

Climate Action, Sustainability, and Energy Committee Meeting Minutes

September 23rd, 2024, 2:00pm

Zoom: <https://virginiatech.zoom.us/j/83621283405>

Present: Alisha Ebert for Dwyn Taylor, Simon Allen, Nam Nguyen, Nathan King, Emily Williams, Carrie Cox, Matt Stolte, Teresa Sweeney, Paul Ely, Autumn Timpano, Joshua Clemons, Irene Leech, Juli McClafferty, Annie Hassall Lawrence, Pat Donovan, Diane Bonsall, Ian Dunbar for Kendra Paisley, Yohan Sequeira

Absent with Notice: Jamie King

Absent: Liza Morris, Zhuo Fu, Wesley Gwaltney, Paul Winistorfer, Leslie Stevens, Andrew Dolbin MacNab, Mae Hey

Guests: Kristina Cook, Emily Vollmer, Ron Meyers, Zach Weiss, Seyi Dasho, Mark Witt, Justin Lough, Luke Goodman, Pat Hilt, Lizeth Jaramillo Taborda, Nick Quint, Kevin Carlson, Todd Schenk, Adia long, Chloe Hurren, Barbara Wise, Katie Smith, Ralph Hall, Jama Courtney, Steve Durfee, Sean McGinnis, Simona Fried, Julie McCafferty, Ann Raridon, Chris Tedder, Sweta Baniya, Erin Poff, Meghan Marsh, Andrew Mudd, S.B. Chandler

Nathan King called the meeting to order at 2:00 pm. A quorum was present.

1. Adoption of Agenda

A motion was made and seconded to adopt the agenda. The motion carried.

2. Announcement of approval and posting of minutes of April 29th, 2024

Nathan King noted that these minutes have been voted on electronically and can be publicly accessed on the Governance Information System on the Web (<http://www.governance.vt.edu>).

2. Membership Updates

Nathan welcomed new members Dwyn Taylor, Simon Allen, Nam Nguyen, Nathan King, Paul Ely, Irene Leech, Julie McClafferty, Paul Winistorfer, and Andrew Dolbin MacNab

3. Presentation

Nathan King (Campus Sustainability Manager and Chair of CASE Committee), Kristina Cook (Sustainability Program Coordinator), Emily Vollmer (Sustainability Coordinator), and Ron Myers (Associate Professor of Practice, Fish and Wildlife Conservation) gave presentations that covered all agenda items for the committee meeting (attached). Kristina provided an overview of CASEC subcommittees, Emily Vollmer provided an update on the 2023-2024 Sustainability Annual Report, Nathan presented an overview and update of the Green RFP program, and Ron Myers provided an update on the agrovoltatics project at Catawba.

4. Announcements and Open Discussion

- Announcements
 - Game Day Green Team Volunteers needed for remaining fall semester home games! Email sustainability@vt.edu.
 - Bee Campus USA update:
 - Inaugural Habitat Creation and Maintenance Volunteer Team orientation and work time on Oct. 4
 - New signs being ordered. Signage is required for VT to remain certified
 - VT committee meeting this fall
 - Volunteer management system being developed for all sustainability volunteer activities, including Bee Campus USA
- Open Discussion
 - SAR:
 - Zach Weiss: How do we calculate GHG emissions? How do we calculate emissions from mowing the lawns?
 - Simona Fried: I work with Dr. Sean McGinnis on the greenhouse gas inventory, and I will post the link to the greenhouse gas inventory and report from 2022. It lays out all our methodology, so I won't spend too much time going into it here, but if you have any questions I'll also put my email address and Dr. McGinnis's. Oh it looks like Emily just shared that.
 - Green RFP
 - Kristina: (reading a chat from Zac Wiess on Zoom): we have another question about plantings on campus wondering what our thoughts are on fruit vines on entrances willow living fences on campus?
 - Kristina: I know that any plants that are planted on campus, there's part of our design construction guidelines that includes a list of approved plants but Zac I can get back with you on some more detail, gather the information. I'll have all these questions in the chat and can get back to anyone whose question isn't thoroughly answered during this meeting. Nathan, or anyone else involved with plantings on campus, any more thoughts on that?
 - Nathan: Yeah, I mean, certainly that's an interesting one to explore if you're coming at this from thinking of a potential green RFP proposal, you know just go ahead and submit that to our office and we'll help you and if you have any questions we'll connect you with a subject matter expert. We can kind of help step you through the process, we can explore it together, and see, you know, really what the outcomes are. You know, I can see this going a couple different ways depending on what buildings, what area of campus, things like that. You know, some buildings architecturally, and especially if it's putting out fruits, it could get trampled with traffic, there might be a few buildings with some issues there but, overall, there are areas on campus where this could make sense. So, you

just have to go through the green RFP process to figure it out, but hopefully that helps.

