

Virginia Tech 2020 Climate Action Commitment Working Group

Final Technical Report

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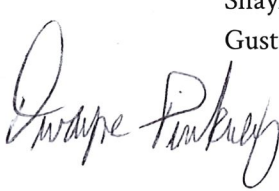


Senior Vice President and Chief
Business Officer
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MEMORANDUM

TO: John Randolph
Todd Schenk
Timothy Baird
Brooke Baugher
Shannon Bell
Blake Bensman
Dushan Boroyevich
Angie De Soto
Carol Davis
Brogan Dineen
Rob Glenn
Drew Harris

Erin Hopkins
Chris Kiwus
Natalie Koppier
Kray Luxbacher
Sean McGinnis
Phil Miskovic
Annie Pearce
Anthony Purcell
Helen Salko
Peter Sforza
Shayla Utzinger
Gustavo Ventura Gargioni

FROM: Dwayne Pinkney 

DATE: December 10, 2019

SUBJECT: Climate Action Commitment Working Group Charge

In light of the increasing sense of urgency surrounding climate change, the President has asked me to assemble an ad hoc working group to review the university community's progress on sustainability and to propose an update to the Virginia Tech Climate Action Commitment ([President's Policy Memorandum 262](#)). This memorandum requests your participation in the CAC Working Group. Much good work on sustainability has already occurred, and it is essential that we continue to build on this momentum and draw on the expertise of our faculty who are engaged in these important fields to remain a leader.

Charge

The CAC Working Group should provide two deliverables: 1) a summary of the university's progress on sustainability since the university's first Climate Action Commitment was put in place in 2009 and revised in 2013 and 2) a proposed update to the Climate Action Commitment.

The summary should:

- outline the structure, partnerships, and arrangements that have developed over time to address sustainability;
- include high level data summarizing the institution's progress since 2009; and
- provide perspective on how these achievements compare to those at peer institutions.

The revised Commitment should:

- consider whether updates to the definition, vision, and mission statements are needed;
- outline clear, measureable, and realistic goals;
- consider the long-term impact of the goals on policies, operations, and budget of the university;
- identify broad metrics and elements for determining progress in meeting these goals; and
- follow university policy format.

Membership and Information Flow

John Randolph will Chair the Working Group and Todd Schenk will serve as Vice Chair. To supplement the expertise of the Working Group membership, the Chair should invite other faculty, staff, and/or external resources to inform the Group's work. The Chair may also establish subcommittees as needed to provide additional community perspectives.

Student representatives on the Working Group are also encouraged to assemble a larger advisory group or to use existing mechanisms such as SGA, GSA, and student organizations to provide information, concerns, and questions to the Working Group.

The university's existing governance process includes an Energy and Sustainability Committee. This committee is comprised of subject matter experts and sustainability practitioners from across the institution, as well as broad representation from faculty, staff, and students. It is essential that both this committee and the university administration have opportunities to share developments that may impact the Working Group's efforts and to ensure that many perspectives are considered. Therefore, I am requesting that regular updates be provided by the Working Group Chair or a designee to me and to the Energy and Sustainability Committee as the team's work progresses.

Timeline for Reporting and Revised Commitment Approval

The President has asked that the Committee to complete its work this academic year so that governance approvals can take place during fall 2020 in accordance with the below timeline:

- **December 2019:** Working Group formed and charged
- **March 1, 2020:** Interim report provided to me on your progress
- **May 7, 2020:** Final reports and recommendations provided to me
- **September 2020:** Presentations to the Energy & Sustainability Committee and the Commission on University Support
- **October 2020:** Presentation to University Council
- **November 2020:** Presentation to the Board of Visitors

Thank you, in advance, for your willingness to take on this challenge and bring your ideas and insight to this critical issue. I look forward to receiving regular updates on the team's work and to submitting an updated commitment for University Council and the President's consideration that provides meaningful and realistic goals for enhancing our work and producing enduring results.

