Carbon Offset Decision-Making Capacity & Future Sustainability at Colgate University

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Definition of Terms

MTeCO2	Metric Tons of Carbon Dioxide Equivalents
Greenhouse Gasses (GHGs)	Gasses released into the atmosphere derived from the combustion of fuel, use of refrigerants, decomposition of waste, and other sources
Carbon Offset (or carbon credit)	One MTeCO2 of reduced, sequestered, or avoided emissions
Gross Emissions	Total measurable and estimated MTeCO2 emitted
Net Emissions	Total measurable and estimated MTeCO2 emitted less carbon offsets
American College and University Presidents' Climate Commitment (ACUPCC) (or Second Nature Carbon Commitment)	A commitment to exercise leadership by addressing the climate challenges we face today as well as by reducing greenhouse gas emissions and by integrating resilience into their curriculum, research, and campus operations that will better serve their students and meet their social mandate to help create a vital, ethical, and prosperous civil society. By signing this commitment these organizations and institutions pledge to develop a comprehensive climate action plan and submit an annual evaluation of progress.
Fiscal Year (FY)	A fiscal year is the 12 month period that a company, institution, or government used for accounting purposes and preparing financial statements. Commonly referred to when discussing budgets or comparing an institution/company's financial performance overtime
Verified Carbon Standard Protocol (VCP)	The Verified Carbon Standard lays out the rules and requirements which all projects must follow in order to be certified.

American Carbon Registry (ACR)	A carbon offset program responsible for registering and verifying carbon offset projects (in line with CAR protocols) to issue carbon credits to compliant offset projects.
Avoided Conversion Protocol (ACR IFM)	Protocol developed by the Climate Action Reserve that entails the prevention of privately owned forested land conversion to non-forest land use.
Climate Action Reserve (CAR)	A carbon offset program responsible for registering and verifying carbon offset projects (in line with CAR protocols) to issue carbon credits to compliant offset projects.
Voluntary Market	Market for carbon offsets that exists outside compliance markets to enable businesses, NGOs, and individuals ability to buy carbon offsets
Compliance Market	A carbon offset program responsible for registering and verifying carbon offset projects (in line with CAR protocols) to issue carbon credits to compliant offset projects.
Permanence	The GHG reduction of a potential offset project must last in perpetuity and GHGs cannot be re-released into the atmosphere
Additionally	The GHG reduction of a potential offset program would not occur in a business-as-usual scenario and is motivated by the offset market
Verifiability	The GHG reduction of a potential offset project must be verifiable with data and regularly monitored by qualified third-parties
Enforceability	An offset credit can only offset 1 MTeCO2 and must be retired after its first use
Real	An offset must represent a 1 MTeCO2 reduction and cannot be quantified through false accounting methodology
Scope 1	Emissions directly produced and emitted by sources owned or controlled by an institution
Scope 2	Emissions associated with the consumption of energy that was produced outside of an organisation

Research Objective:

Consider internal governance structures, institutional organization, and university processes at peer universities in order to aptly recommend strategies for deciding future carbon offset purchasing policy and outline what criteria should be considered when making offset investments.

Executive Summary:

Through the investigation of the organizational structures and administrative processes used currently to make decisions regarding carbon offsets both at Colgate University and at peer schools, we found the following two main trends:

Trend #1: The first trend relates to how peer institutions assess the community's evaluation of different co-benefits. A number of institutions who have already purchased carbon offsets did so in a manner that included a diverse portfolio of offset options. For example, we cited the interesting mix of carbon offsets that Duke invested in and the various co-benefits surrounding those offset projects. However, we noted that while some schools had very explicitly stated evaluation criteria for co-benefits (such as Colby), this is something that Colgate and many other peer institutions lack.

Recommendation #1: In response to these findings from our first trend, we recommend that those in charge of recommending offset purchases (currently Colgate's Carbon Offset Working Group) utilize a campus-wide survey. A campus-wide survey has the potential to both engage a wide-range of stakeholders' opinions regarding which co-benefits are most important to the Colgate community, while additionally serving as an educational tool so that Colgate community members are educated on topics including: carbon neutrality, Colgate's 2019 neutrality pledge, and how carbon offsets factor into this pledge.