- Agrivoltaics

- Diane Bonsall: How are concerns addressed about view from the Appalachian Trail? I guess that would be Ron or Ralph.
- Ron: I'll take that one, that's okay Ralph. Kristina, can you find that slide that had the pictures of the site? That had the visual history? So briefly what we did, we told them we wanted to get somewhere between 3 and 20 megawatts sited on the site, so what areas of the site might be okay for the Appalachian Trail community and community members and we had them identify locations in the community that were sensitive to them, like McAfee Knob and Tinker's Point and all these other places, there were like thirty. We went out and took photographs from there and we sort of hired a consulting firm that superimposed what those arrays might look like from that viewpoint, and we had the stakeholders evaluate, is this okay? Do we want to cut down the size of it? And they cut out a lot of the areas that we thought might be technically suitable from a slope perspective. And so, by the end, sort of because people are involved in that process, they recognized that they really oughta be supportive of VT and supportive of solar, so it was okay to see it from some places and not from others and we just came up from a compromise.
- Kristina: Yohan is asking for the PV farm, will there be significant need to upgrade the power grid? Will there be power storage at the site as well?
- Nam: I can take that if you'd like, Kristina. Good afternoon, everyone. I'm Nam Nguyen with energy and utilities, and I've had a chance to be engaged with professors Hall and Myers for the last few months on this concept of agrivoltaics and just a solar array in general. For my contribution, we're going to do technical and financial feasibility studies to really understand what it takes to really put some of these projects into development and understand fully the cost-benefit analysis. So, we recognize that there's opportunities, particularly with investment tax credits available with the Inflation Reduction Act that's available, but we also know there's going to be challenges to executing those ITC opportunities because they do require quite a bit of compliance for those grants. There are prevailing wages, there are certain percentages of apprenticeships you have to employ, and buy American for the products, and those things do add to the cost, so there are a lot of complexities in fully understanding the technical and financial analysis of these projects. As far as the integration to the grid, unfortunately, most of these sites are outside the service territory of Virginia Tech electric service, so we do not have the means to do the electrical modeling of what it would take to absorb these sizes of arrays, so we would have to rely on the incoming utilities to do that, and again, those are the things that would require some funding to have that determination made in the connection

requirement. Typically, that does require some type of upgrade, whether it's upgrades to the distribution or transmission lines themselves, or in some cases even to the substations themselves. Lastly, I know it's been touched upon, but representing facilities, there are things we would have to make sure that we address in terms of the design standards of the campus and making sure that we maintain the required open space stated in the Campus Master Plan and approved by the Board of Visitors. Also, making sure that implementing these projects is consistent with the land use that has been applied to us as a land grant university. So that's kind of a long way of going about answering this question, but I hope I addressed it.

- Kristina: Thanks so much, Nam. That was great. We have another question: Are there other places within the US where agrivoltaics have been embraced? Such as in places where there are less viewshed issues, and in your opinion, how far off are we from implementing on a commercial level?
- Ralph: I'll say what I know and then Ron can chime in. So, I've been to a utility-scale agrivoltaics facility in Massachusetts, and that one was away from the main view on farmland. There was actually part of a larger complex where you had full utility-scale solar on one part, and the other part had solar panels raised above livestock so livestock could graze and get shade from the sun. So, there are examples around the US. There's predominantly utility-scale solar, agrivoltaics is sort of a newer part of that. What we see is that there are very good ways to do solar. For example, screwing in the poles so you don't disrupt the soil, you kind of keep the topsoil in good health, you don't put heavy equipment on it, you don't cut and fill, there's good ways to do. So, what we are looking at, what we're challenging the students to look at, is how can Virginia Tech look at agrivoltaics in all its forms and functions? Livestock, vegetable production, greenhouses, where could they go? What kind of research portfolio would that enable? What about local food supply? How do we procure local vegetables for these types of systems? What does that do to the suppliers locally? Can local farmers join in on the local procurement process? There's lots of interesting, interconnected questions. Agrivoltaics is emerging, we're not quite there yet. Ron, do you want to add anything else about what you've seen?
- Ron: Yeah, that's a good overview. I think the question was also asking about visual impacts, and it's really, the whole field of visual aesthetics is of course literally a whole field, landscape architecture, architecture, art, right? And so, we've had faculty from those areas helping us to understand these issues. What we're finding is that if it's a really visually sensitive area, like underneath the Appalachian Trail, you know, really pretty high quality viewshed, there's a little development in the view, and so people are okay with a little bit of additional development for a good

cause. And so, you don't have to completely say no not here. In fact, we found out that the younger members in the Appalachian Trail community wanted to see it, they wanted to show that that community was progressive and doing something, and it's really interesting. In fact, one of the conditions was that we had a condition to explain about the APV down there, so this was interesting. And, I do think that almost no developers elaborate with the public to figure out: what are their visual concerns? And adjust their projects. So I think if that's done, it would go a long way to addressing these concerns with siting. And I also just don't think it's possible to do enough solar PV with agriculture to get us where we need to go without seeing some of it.

- Nam: I'll add that APV has taken off more, so in Europe, where land and space are a bit more constrained, but it is having some interest here in the US as more suitable lands are needed for additional solar and having farmers being able to have multiuse of their land is something that may be attractive and appealing in the future. I think Dominion Energy is doing a pilot, also, when we met for the workshop a couple months ago, they had mentioned that they were having a pilot ongoing.
- Ralph: I'll just add because I totally forgot to mention the workshop. So, we had some funding, and in August we held a workshop. There were, I think, about over 50 participants there. We had a farm representative, farm bureau representatives on the panel, a developer's panel, a utilities panel, academics, and we had government, so the sort of policy panel. So from that 3-day workshop, we are currently working on a white paper that will go out and capture what we discussed. The principle outcome is a need to start holding conversations across as many stakeholders as possible in Virginia to start building an understanding of what APV is, what are best practices for installation. What we're thinking as a land grant institution, Virginia Tech has an obligation to go out and sort of lead the way to go out and see what works and what best practices are through our Virginia Cooperative extension program to farmers and beyond. So we're sort of really doing this as an innovative network of opportunity. So right now we're literally writing the white paper from August's meeting and that will be distributed quite broadly hopefully as soon as it's ready. So, we should've mentioned that. Lots of different things happening in lots of different places, you forget what you've done. But, the nice thing about this is that internally we talk about fellowships at the centers. So, we have centers, like the Center for Advanced Innovation in Agriculture, Center for Future Workplaces and Practices, Center for Power and Energy, Center for Food Systems and Community Transformation, Center for Economic and Community Engagement, VT Wireless, and beyond. So all of these centers have a clear connection with agrivoltaics, so we're really trying to think about how can we work together, leverage resources, and start interesting conversations. There's