Virginia Tech 2020 Climate Action Commitment Working Group

FACULTY (10)

- **John Randolph, Chair**, professor emeritus, UAP
- **Todd Schenk, Vice-Chair**, assistant professor, UAP
- **Tim Baird**, associate professor, Geography
- **Shannon Bell**, associate professor, Sociology
- **Erin Hopkins**, assistant professor of AHRM,, and faculty representative to the E&SC.
- **Chen-Ching Liu**, AEP Professor, ECE
- **Kray Luxbacher**, C.T. Holland professor and assoc. head, MME
- **Sean McGinnis**, associate professor, MSE and director, Green Engineering Program
- **Annie Pearce**, associate professor, BC
- **Peter Sforza**, director, Center for Geospatial Information Technology

STUDENTS (10)

- **Brooke Baugher**, graduate student, former grad assistant in the Office of Sustainability
- **Brandon Burkey**, graduate student representative to the E&SC.
- **Gustavo Ventura Gargioni**, graduate student representative to the E&SC (**withdrew**)
- **Jack Leff**, graduate student representative, GSA at-large
- **Phil Miskovic**, graduate student representative to the Com. on University Support
- **Brogan Dineen**, undergraduate student representative to the E&SC.
- **Drew Harris**, undergraduate student and worker in the Energy Manager's Office.
- **Natalie Koppier**, undergraduate student representative to the E&SC.
- **Jayme Bibbins**, undergraduate, SGA at-large
- **Owen Callahan**, undergraduate, at-large

STAFF (4 non-voting)

- **Blake Bensman**, sustainability manager, Dining Services and Housing/Residence Life.
- **Christopher Kiwus**, associate VP chief facilities officer and ex officio E&SC, CUS
- **Rob Glenn**, director of Virginia Tech Electric Services and facilities representative to E&SC
- **Brandon Hendricks**, assistant director for Dining Services.

COMMUNITY (2 non-voting)

- **Carol Davis**, Town of Blacksburg representative.
- **Shayla Utzinger**, Blacksburg High School liaison

VT CAC 2020 Working Group Subcommittees (+convener, *WG member))