Trend #2: The second trend we noted throughout our studies and analyses of peer institutions was a struggle to integrate the sustainability governance bodies with the rest of the university's governance structure. For example, while Swarthmore's sustainability governance structure appeared very connected internally, there was a disconnect between the sustainability governing

bodies and the rest of the university's governing bodies. Colgate's own governing structure echoes this disconnect between sustainability governing structures and the other institution-wide governing bodies (in particular the Faculty Governance Committees).

Recommendation #2: From our second trend, we identified that there is a need to formalize and integrate the Sustainability Council (Colgate's current sustainability governing body) within Colgate's Institution-Wide Governance Structure. We believe this can happen in potentially 2 ways:

1. The Sustainability Council could be established as a Faculty Governance Committee. This would mean that members are elected which would provide a greater degree of inclusion regarding stakeholder engagement than what currently exists. Additionally, as a full-fledged Faculty Governance Committee, the transformed Sustainability Council would have the opportunity to participate in President Casey's pilot program involving the APC (Advisory and Planning Committee). Therefore, they would gain a seat at the table discussing important trade-off discussions dealing with Colgate's annual budget proposal.
2. An alternative recommendation is the establishment and formalization of the Sustainability Council in an alternative manner (not a full-on Faculty Governance Committee, but still a structure of equivalent standing that could potentially have a seat on the APC).

Methods:

In order to come up with the above trends and corresponding recommendations, we asked ourselves: what can we learn from other institutions, as well as best practices at Colgate, about how institution-wide decisions are made? Building from this question, we reached out to a number of peer institutions and set up interviews with the respective corresponding experts. We have investigated nine peer higher education institutions and one non-profit organization. We considered colleges and universities that have strong sustainability programs, have already invested in carbon offsets, and that have either already reached carbon neutrality or have carbon neutrality goals. Some of these institutions have similar portfolios to Colgate, such as small liberal arts institutions, located in rural areas. We chose these institutions, in accordance with

assistance from John Pumilio, in the hope of finding trends across institutions that will help Colgate avoid obstacles and communicate our initiatives more clearly to the community. Below is a list of the institutions and professionals we interviewed:

1. **Colgate University**:
    a. John Pumilio (Director of Sustainability)
    b. Richard Klotz (Professor of Economics and Carbon Offsets Working Group Member)
    c. Robert Turner (Professor of Economics Department Chair and Carbon Offsets Working Group Member)
    d. Trish St. Leger (Vice Provost)
    e. Pamela Gramlich (Environmental Studies and Sustainability Program Coordinator)
    f. Dr. Catherine Cardelús, (Professor of Biology and Environmental Studies)
    g. J.S. Hope (Senior Vice President for Finance and Administration)
    h. Brian Casey (President of Colgate University)
2. **Bowdoin:**
    a. Keisha Payson (Assistant Director of Sustainability)
3. **Duke:**
    a. Matthew Arsenault (Duke Carbon Offsets Initiative Program Manager)
4. **Hamilton:**
    a. Aaron Strong (Assistant Professor of Environmental Studies)
5. **Second Nature:**
    a. Steve Muzzy (Climate Programs Senior Manager)
    b. Ruby Woodside (Innovative Services Manager)
6. **Yale:**
    a. Ginger Chapman (Director of the Office of Sustainability)
7. **Colby:**
    a. Sandy J. Beauregard (Sustainability Director)
8. **Swarthmore**:
    a. Nathan Graf (Climate Action Senior Fellow)
9. **Middlebury**:

a. Jack Byrne (Director of Sustainability Integration)

10. **Clarkson**:
    a. Alex French (Sustainability Coordinator)

After interviewing faculty, staff, and administrators at various institutions, we analyzed and synthesized the comments and feedback in order to address our research question.

Introduction: Colgate University Climate Action & Carbon Offsets: 2009-2019

On October 9th of 2008, Colgate signed the American College and University Presidents' Climate Commitment (ACUPCC), now named the Second Nature Carbon Commitment. The university pledged to: complete a baseline inventory of emissions, take immediate short-term action to reduce greenhouse gas emissions, make sustainability a component of our formal curriculum, and create a step-by-step climate action plan (CAP), with measurable goals, including a target date for reaching climate neutrality. Colgate University has produced the five-year 2011 Sustainability and Climate Action Plan and then the Bicentennial Plan for a Sustainable and Carbon Neutral Campus in 2017. Both are climate action plans geared towards helping reduce our campus carbon footprint, with the goal of achieving carbon neutrality by the end of the fiscal year of 2019.