been quite a few interesting research proposals in the last few months, so Ron mentioned that we just won a \$2.5 million project with many universities across the US and labs, we already have a grant. Lee Daniels and his colleagues are looking at stormwater runoff from agrivoltaics, I think that's about \$3.4 million, so we're likely to see this continue, so we're sort of on the ramp up, is how I'd describe it. We'll see what happens, but that's an update on what we did in August.

- Kristina: Thank you so much. I was hoping you'd talk about that, too, so much appreciated. Looks like we just have one minute left, maybe we have time for this last question to be answered and then when I send out the minutes and presentation, that will also include the chat so your voices will be heard, those of you in the chat who have made comments.
- Kristina: Is the electricity provider in Catawba Botetourt Cooperative of AEP?
- Ron: It's actually both. It's really unique, both of those providers go into that campus.
- Ralph: They're on the tail end of both distribution systems, and so when the power goes out, they lose power, so they have experienced critical loss of power, and they need power given the services they provide, health services they provide. So the idea of having a backup battery system is something the CEO at the Catawba hospital is very, very interested in. So we'll see what happens there, but it's an interesting case. And, if you haven't been there, the hospital is largely invisible from when you're standing in the valley, it's sort of behind the ridge and the tree line. So, it's actually hard to see it, so the land they are looking at to put solar on it, a significant majority of that land, you wouldn't see it if you're down in the valley or up on the ridge. It's quite a unique setting.
- Ron: Kristina, can I go back to the comment about, Irene's comment about how the attitude here is that outsiders will come put something in and force the locals to accept it? This is a lot of my interest with the APV part, not just as a natural resources person wanting to have multiple land uses, like energy, agriculture, wildlife, but none of this is gonna work if we continue to use the model of forcing this on the public. So I've been working closely with Todd, who helped me learn a lot more about good ways to engage the public in this planning, and that's what we piloted at Catawba, so I completely agree with you, Irene. There's a good reason for that perception out there. And again, as Virginia Tech, as a leader out there, we want to share this best practice.

6. Adjournment

There being no further business, the meeting adjourned at 2:59 pm.



Climate Action, Sustainability, and Energy Committee

September 23, 2024 – 2:00 PM





Please Use Poll Everywhere to Sign in for Attendance

All attendees- members, proxies, and guests **affiliated with VT** should sign in

Participating on Your Phone or Tablet

Using a QR to Participate on Poll Everywhere

1. Open camera app on your phone
2. Place QR code in frame but DO NOT take a photo
3. Focus shot until yellow pollev.com indicator appears



4. Tap QR code on screen to open Poll Everywhere

Pollev.com/kathleensmith949

To participate on your computer:

1. Open web browser and enter web address provided to go to Poll Everywhere
2. Enter your VT email in the text box and select “next”
3. Select “Log in with Virginia Tech University Governance”
4. Sign in with VT SSO and complete two-factor authentication
5. Select “Join Presentation”

Welcome New and Returning Committee Members!

New Members (9)	Returning Members (16)	
Dwyn Taylor	Emily Williams	Wesley Gwaltney
Simon Allen	Liza Morris	Annie Hassall Lawrence
Nam Nguyen (served previously)	Carrie Cox	Pat Donovan
Nathan King (Chair)	Jamie King	Diane Bonsall
Paul Ely (served previously)	Matt Stolte	Leslie Stevens
Irene Leech	Teresa Sweeney	Kendra Paisley
Julie McClafferty	Autumn Timpano	Mae Hey
Paul Winistorfer (served previously)	Joshua Clemons	
Andrew Dolbin MacNab	Zhuo Fu	

7 additional appointments coming soon!

Current quorum is 14 members



Agenda

- Welcome, Opening Remarks, and Membership Updates
- Approval of Proposed Agenda (Poll Everywhere)
- Charge, Ground Rules, and Input
- April Meeting Minutes: Electronic Vote Results
- Announcements
- Business
 - Subcommittees Overview
 - SAR Update
 - Green RFP Overview
 - Agrivoltaics Update
- Open Discussion

Charge

To provide guidance to the university administration on the implementation of the university's Climate Action Commitment and opportunities to enhance Virginia Tech's pursuit of environmental quality and social sustainability. The committee makes recommendations regarding the application of policies, infrastructural and operational changes, educational strategies and modifications, and other steps intended to foster broad engagement with the university's environmental goals. The committee oversees subcommittees that each carry out aspects of the committee's charge.

Reports to: University Council Cabinet

Governance Protocols

- Please assign a proxy for meetings you cannot attend (notify Kristina Cook of your expected absence ahead of time).
- Please do not vote on items if you are not a member, but we are glad you are here!
- We follow Robert's Rules of Order during meetings.