- **Community Engagement Subcommittee** (VT CAC #10): campus involvement during Working Group process (involving stakeholders) and post-WG implementation (engaging campus participants)
 - Todd Schenk*##+
 - Carol Davis*#
 - Emily Satterwhite (Appal Studies)
 - Aparna Cheran# (undergrad, Microbio)
 - Rachel Spector# (undergrad, EnvCons&Soc)
 - Heidi Hahn# (undergrad, EPP)
 - Bryan Hanson (grad school ombudsperson)
 - Alexa Briehl (Dir. Comm. Business Affairs)
 - Sarah Collings Myers" (Comm. Facilities)
- **Climate Justice Subcommittee** (VT CAC #10): opportunity for student advocates to contribute to and monitor WG
 - Shannon Bell*##+
 - Carl Zipper# (CSES retired)
 - Jack Leff* (grad, STS)
 - Ryan Berotti (undergrad, ME)
 - Rachel Spector (undergrad, EnvCons&Soc)
 - Heidi Hahn# (undergrad, EPP)
 - Owen Callahan (undergrad, Psych)
 - Aparna Cheran# (undergrad, Microbio)
 - John Shewchuck# (undergrad, ME)
 - Amber Wendler# (grad, Bio)
 - Erin Nuckols (grad, EDP)
 - Jason Chavez (grad, PoliSci)
 - Shayla Ultzinger*# (BHS student)
- **Renewable Energy Opportunities Subcommittee** (VT CAC #7): faculty/students/staff review renewable energy options including solar, biomass, wind on campus and off-campus VT properties and other sites, and potential partnerships for development.
 - Rob Glenn*##+
 - Sean McGinnis*#
 - Ron Meyers# (Research Tech, UAP)
 - John Randolph*#
 - Chen-Ching Liu# (ECE)
 - John Chermak# (GeolSci)
 - Kim Briele" (Dir, EngAssess)
 - Mary-Ann Ibeziako (AVP, Utilities)
 - Rachel Spector# (undergrad, EnvCons&Soc)
 - Heidi Hahn# (undergrad, EPP)
 - Paul O'Horo# (undergrad, ECE)
 - Nathan Hearne# (undergrad)
- **Peer University Comparison Subcommittee** (VTCAC #1): faculty/students/staff review climate action among peer universities (e.g., in Virginia, ACC, Land Grant institutions) compared to VT:
 - John Randolph*##+
 - Justin Noble (Dir. Internal Audit) or rep
 - Kray Luxbacher (Mining and Minerals) #
 - Ryan Berotti" (undergrad, ME)
- **GHG Inventory Subcommittee** (VT CAC #3, 13): faculty/students/staff review our current practice of monitoring carbon emissions and progress toward our goals.
 - Sean McGinnis*##+(MSE)
 - Drew Harris*# (undergrad, ME)
 - John Randolph*#
 - Kray Luxbacher*# (Mining and Minerals)
 - Rob Lowe# (EnvHealthSafety)
 - Mary-Ann Ibeziako" (Utilities)
 - Gustavo Gargioni*# (grad, AeroEng)
 - Jack Leff*# (grad, STS)
 - Natalie Koppiers*# (undergrad, EPP)
 - Owen Callahan# (undergrad, Psych)
 - Conor Doane# (undergrad, CEE)
 - Marc Stern (FREC)" (continue on list)
- **Energy Opportunities Subcommittee** (VT CAC #4, 7): faculty/students/staff review progress and potential for energy-related issues (electricity efficiency, steam plant, chillers, efficiency and demand reductions, 5-year energy management plan)
 - John Randolph*##+
 - Rob Glenn*#(Dir, VTES)
 - Amanda Morris# (Chem)
 - John Beach#(Dir, Utilities)
 - Kim Briele# (Dir, EngAssess)
 - Mary-Ann Ibeziako (Utilities)
 - Lowell Jesse" (EnergyEng, Facilities)
 - Gaurav Anand# (undergrad, ChemEng)
 - John Shewchuk# (undergrad, ME)
 - Ryan Berotti# (undergrad, ME)