Since 2009, Colgate has implemented over 30 campus projects to reduce our campus carbon footprint by over 20%. These projects include the installation of energy efficiency projects, such as lighting upgrades, cutting over one million kilowatt-hours of electricity use, and the installation of renewable energy systems, such as the geothermal heat exchange system beneath the Chapel House.

Colgate has also invested in off-campus projects, such as the Patagonia Sur Offset Project and Forest Sequestration Project. The Patagonia Sur Offset Project aims to reduce carbon emissions by utilizing management practices, such as afforestation and reforestation, in Chile to offset the university's carbon emissions. Additionally, Colgate's Forest Sequestration Project provides data and insight regarding the potential opportunity of accounting for carbon sequestration in Colgate owned forests as well.

Patagonia Sur Offset Program

Patagonia Sur, a for-profit conservation company, which seeks to protect and monetize valuable ecological ecosystems in Chilean Patagonia, took fruition in 2011. It permanently protects over 60,000 acres in Patagonia with conservation easements, and also is involved in a native-species restoration project under the Verified Carbon Standard protocol, a standard that certifies carbon emissions reductions (Carbon Offsets Working Group, Patagonia Sur Project Offsets FAQ, 2018). Through the native-species restoration project, the company plants native species of trees to restore ecologically degraded land in Chilean Patagonia, producing forest carbon offsets to sell to universities and companies that want to offset their carbon emissions. Colgate also offers alumni traveling to reunion the opportunity to offset their individual carbon emissions through this Patagonia Sur offset program. Furthermore, Patagonia Sur has started multiple non-profits such as Tierra Austral, Chile's first land trust, and Reforestemos Patagonia, a thriving public-private campaign to reforest national parks such as Torres del Paine (Patagonia FAQ, 2018). Colgate's investment in the Patagonia Sur offset project has been a large step towards Colgate fulfilling its Carbon Neutrality pledge by 2019. According to Colgate's section on www.offsetnetwork.org (a website detailing offset projects taken-on by Duke and Colgate) the "Colgate University Forest" will result in a total of 225,000 native species of trees that are being planted on 430 acres of ecologically degraded land in Chile's Aysén Region of Patagonia. (Colgate University, Patagonia Sur Carbon Offset Project, 2018), which includes more than 60,000 trees being in the Valle California Preserve that Colgate is currently responsible for alone (Patagonia FAQ, 2018). Colgate's purchased offsets from Patagonia Sur are to sequester approximately 5,000 tons of carbon annually for about $10-$15 per mtCO2e, accounting for most of the university's air and employee commuting travel (Patagonia Sur, 2018).

It was under President Herbst that Colgate committed to the year of 2019 for carbon neutrality. In a prior interview, Colgate's President Jeffrey Herbst made the comment that "as a university with a global reach and mission located in rural central New York, we have emissions that we simply cannot avoid". He continued on to state: "we should take responsibility for that impact by investing in off-campus projects that sequester or reduce atmospheric CO2 on our behalf" (Brooks, 2011). In our interview with the current Colgate President Brian Casey, he seemed to agree with President Herbst's statement in his agreement that there are emissions from travel that we will never be able to mitigate. President Casey seemed to be of the mindset that Carbon Offsets (such as those purchased in Patagonia Sur) are a temporary stepping stone that

allow Colgate to reach Carbon Neutrality in accordance with its 2019 pledge. Colgate can feel good about the fact that Patagonia Sur's founder and CEO, Warren Adams, is a 1988 Colgate grad and that in January 2018 a group of students took an extended-study trip to visit and survey Colgate's Patagonia Sur investments (Patagonia Sur, 2018). However, President Casey indicated that a necessarily hefty investment in Colgate's energy and/or water management might be a better long-term sustainability move after reaching the 2019 neutrality goal.

On-Campus Initiatives

In addition to these plans, Colgate created the Green Revolving Loan Fund: an internal fund with an investment of $1.25 million which was instituted in order to help improve and implement additional sustainability efforts on Colgate's campus. The Green Revolving Loan Fund has increased energy efficiency and the use of renewable energy, while reducing Colgate's carbon footprint by substantially increasing physical upgrades on campus through multiple projects.