* April 2024 minutes were approved by membership electronically

A scenic view of a lake surrounded by lush green trees, with a white rectangular box in the center containing the word "Announcements" in blue text.

Announcements



Get Involved today!

Volunteers Needed

From Tailgate to Endzone:
Help Hokies Score Zero-Waste!

Game Day Green Team Volunteer Sign Up



Please Join Us

September 7th, 2024

12:30- 2:30pm



Lancaster House,
Washington St.

We Need Help With

- Education & Outreach
- Collecting Bottles & Cans
- Making Game day Greener

For game day details & more information :

contact

Sustainability@vt.edu

Bellag20@vt.edu
Isabella Gerena
Office of Sustainability GA

Event starts on:

SATURDAY

7 SEPTEMBER 2024

Lancaster House, Washington St.

JOIN OUR

GAME DAY GREEN TEAM!



What You'll Do:

- Engage with tailgaters and Educate them on recycling and waste management.
- Help create a Greener game day experience for everyone at Virginia Tech.

Perks:

- FREE T-shirt for all volunteers!
- Enjoy the Game! Finish volunteering 2 hours before kickoff so ticket holders won't miss out on the action.

*Are you passionate about sustainability and looking for a fun way to get involved? The **Game Day Green Team** is calling for enthusiastic volunteers to help make our home football games more eco-friendly!*

For Details & Questions Email:

Sustainability@vt.edu



VT's Bee Campus USA Update

- Inaugural Habitat Creation and Maintenance Volunteer Team orientation/work time is **Friday October 4th from 2:30 to 4:00pm**. Focus will be on Torgerson and Newman Library roundabout gardens. For more information, please contact Kristina Cook (kristinac@vt.edu)
- New signs are being ordered for existing gardens. Signage is required for VT to remain certified.
- Bee Campus USA committee will be meeting this fall.
- A volunteer management system is being developed for all sustainability activities, including Bee Campus, with Honors class 3204 this semester





Agenda

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A scenic view of a lake surrounded by lush green trees, with a white text box overlaid in the center. The text box contains the title "Committee Input & Subcommittees Overview" in blue font. The background shows a large tree in the foreground, a body of water in the middle ground, and more trees in the background under a bright sky.

Committee Input & Subcommittees Overview

We Would Like Your Input!

- Agenda ideas
 - Guest speaker suggestions
 - Colleagues/Peers to add to meeting invites and subcommittees
 - Subcommittees meet at least twice per semester and are a low commitment but effective way to be a part of moving VT's CAC implementation forward
 - Let Kristina Cook know if you are interested in joining a subcommittee (kristinac@vt.edu)
- **Agriculture, Forestry, and Land Use Operations (Notes used from Urban Forest Advisory Committee)**
 - **CALL (Climate Action Living Laboratory)**
 - **Carbon-Neutral Commuting & Carbon-Neutral Fleet**
 - **GHG Inventory and Carbon Offsets & Management**
 - **Climate Justice**
 - **Energy**
 - **Water**
 - **Sustainable Campus Culture, Engagement, & Sustainable Choices**
 - **VT-Blacksburg Sustainability Collaboration (Notes used from Sustainable Blacksburg)**
 - **Zero Waste**

A scenic view of a lake surrounded by lush green trees, with a white text box overlaid in the center. The text is in a blue, sans-serif font.

Sustainability Annual Report (SAR) Update

2023-24 Sustainability Annual Report

- 15th annual report, CAC progress
- Timeline:
 - Editorial review complete
 - Graphic design in progress
 - Submission to BOV in November
 - Publishing in November
- Key Highlights
 - STARS Gold achieved in spring – 73.17
 - Tree Campus and Bee Campus USA certifications maintained
 - Top 200 in the THE Impact Rankings
 - 84% waste diversion rate in CY2022
 - CALL network expanding and formalizing
 - CY2022 showed a 10% reduction in total CO2 emissions from CY2021
 - New transit center opened, resulting in BT ridership increase

A scenic view of a lake surrounded by lush green trees, with a white text box overlaid in the center. The text box contains the title "Green RFP Overview" in blue font. The background shows a large tree trunk in the foreground, with a lake and more trees in the distance under a bright sky.

Green RFP Overview

2024-2025 Green RFP: Key Points and CASEC's Role

- Formal university program for **student or student organizations** to submit sustainability projects that support the 2020 Climate Action Commitment
- Program was launched in **academic year 2010-11**
- The uniqueness – proposals are submitted, reviewed, **select proposals prioritized**, approved proposals funded, & implementation initiated within a year of receiving them
- **CASEC to review & prioritize the select proposals**
- **The program launched Friday, Sept 20th**
- Encourage your students to work with our office and submit a proposal!
- Detailed information and link to the proposal document:

<https://www.vt.edu/sustainability/engagement/green-rfp.html>

2024-2025 Green RFP Process and Timeline

<u>DATE</u>	<u>ACTIVITY</u>
Sep 20	Green RFP 2024-25 announcement
Nov 15	Proposal deadline to office of sustainability
Dec 1	Office coordinates review with subject matter experts
Jan 27	CASEC Subcommittee to review & prioritize proposals
Feb 24	Subcommittee presents recommendations to <u>CASEC for approval</u>
Mar 7	CASEC presents proposals to the Office of Budget & Financial Planning
Mar/Apr	OBFP convenes Budget Review Committee- identifies funding sources
July	Select proposals approved - implementation initiated

Implementation Update

2022-23 Projects = 10 total

Progress

- **6 projects complete**
- **3 projects in progress**
- **1 project not started**

2023-24 Projects = 2 total

Progress

- **Patton Hall LED project has launched**
- **Stroubles Creek is set to begin in spring**



A scenic view of a lake surrounded by lush green trees, with a white rectangular box overlaid in the center containing the text 'Agrivoltaics Update'. The background shows a calm body of water reflecting the sky, framed by dense green foliage and tree branches. The text is centered within the white box in a blue, sans-serif font.