- **Buildings Opportunities Subcommittee** (VT CAC #6, 7): faculty/students/staff review progress and potential for energy efficiency of new and existing buildings (design guidelines, 5-year energy management plan)
 - Scott Kerklo# (Facilities Eng. Ops)
 - Erin Hopkins*# (AHRM)
 - Georg Reichard# (BC)
 - Anamaria Bukvic# (Geog)
 - Julia Gohlke# (Vet Med)
 - Mike Vellines (Const Stds, Facilities)
 - Paul Ely (Capital Const/Renovations)
 - Kim Briele (Eng.Assess.)
 - Emma Lineberry" (undergrad, Arch)
 - Christine Labuski (Soc)
 - Catie Grayson (undergrad, EPP)
 - Erin Nuckols (grad, EDP)
 - Yasmine Sikder (undergrad, ISE)
- **Transportation Opportunities Subcommittee** (VT CAC #11): faculty/students/staff review transportation progress and potential emission reduction (commuting, motor pool, other travel including university business air travel)
 - Nick Quint (Trans. Network Manager)#+
 - Brandon Burkey* (undergrad, Phil)
 - Greg Tew# (Arch)
 - Durelle Scott# (BSE)
 - Janet Rankin# (HNHE, ret)
 - Erik Olsen or Tom Fox (Blacksburg Transit)
 - Kali Casper (Town of Blacksburg planner)
 - Beth Lohman (Blacksburg GW/BW/SW Corridor)
 - Mike Dunn (Trans.Eng. Univ. Planning)
 - Amber Wendler# (grad, Bio)
 - Jordan Torregrosa# (undergrad, ME)
 - Lydia Patton# (Philosophy)
- **Budget and Finance Subcommittee** (VT CAC #14): faculty/students/staff review potential budget and finance mechanisms to achieve prospective VT CAC goals.
 - Nancy McGehee#(Hospitality/Tour. Mngmt)
 - Tim Hodge#(AVP Budget & Finance)
 - Debbie Greer" (SrDir Finance, SVPCBO)
 - Jim Hillman" (Dir. Facilities Finance)
 - Nate Smith# (undergrad, ISE)
 - Development person?
- **Agriculture/Forestry GHG Subcommittee:** faculty/students/staff investigate net emissions from VT NRV land use/ag operations not included in original VT CAC as well as opportunities for emissions reduction and waste digestion/composting.
 - Patrick Hilt#+ (CALS operations)
 - Greg Evanylo # (CSES)
 - Jody Booze-Daniels# (CALS)
 - John Seiler# (FREC)
 - Peter Sforza* (CGIT)
 - Jack Rosenberger" (Campus Landscape Arch)
 - Tessa Hawley (undergrad, AAEC)
 - Nick Copeland
 - David Haak
 - Jamie King
 - Nathan King
 - Kathryn Lewis
 - Adam Taylor
- **Waste/Recycling/Composting and Procurement Subcommittee** (VT CAC #8, 9): faculty/students/staff review progress and opportunities.
 - Blake Bensman*#+ (SustMan. Dning/Housing)
 - Brandon Hendricks*# (AssocDir, Dining)
 - Annie Pearce*#(BC)
 - Greg Evanylo# (CSES)
 - Jody Booze-Daniels# (CALS)
 - Rob Lowe# (EnvHeathSafety)
 - Denny Cochrane# (Sust.Manager)
 - Reed Nagel# (Procurement)
 - Casey Underwood" (Athletics)
 - Jennifer Russell" (Sust.Biomaterials)
 - Greg Canaday" (Bldgs & Grnds)
 - Alan Cummins" (ExDir, MRSWA)
 - Teresa Sweeney" (MRSWA)
 - Amy Klinger# (undergrad, Biochem)"
 - Patrick Hilt
 - Anthony Purcell
- **Structuring Sustainable Choices Subcommittee** (Serve as a support to other subcommittees in tackling institutional behavior)
 - Todd Schenk# (UAP)
 - Alexandra Kahl# (MURP)
 - Drew Harris # (undergrad)
 - Blake Bensman# (SustMan. Dning/Housing)
 - Jack Leff # (grad, STS)
 - Christine Labuski # (Soc)

Glossary—VTCAC

100% renewable electricity: Relying on renewable energy production and/or RECs for all electricity

Behind the meter: Electricity activity (generation, demand response, efficiency) on the customer's side of the meter

Bundled RECs: RECs plus electricity

Carbon credits: Same as carbon offsets

Carbon neutral: Net zero carbon emissions = 0 = emissions – credits/offsets

Carbon offsets: Certificate representing the reduction of one metric ton of CO₂ that can be bought to credit against CO₂ emissions

Carbon sequestration: Proposals for removing CO₂ from the atmosphere, or for preventing CO₂ from fossil fuel combustion from reaching the atmosphere

Climate justice: The recognition that climate change is not just an environmental problem but also an ethical issue, as the nations and people who will suffer the greatest consequences of climate change also tend to carry the least responsibility for causing the climate crisis.

Demand response: reduction of electricity power demand during peak use periods by user or utility

E-waste: Electronic waste and universal “do-not-landfill” waste

Fossil fuel free: eliminate reliance on fossil fuels

Frontline communities/groups: Historically marginalized groups that are disproportionately burdened with the negative consequences of both climate change and the mitigation and adaptation efforts taken to address the climate crisis.