Colgate completed its first comprehensive greenhouse gas inventory for the fiscal year in 2009, as a part of the ACUPCC signing. This inventory calculated the campus' total emissions to be 17,353 metric tons equivalent of carbon dioxide (MTCO2e). To clarify, MTCO2e stands for metric tonnes of CO2 equivalent and is used in to compare an institutions emissions over a period of time. (Chavez, 2012). In 2017, Colgate updated its 2011 Sustainability and Climate Action Plan, implementing the Colgate Bicentennial Plan for a Sustainable and Carbon Neutral Campus. The Bicentennial Plan focused on integrating the concept and practice of sustainability into Colgate's decision-making processes, including carbon offsets. This action was required of all signatories of the Second Nature Carbon Commitment.

While examining the university's sources of carbon emissions, it became apparent that it would be too difficult and expensive to eliminate all forms of emissions without profoundly impacting the university's academic mission. Investing in high-quality certified offsets is regarded as an effective way to combat climate change for organizations and institutions (such as Colgate) who have accepted responsibility for their carbon footprint. In addition, Colgate wants to mitigate the emissions they cannot eliminate through their on-campus operational initiatives. Therefore, in order to fully account for all emissions without overspending and detracting from Colgate's academic mission, carbon offsets must become an integral part of Colgate's neutrality strategy.

Carbon Offsets: In a Nutshell

Colgate's gross greenhouse gas emissions were 14,708 tons in FY 2017. The results of the carbon inventory show that Colgate's buildings, air travel, and commuter travel make up the main sources of university emissions, specifically due to the use of space heating, electricity, transportation, grounds management, solid waste, and refrigerants.

As illustrated, a large percentage of the university's gross emissions were from commuting and business travel (~42%). However, to eliminate these emissions would directly impact the university's faculty research, admissions, and institutional development (all which are essential to Colgate). Given the carbon emissions sequestered by the Patagonia Sur Project as well as the Forest Sequestration Project (5,000 and 3,776 respectively), it is apparent that there are still **5,932 total net emissions** that are unaccounted for. In order for Colgate to achieve carbon neutrality in the near-term, it is necessary for Colgate to invest in carbon offset projects.