Agrivoltaics Update

Catawba Valley Agri/Wildlife Solar PV Facility

September 23, 2024 VT CASE Meeting Update

Ron Meyers, Ph.D., Associate Professor of Practice

Director, VT Renewable Energy Facilities Siting Project



Research, Teaching, Demonstration
Energy + Food + Employment +
Affordable Education / Student Success

Decarbonization of VA Economy & Land Use

- 5 energy-use sectors: Electric power, transportation, industrial, residential, commercial
- Virginia Code § 45.2-1706.1.:
 - 30% clean electricity by 2030
 - ~161,000 acres solar PV (TNC 2022)
 - 100% clean electricity by 2040
 - Net-zero GHG emissions in all sectors by 2045
 - *Ensure that energy development projects avoid, minimize, and, if necessary, mitigate damage to the Commonwealth's natural and cultural resources*
- Electricity sector is 33.6% of CO2 reductions needed to decarbonize economy
(<https://www.eia.gov/environment/emissions/state/analysis/pdf/table4.pdf>)
- Decarbonization of entire economy = ~ 483,000 acres in VA for USS PV (Meyers)

Virginia residents protest proposed solar farm in Spotsylvania

Land designated for agricultural use

By [Laura Kelly](#) - The Washington Times - Monday, December 10, 2018

TOP STORY

Culpeper County planners deny solar project

By [Allison Brophy Champion](#) Jul 12, 2018



U.S. World Opinion Politics En

Hot Topics Stampede at Soleimani's funeral

1:18 MT

LOCAL · Published February 15 · Last Update February 16

Massive East Coast solar project generates fury from neighbors



By [Alex Pappas](#) | Fox News

SUSTAINABLE RENEWABLE ENERGY DEVELOPMENT

- Renewable energy development that meets the needs of the present without compromising the ability of future generations to meet their own needs

Three pillars

- **Economic development** - Grow carbon-free economy, protect agriculture
- **Environmental protection** - Ecological integrity maintained
- **Social equity** - Meaningful public engagement, fair distribution costs & benefits

Meyers, et al. 2020

ENVIRONMENTAL PERFORMANCE

- Green house gas reductions (Kreps, Martin)
- Land & soil protection/enhancement (Kreps, Martin)
- Stormwater management and receiving stream protection/enhancement
- Forest protection
- Invasive species reduction
- Wildlife protection/enhancement (Martin)
- Toxics
- Waste Reduction/Reuse/Recycling
- Visual intrusion
- Noise intrusion
- Cultural/historic preservation

Overview of Research

1. When and how to intervene in siting process? (Meyers et al 2019)
 1. Pilot test beta version of stakeholder process (VT funded, Meyers et al 2019)
 2. Refine, test Proof of Concept for Sustainably Sited Solar PV Facility (VT funded, Meyers et al 2024)
<https://hdl.handle.net/10919/117751>
 3. Integrate New Economic Model to increase social equity (VT 2030-2047 Vision, 2024)
1. Document permitting processes in VA (4_VA funded, partnership with UVA)
2. Document existing local permit conditions for approved projects in VA (VE Funded)
3. Assess sources, degree of misinformation regarding solar PV (Meyers, NPR 2024)
<https://www.npr.org/2023/03/16/1164050912/activists-spread-misleading-information-to-fight-solar>
5. <https://www.npr.org/2023/02/18/1154867064/solar-power-misinformation-activists-rural-america>
6. Exploring APV in Virginia (VE funded)
7. Identify best practices for sustainably sited USS PV (seeking funding)
8. Develop sustainably sited USS PV concept plan scorecard (seeking funding)

Catawba Sustainability Center and Catawba Hospital Renewable Energy Social Feasibility Assessment, 2023 Update

January 29, 2024



Research, Teaching, Demonstration
Energy + Food + Employment +
Affordable Education / Student Success

Ron Meyers, Ph.D., Associate Professor of Practice, Department of Fish and Wildlife Conservation, Director, VT-Renewable Energy Facilities Siting Project; Pardis Akbari, Ph.D. student, Nathan Drummond; Jack Leff, Climate Action Fellow; Michael Justice, Senior Geospatial Technician