GHG emissions: for the VT 2020 CAC, GHG emissions include CO₂, CH₄, and N₂O by VT operations at Blacksburg campus based on geographic and GHG scope of 2020 CAC. The **geographic scope** includes all Virginia Tech owned lands and buildings on the main campus, all buildings leased by university departments in Blacksburg, and agricultural/forestry operations and lands in the Blacksburg region. The **GHG scope** includes Scope 1 (emissions from campus fuel use and fugitive sources), Scope 2 (emissions related to purchased electricity (generation CO₂ and N₂O, transmission/distribution losses), and Some Scope 3 emissions related to campus behavior (commute driving, transit bus fuel, waste/recycling/compost, water/wastewater, aviation fuel, and commercial business travel).

Green Labs: sustainability program for research labs that spans energy, water, waste, procurement, and user behavior

Net metering: Producer customer (e.g. solar rooftop) relies on grid when needed and excess produced power is sent to the grid and customer pays for only net power from grid

Recycle rate: basic recycling rate = Primary Recycled Materials (PRM)/(PRM + MSW disposed); adjusted recycling rate adds credits to PRM for SW reused and Non-MSW recycled

Renewable energy credits (RECs): Renewable value associated with renewable energy production that can be separated from the energy and sold separately to buyers wishing to increase renewables reliance

RECs additionality: RECs that fund new renewable energy projects

Smart Grid: an electricity network based on digital technology that is used to supply electricity to consumers via two-way digital communication

Sustainable food: Less dependent on red meat and pork and more dependent on poultry, vegetables, grains, nuts

Zero net energy: Super-efficient building with net metered solar rooftop to provide the difference so zero annual net energy from utility

Zero waste campus: campus with a waste diversion rate (waste kept out of landfill) of 90% or more

Virginia Tech for Climate Justice

Demands

Updated 12/17/19

Virginia Tech has a responsibility to the students and the planet to claim our role as a courageous leader for climate justice. We urge Virginia Tech to live up to its reputation as an innovator in the development of tomorrow's technology and to its motto *Ut Prosim* (that I may serve) by establishing strict guidelines and timelines to reduce the university's contribution to climate catastrophe.

The following demands align with the Beyond Boundaries vision, including its [Tech for Humanity](#) initiative, which calls for technology innovation to be guided by values such as equity, ethics, and sustainability.

We Demand:

1. That President Sands make a public statement acknowledging that we are in a climate emergency and that, accordingly, he will advocate for immediate action. This statement will include a denunciation of the Mountain Valley Pipeline, which has already damaged the region's ecologies and, if completed, would emit twice as much greenhouse gas (GHG) as all fixed sources of emissions in Virginia.

(UPDATE 11/8/19: President Sands stated "urgency" but not emergency in his statement on updating the Climate Action Commitment, <https://vtnews.vt.edu/.../11/president-climate-commitment.html>.)

2. That the Virginia Tech Foundation divest from all publicly-traded companies that hold coal, oil, or gas reserves and intend to use or sell them for the purpose of combustion, from all pipelines or other fossil-fuel-related enterprises, and from all financial products that include such companies.

(UPDATE 11/6/19: John Dooley will take our request to the Foundation's January 2020 meeting.)

3. That the university mandate a cap on greenhouse gas (GHG) emissions across all VT facilities, including upstream emissions from energy sources like natural gas. That Virginia Tech's total energy consumption, including with the campus expansion envisioned in the 2047 Master Plan, be capped below the current energy intensity levels, and that the Climate Action Commitment include an annual rate of energy reduction informed by leading peer institutions like UNC Chapel Hill and ongoing UN Climate Action Summits. That Virginia Tech's electric and heating supply to all VT facilities be generated from 100% renewable sources by 2030. That Virginia Tech Electric Service, which serves the Blacksburg campus and 6,000 residential and commercial customers in Blacksburg, provide 100% of its electric supply from renewable sources by 2030. That these transitions be guided by principles of energy democracy, which align

with the “Tech for Humanity” Initiative, and climate justice locally and globally. That once these commitments are in place, President Sands sign on to the SDG [Global Climate Emergency](#) letter. (UPDATED 11/8/19)