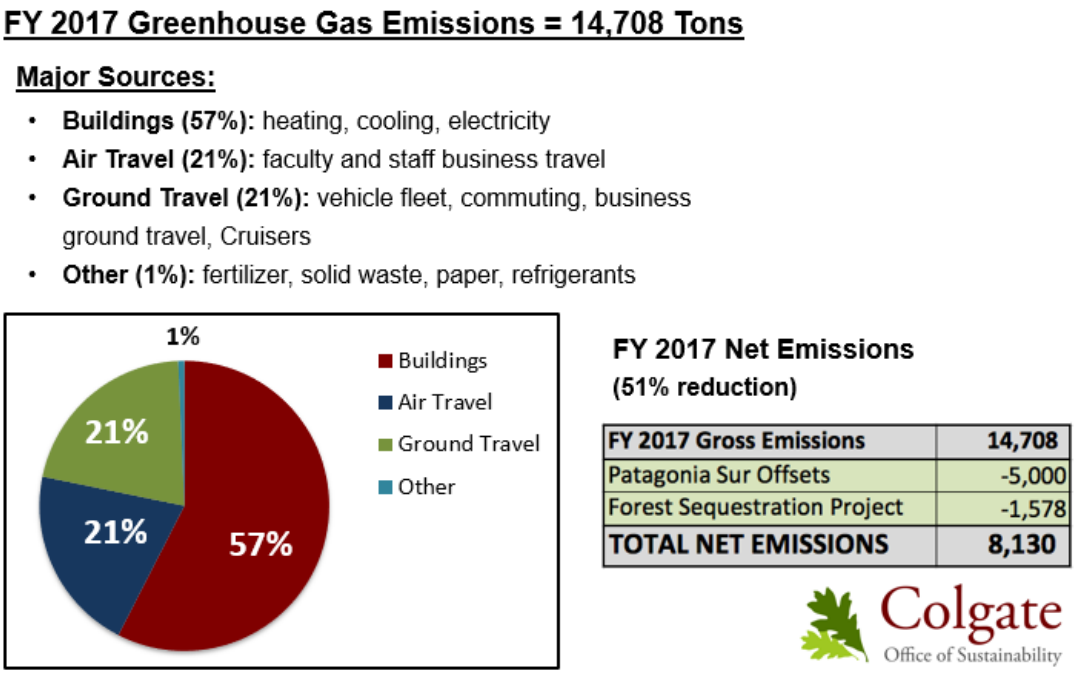


Figure 1: Colgate University's Source of Emissions, FY 2017

Defining Carbon Emissions and Carbon Offsets

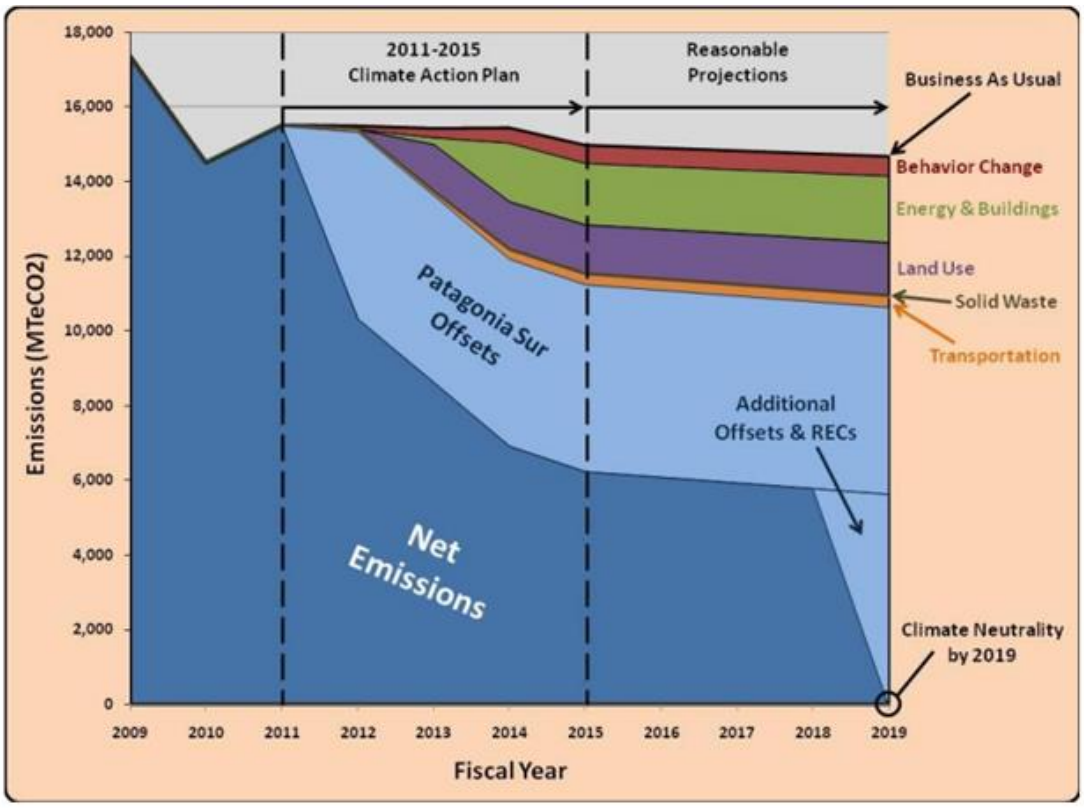
Carbon emissions are divided into three "scopes" or types of emissions. These scopes are differentiated by the locations where the carbon is emitted. In turn, this also addresses responsibility and the level of control over the emissions, scope 1 being direct and scope 3 being

indirect or shared emissions. Defining scopes for carbon emissions measurement introduced uniformity and consistency across all institutions and organization. These definitions were defined by the World Business Council for Sustainable Development (WBCSD), the World Resources Institute (WRI) and the Climate Registry's General Reporting Council (Colgate University, Colgate University's Sustainability and Climate Action Plan, 2011). By using these measurements, Colgate is in compliance with the Second Nature Carbon Commitment and rules outlined in the 2011 Sustainability and Climate Action Plan.

Scope 1 includes all carbon emissions that are released directly from a source. For Colgate, examples include on-campus combustions, such as natural gas, fuel oil #2, kerosene, and propane, as well as vehicle fleet emissions from University owned and operated vehicles. Scope 2 emissions consist of purchased third party electricity generation, which for Colgate would constitute electricity purchased from the Village of Hamilton. Scope 3 encompasses are indirect emissions such as employee commuting, air travel, paper use, and solid waste, which students to commuting to and from school during breaks.

