the physical solar array: process, output, etc.
3. Site ecology, including notable species and description of ecosystem
4. Geological history of the site since glaciation
5. Forest community type on site after glacial melting
6. Indigenous settlement and land use history
7. European colonization of the land in the Champlain Valley
8. Land use history since colonization
9. Description of relationship with Bee the Change and pollinator habitat (contingent on future collaboration)
10. Energy2028 goals of Middlebury College and how the solar site supports them
11. Description of the site selection process and recognition of the conflict it created
12. Community/student artwork, poems, and more

The signage should be crafted to help make the solar site more like a "living museum," where anyone—children, college students, adults living in the community—can engage with helpful, relevant, and accessible content. The recommendation below to focus on indigenous justice should be a key consideration when designing signage.

Our committee believes this signage task presents a unique and valuable opportunity for student input and learning. **To that end, we suggest that an environmental writing class (or other relevant class) at Middlebury could include work to develop the writing content for the signage.**

F. Future Considerations

Our committee has identified several future considerations for the solar site. While we could not fully pursue these, we want to ensure that next year's committee (and even committees in the several years following) are aware of the following opportunities for enhancement to the recreational usage of the solar site.

We strongly recommend that indigenous justice becomes a central focus for this project as it moves forward; the land itself is the foundation of this project and so the link to the Abenaki people cannot and should not be ignored**.** Megan Brakely (Associate Director of the Knoll) has done a great deal of important work in this realm as it pertains to decolonizing agriculture and forming relationships with the Abenaki community. Her work with Chief Don Stevens of the Nulhegan Band of the Coosuk Abenaki Nation can be an example to look to for guidance and inspiration. She has offered to provide information about her work if requested. She recommends the steel and cement supports for signs (see the signs at the Knoll as an example) and these structures can accept new decals, providing the ability to alter signage when necessary. Megan stressed that this is all a work in progress. We believe it is the Solar Site committee's responsibility to make this land not only accessible but also inviting to the Abenaki community. This interview with Chief Don Stevens provides helpful insight into how this can be achieved. The solar site trails provide an opportunity to continue building a partnership with the Abenaki community. We recommend starting by dedicating one sign to a land acknowledgement unique to the site and one or more signs dedicated to explaining the history of the land as it relates to the Abenaki community. The subsequent steps should be planned in consultation with Chief Don Stevens or anyone else that he recommends or future committees determine to be relevant stakeholders to this matter.

Another consideration is the **incorporation of art installations at the solar site.** As stated in the original, longer set of committee goals, the committee could eventually "Determine if the site is eligible for the Art in Public Spaces program and if so, identify possible art installations and sites for them and how they would relate to the other elements of the overall project." Involving members of the Program in Studio Art in this component of the project would provide experiential education opportunities, an important goal of Energy 2028.

In addition, **we strongly recommend that future committee members work with Bee the Change and Encore Renewables to develop native pollinator habitats**. Utilizing the space between and underneath the solar panels for native plants that serve as a habitat for important pollinator species is a wonderful opportunity to add to the ecological value of the site. Furthermore, creating native pollinator habitats would add to the aesthetic appeal of the site and improve the recreation experience for trail users.

Finally, **ecological restoration was one of the original committee goals that had to be cut due to time this year but that will be important for future committee work**. In the original wording of the goals, the committee should provide plans for "an assessment of the site to determine possibilities for ecological restoration, including natural hydrology, vegetation and the role of the larger area with regard to the conservation of grassland bird habitat (a condition of the State permit for the solar project is to protect 90 acres of habitat somewhere near the site)." While parts of this goal, especially those pertaining to the grassland bird habitat, are required, all efforts for ecological restoration will be extremely valuable. It is important that the solar site serves not just a short-term power supply role but also addresses longer-term ecological issues.

We, the members of the 2022-2023 South Street Solar Site Trail Committee, thank you for taking the time to read our report. It has been an exciting journey to see how far we were able to take this project. We are looking forward to hiking on these trails in the near future.

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Beyond Energy2028

"There are countless more things possible than we could ever dream"

– Brian Doyle, One Long River of Song, A Prayer for You and Yours

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