4. That Virginia Tech enact comprehensive energy efficiency programming at existing and planned campus facilities informed by strategies from the U.S. Department of Energy’s 2018 Zero Energy University Campuses Progress Update; formalize a commitment to prioritize the renovation of existing buildings before demolition and new construction; ensure all new construction meet net-zero energy ready standards by achieving a source energy use intensity (EUI) of 75 kBtu/ft²yr or less in third party energy simulations with verification through post-occupancy evaluations. (UPDATED 11/8/19).
5. That Virginia Tech appoint student representatives--selected by well-informed members of established student-led environmental organizations--as voting members on all bodies that make decisions concerning energy use, the Climate Action Commitment, and issues with climate justice implications.
6. That Virginia Tech initiate a comprehensive research initiative focused on distributed renewable energy development and energy efficiency. That Virginia Tech expand funding for Cooperative Extension to include community training programs and resources for weatherization, energy efficiency, and renewable energy creation in homes and small businesses throughout Southwest Virginia. That such programs be guided by principles of energy democracy and climate justice locally and globally. (UPDATED 11/8/19)

VT Faculty Senate Resolution - Climate Change (Version: October 25, 2019)

Whereas opinions among faculty senators—and Virginia Tech faculty in general—vary, but there is broad consensus, based on extensive, independent, scientific studies, that climate change poses an existential threat, and that we have a narrowing window of time to curb greenhouse gas emissions in order to avoid devastating increases in the global temperature and acidification of ocean waters.

Whereas Virginia Tech is responsible for significant greenhouse gas emissions and other environmental impacts, and thus has a moral responsibility to act sustainably, including reducing our emissions;

Whereas Virginia Tech students, staff and faculty are calling for action to address climate change and improve upon our environmental footprint in other areas;

Whereas from renewable energy to electric cars, sustainable farming to environmental policy, we are proud of the research our faculty and students are doing to address climate change and other environmental problems;

Whereas the climate crisis is a global issue and taking leadership through action serves Virginia Tech's goal of setting an example and leading innovation as a global land-grant university;

Whereas there are myriad opportunities for virtually all Virginia Tech programs to contribute meaningfully to the development and support of the technologies, policies and socio-cultural shifts necessary to tackle climate change and other environmental problems;

Be it resolved that the Virginia Tech Faculty Senate calls upon the university administration to move swiftly to make a more serious commitment to address our greenhouse gas emissions and to advance environmental stewardship in general;

Be it further resolved that as part of this commitment we ask the administration to engage the wider community in a process of updating and then implementing our greenhouse gas and other environmental commitments;

Be it further resolved that we call for this commitment to include a comprehensive review of Virginia Tech's direct and indirect carbon footprint, and the development and implementation of a plan to significantly reduce our greenhouse gas emissions on a timescale that reflects the urgency of this issue;

Be it further resolved that we call for this plan to include a roadmap that will lead us to 100% renewable energy usage for our electricity, heating, and transportation services by 2025;

Be it further resolved that we call for this plan to include improvements to our purchasing and waste management practices to both reduce greenhouse gas emissions and lessen our impacts on the environment;

Be it further resolved that we call for this plan to include meaningful and substantial increases in energy efficiency achieved by making it a rigorous and mandatory consideration in all major construction and renovation projects on campus, as well as through a separate program to review and improve energy efficiency in existing buildings and infrastructure;

Be it further resolved that the faculty senate calls on the university to provide greater support for research, teaching and outreach activities that facilitate action to address climate change and other environmental issues;

Be it further resolved that the faculty senate calls upon the Virginia Tech Foundation to find ways to use the endowment to make investments that support and encourage firms to make the changes needed to avert a climate-change disaster in the coming years and advance environmental stewardship.