Colgate has implemented a variety of initiatives to address and reduce emissions from all scopes. In 2017, Colgate successfully reduced gross emissions by 21% since 2009 (Colgate University, State of Sustainability, 2017). Scope 1 and 2 emissions have been reduced by about 10% and scope 1, 2, and 3 emissions have been reduced by 15.31% below the 2009 baseline in 2017. (Second Nature, 2017). While the institution has and will continue to reduce carbon emissions, the administration recognizes that activities done as part of the university's mission, like promoting educational opportunities, will always result in some level of carbon emissions. Like many other educational institutions, Colgate plans to invest in carbon offset programs in a way that can responsibly negate residual emissions to reach carbon neutrality.

Figure 2: Colgate's Wedges Analysis: greenhouse gas emissions and sources of reduction (Colgate University Climate Action Plan, 2011).



A carbon offset is defined as a measurable avoidance, reduction, or sequestration of greenhouse gas emissions that are quantified in tons of carbon-equivalents or CO2-equivalents (Ramseur, 2009).

Carbon Offset Integrity Precautions

Regarding offsets, there is a large concern regarding voluntary carbon offsets and their integrity. According to Second Nature's Carbon Offset Guidance (released to the public July 2016), "A critical quality concern is assuring that offsets are real. There must be emissions reductions that are, in fact, a result of the project activity and must result in an absolute net reduction of GHG emissions". Therefore, it is generally agreed upon that for an offset to be credible, the offset must equate to an emission reduction from a direct emission source, i.e. a smokestack or exhaust pipe. Furthermore, the quantity of emissions reductions should not be inflated by incomplete accounting. This is to insure that there is no *emission leakage*, an inaccuracy which occurs when emissions are reduced at one location but increased elsewhere and not accounted for (CRS, 2009) in another. In addition, there are several criteria that

determine the integrity and quality of an offset project. However, in some cases, there are instances of positive leakage spillover effects if the project's GHG reduction process is able to instigate further GHG reductions in other areas.

One of the most significant reasons why leakage should be a priority when assessing carbon offset projects is that in the case of GHGs, the gases are equally and damaging to the environment (Murray, Sohngen, & Ross, 2007). There are often two forms of leakage: primary and secondary. Primary leakage comes from the business-as-usual activities from actors and firms (for which they are responsible for), whereas secondary leakage occurs when the project's outputs create incentives for third parties to emit elsewhere (such as market trends) (Aukland et al., 2003).

Permanence: Once carbon offsets are generated from a project, there should be confidence that the emission offsets are not postponed but are permanent instead. This issue generally applies to to biological sequestration activities, specifically forestry activities. Buyers need some assurance that the land set aside for forest will not be used for a conflicting purpose in the future. However, natural events such as fires and pests would be difficult to predict and control. (Ramseur, 2009)

Additionality: In order to generate offsets, a project must be a response to the incentives provided by a carbon offset market (Goodward & Kelly, 2010). This is regarded as the most significant factor that determines the integrity of carbon offset. Additionality (sometimes described as a condition) refers to whether an offset project would have gone forward on its own merits (or own financial benefits) without the support of the offset market. Essentially, would the project have occurred anyway? If the project would have occurred without the financial support of the offset buyer, the emission reductions generated from the project would not be additional. This is regarded as the most significant factor that determines the integrity of carbon offset. However, the standards used to analyze a project's additionality vary due to the fact that some institutions deemphasize the importance of this characteristic. Activities that would happen without such incentives are business-as usual and do not represent new emission reductions. (Ramseur, 2009)

Verification: The two primary markets for carbon offsets are the regulatory and the voluntary market. The regulatory market relies on government agencies being held responsible for establishing offset crediting standards and the practical structure. Carbon offsets come predominantly from a voluntary market. In the voluntary market, a set standard for offset crediting does not yet exist. In order to ensure that carbon offsets purchased will be legitimate, most rely and require the presence of independent and qualified third-party verifiers. This standard provides a detailed list of eligibility requirements for projects for calculating a projects emissions reduction. There is a wide variety of third-party verifiers within the offset market. Forest carbon verifiers are experienced and specialized environmental auditors that are limited to several approved firms. Registry staff operate non-profits that manage the majority of the project development process, approving projects and crucially, awarding and maintaining offsets as traceable goods through public registries. Carbon brokers facilitate the sale of forest offsets to greenhouse gas-emitting industries (Kelly & Schmitz, 2006). In addition, these third-party verifiers are responsible to diligently and consistently assess the validity of the information provided by the applied project. In addition to meeting the standard, each individual credit issue must be based on data that meets the requirements of the policy program. (Goodward & Kelly, 2010)