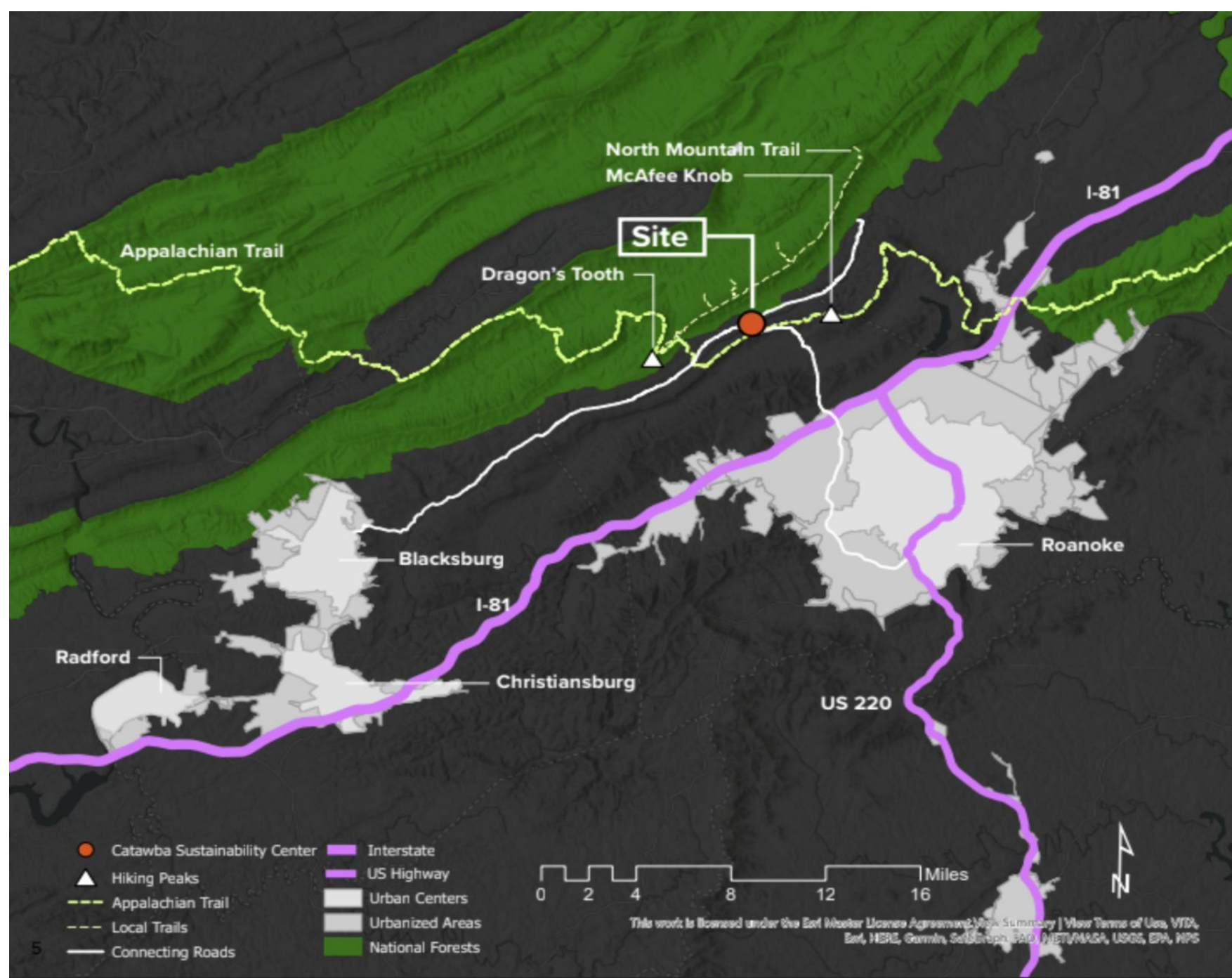
Study Purposes

- Support Phase II, VT Climate Action Commitment, 2020
- Secure social license to site arrays on VT/state lands
- Identify stakeholder requirements for siting large PV facility
- Methodological – Proof of Concept for sustainable siting process:
 - Economically beneficial
 - Environmentally beneficial
 - Socially beneficial

Catawba Setting

Source: Arshadi, 2022

(VT Senior Project)



Study History

- 2019 – Pilot test beta version. EPP 4354 Studio course
Catawba Renewable Energy Feasibility Study
- 2023 – Proof of Concept for stakeholder engagement
process and content VT CPIF grant to Dr. Meyers
- Stakeholders include VT faculty, students, staff, Catawba
Hospital, Appalachian Trail regional and local
commissions, community
- Six stakeholder meetings in each study to collaboratively:
 - Identify research questions
 - Evaluate research results
 - Co-decide acceptable locations, sizes, conditions



Conditions Acceptable to Stakeholders

- Economic: 17 conditions - Upgrade CSC to hire local farmers
- Environmental: 65 conditions – Soil protection to wildlife enhancements
- Social/Equity: 25 conditions – meaningful stakeholder engagement to use certification program to assure local environmental standards met throughout supply chain

ENVIRONMENTAL PERFORMANCE

Greenhouse Gas Reductions



- Site maximum feasible MW where consistent with other goals
- Use principles of reduce, reuse, and recycle to reduce embedded GHG
- Graze livestock where possible to increase C uptake, reduce GHG
- Multiple uses of land, including biofuel production
- Identify person responsible for managing GHG reductions

ENVIRONMENTAL PERFORMANCE

Visual

- Identify important viewpoints with stakeholders
- Visual studies for viewpoints
- Adjust concept plan to reduce visual intrusion



Simulation



Existing Conditions

Viewpoint 1D
Photograph from viewpoint 1D Tinker Cliffs toward 241°



ENVIRONMENTAL PERFORMANCE

Wildlife

- Ensure no adverse impacts listed species
- Identify DWR listed species at site, local wildlife initiatives, Certified Wildlife Biologist develop habitat management plan
- Provide wildlife corridors & wildlife friendly fencing
- Identify If for grazing - plant mix cool & warm season grasses native pollinators under/around arrays
- If no grazing, plant mix warm season grasses & native pollinators under/around arrays
- If for grazing - plant transitional habitat only outside fence, next to forests, mow every x years
- If no grazing - plant 25 feet transitional habitat inside & outside fence, 50 feet next to forests



<https://www.solarpowerworldonline.com/2017/05/pollinator-friendly-solar-vegetation/>

ENVIRONMENTAL PERFORMANCE

Toxics

- Avoid use of Gen-X type coatings
- Use panels that pass U.S. EPA TCLP test
<https://www.epa.gov/hw-sw846/basic-information-about-how-use-sw-846>



<https://www.solarpowerworldonline.com/2017/05/pollinator-friendly-solar-vegetation/>

Next Steps

- Faculty – collaborate with all to identify next steps, secure funding
- U.S. DOE Vouchers - \$100,000 each. Submitted September
 - Catawba technical/economic feasibility assessment
 - Checklist - siting best practices
 - Assist localities with siting decisions
- U.S. DOE Innovation at SCALE (Solar Community Assistance for Local Equity) Due September 30.
 - Targeted technical and analytical assistance to help communities overcome barriers to solar adoption and their path to solar in a just and equitable way. Participants in Innovation at SCALE will engage with subject matter experts and SEIN project leaders to identify and implement the insights and lessons from those projects that may be impactful in the participant's community.
- U.S. DOE LASSO Prize: Large Animal Solar System Operations: Due March 2025. Up to \$450,000
 - Multiple partners, including Virginia Tribes, Piedmont Environmental Council, et al

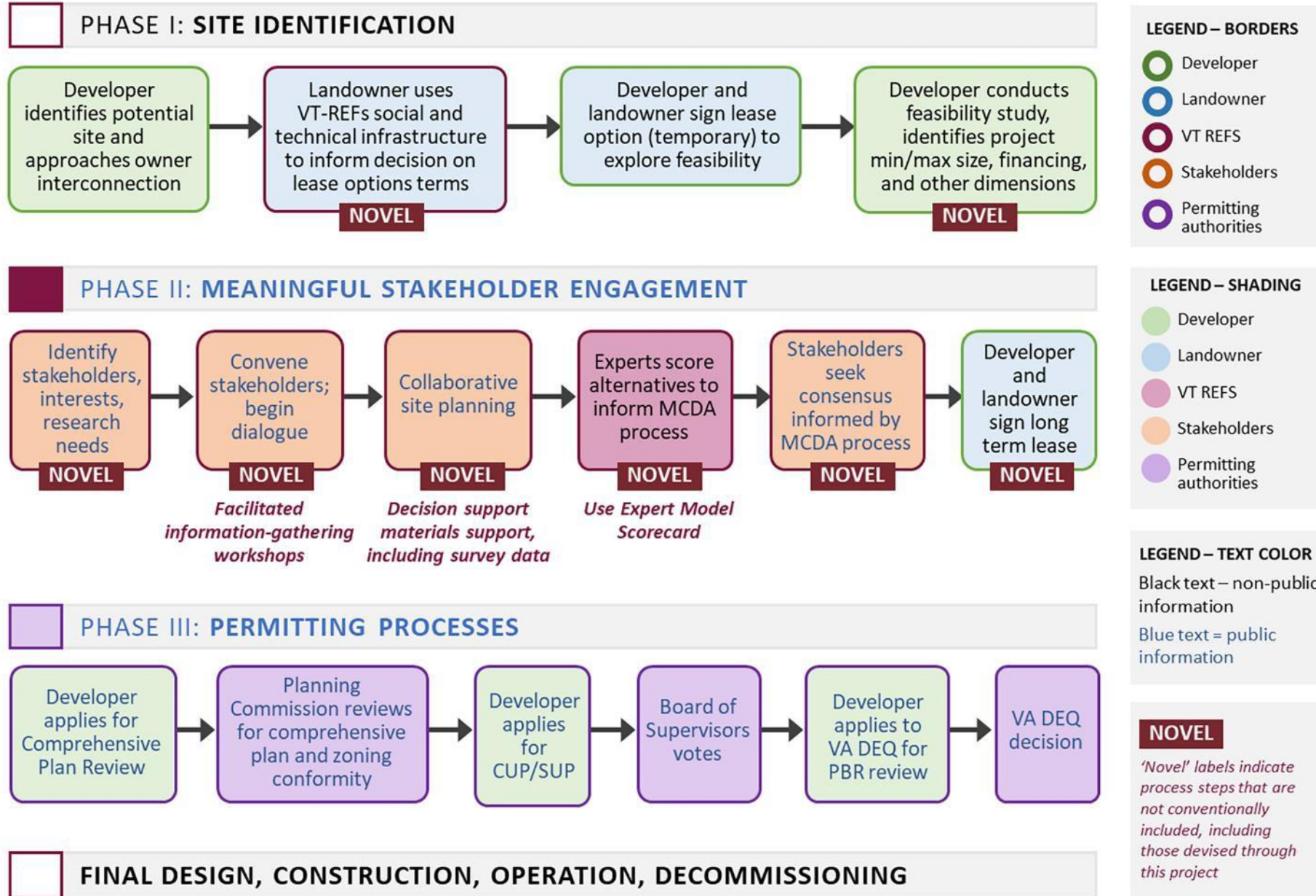
Options

<u>Option</u>	<u>Location</u>	<u>Potential nameplate MW</u>	<u>Description</u>	<u>Potential land uses</u>	<u>Potential Training/Research</u>	<u>Finance</u>
1	Catawba Hospital	6.1	Solar PV/battery - 24/7 power. Hospital/private partnership, VT faculty support	APV - Beef grazing with PV, Wildlife - pollinator habitat, demonstration facility, restore warm season grasses, restore riparian habitat, remove invasives	APV - Beef, Wildlife management, engineering, architecture, landscape architecture	50% - USDOE \$500,000 VE ? Corporate Private finance
2	Catawba Hospital	6.1 + ?	Solar PV/battery - 24/7 power. Hospital/private partnership, VT faculty support, sell x to VT	APV - Beef grazing with PV, Wildlife - pollinator habitat, demonstration facility, restore warm season grasses, restore riparian habitat, remove invasives	APV - Beef, Wildlife management, engineering, architecture, landscape architecture	50% - USDOE \$500,000 VE ? Corporate Private finance
3	Catawba Hospital	6.1 + ?	Solar PV/battery - 24/7 power. Hospital/VTES/private partnership, VT faculty support, sell x to VT	APV - Beef grazing with PV, Wildlife - pollinator habitat, demonstration facility, restore warm season grasses, restore riparian habitat, remove invasives	APV - Beef, Wildlife management, engineering, architecture, landscape architecture	50% - USDOE \$500,000 VE ? Corporate Private finance
4	Catawba Hospital /Catawba Sustainability Center	6.1 + ?	Solar PV/battery - 24/7 power. Hospital/VTES/VT private partnership, VT faculty support	APV - Beef grazing with PV, Wildlife - pollinator habitat, demonstration facility, restore warm season grasses, restore riparian habitat, remove invasives	APV - Beef, Wildlife management, engineering, architecture, landscape architecture	50% - USDOE \$500,000 VE ? Corporate Private finance

REFERENCES

- Action Research Network of the Americas. <https://arnawebsite.org/action-research/>. nd
- Babbie, Earl. 2014. *The Practice of Social Research*. 14th ed., CENGAGE Learning Custom Publishing, 2014.
- Beck, S., Hunger, M., Murphy, R., Sorensen, A. 2022. Description of the approach, data and analytical methods used for Farms Under Threat 2040 projections of solar energy facilities. American Farmland Trust. https://farmlandinfo.org/wp-content/uploads/sites/2/2022/06/FUT_Solar_Model_Technical_Methods_Final.pdf
- Brundtland, G. 1987. Report of the World Commission on Environment and Development: Our Common Future. United Nations General Assembly document A/42/427.
- Brinkman, Joshua T., and Richard F. Hirsh. 2017. "Welcoming the PIMBY ('Please in My Backyard') Phenomenon: The Acceptance of Wind Turbines and the Culture of the Machine in the Rural Midwest." *Technology and Culture* 58 (2): 335– 367. <https://doi.org/10.1353/tech.2017.0039>.
- Denholm, Paul, Patrick Brown, Wesley Cole, et al. 2022. *Examining Supply-Side Options to Achieve 100% Clean Electricity by 2035*. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A40-81644. <https://www.nrel.gov/docs/fy22osti/81644.pdf>.
- Devine- Wright, Patrick, Susana Batel, Oystein Aas, Benjamin Sovacool, Michael Car-negie Labelle, and Audun Ruud. 2017. "A Conceptual Framework for Understanding the Social Acceptance of Energy Infrastructure: Insights from Energy Storage." *Energy Policy* 107 (August): 27– 31. <https://doi.org/10.1016/j.enpol.2017.04.020>.
- Dewey, J. 1916. *Democracy and Education*. New York. Free Press.
- Matsuura, Masahiro, and Todd Schenk, eds. 2017. *Joint Fact-Finding in Urban Planning and Environmental Disputes*. New York: Routledge.
- Raab, Jonathan. 2017. "Energy and Climate Stakeholder Processes in the United States." In *Joint Fact-Finding in Urban Planning and Environmental Disputes*, edited by Masahiro Matsuura and Todd Schenk, 139– 164. New York: Routledge.
- Sovacool, Benjamin K., and Pushkala Lakshmi Ratan. 2012. "Conceptualizing the Acceptance of Wind and Solar Electricity." *Renewable and Sustainable Energy Reviews* 16 (7) 5268– 5279. <https://doi.org/10.1016/j.rser.2012.04.048>. Stern, Marc J., and Timothy D. Baird. 2015. "Trust Ecology and the Resilience of Natural Resource Management Institutions." *Ecology and Society* 20 (2): 14. <http://dx.doi.org/10.5751/ES-07248-200214>.
- Susskind, Lawrence, and Patrick Field. 1996. *Dealing with an Angry Public: The Mutual Gains Approach to Resolving Disputes*. New York: Free Press.
- Susskind, Lawrence E., Sarah McKearnen, and Jennifer Thomas-Larmer. 1999. *The Consensus Building Handbook: A Comprehensive Guide to Reaching Agreement*. Thousand Oaks: Sage.
- Wüstenhagen, Rolf, Maarten Wolsink, and Mary Jean Bürer. 2007. "Social Acceptance of Renewable Energy Innovation: An Introduction to the Concept." *Energy Policy* 35 enpol.2006.12.001.

Proposed Social Infrastructure: VT-REFS Social Infrastructure to Support Sustainable Siting of USS (S³PV) Facilities



Open Discussion

- General Committee and Subcommittee Questions
- Sustainability Annual Report (SAR)
- Green RFP Overview
- Agrivoltaics Update

Next Meeting:

**October 28, 2024
2:00 p.m. via Zoom**