Enforceable: A carbon offset is meaningful and credible if it is only accounted for once. Once it is sold, it should be retired and never sold again or counted in another context. It must be tracked and it should be easy to determine its ownership and use in order to avoid double counting (Goodward & Kelly, 2010), With this being said, there are still opportunities for double counting to exist. For example, a U.S buyer may purchase offsets generated thought the development of a wind farm in a country, state, or locality that has established GHG emissions targets. The buyer will count the offsets, which may have been purchased to counter an increase in personal air travel. The country, state or locality in which the wind farm was located may see an emissions reduction due to the wind farm. This decrease would be reflected in the nations GHG emissions inventory. Therefore, the offset project may replace other reduction activities that the nation might have taken to meet its target. (Transmuer, 2009)

Real: In order to determine the amount of emissions that are avoided by an investment in an offset project, the project managers must establish a baseline or in other words, an estimate of the business-as-usual scenario or the emissions that would have occurred scenario or the emissions that would have occurred without the project. The accuracy of this baseline determination is crucial to the integrity of the project. If this baseline is calculated incorrectly, the offsets sold may not match the actual reductions achieved. Overestimating the baseline would result in an artificially high amount of offsets. If the quantity of emission reductions is inflated, by inaccurate or incomplete accounting, it could be possible if emissions were reduced at one location but increases elsewhere. This inflation would be a result in potential emission leakage (Goodward & Kelly, 2010). It should be noted that generally speaking, project developers would have a financial incentive to err on the high side of baseline determination due to the fact that more offsets would be generated if there is a higher projected baseline (Ramseur, 2009).

Future Carbon Offset Purchases

Many have recognized that higher education institutions have a unique opportunity to pursue addressing difficult question about emissions reduction in innovative and creative ways. Universities and colleges are also unique in that they have a pool of experts and intellectual resources that are powerful resources when developing innovative solutions to complex problems (Barth, 2013; Silka, 2014).

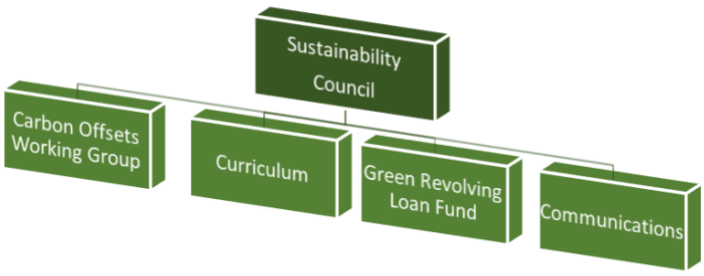


Figure 3. Organization Structure of Colgate's Sustainability Council and its four subcommittees.

Colgate established the Sustainability Council after the President signed the Second Nature Agreement. The Sustainability Council has four subcommittees that all promote and further sustainable initiatives across campus. The Carbon Offsets Working Group was created by the Sustainability Council in order to research, analyze, and eventually recommend what carbon offsets Colgate University should purchase in order to reach neutrality by 2019.

In January of 2018, the Carbon Offsets Working Group completed an initial evaluation of carbon offsets projects to potentially (Carbon Offsets Working Group, Interim Report, Jan 2018). The Carbon Offsets Working Group proposed the investment in a diversified portfolio of offset projects annually. A group of students in Environmental Studies 390 in the spring of 2018 created a carbon-offset related survey that yielded 132 responses from the Colgate student body. The goal of the survey was to help Colgate identify students' opinions on carbon offsets generally, and in Colgate's context specifically (ENST 390, Student Perceptions of Colgate University's Carbon Offset Program, Spring 2018). The subcommittee helped gather community feedback on carbon offsets, to ascertain what co-benefits the community valued the most. Their survey results found that what students value most in a carbon offset project are projects with high ecological benefits, followed by a carbon offset project that benefits the local community. Within this portfolio, offset projects were viewed through the lenses of the following four evaluative criteria:

Bare Minimum Criteria

1. Third-Party certified projects purchased from a vendor, as well as the development of new projects that utilize a peer-reviewed process for project verification.
2. Low-cost verified offsets through an existing registry as well as premium offsets that include value-added co-benefits (such as social, local, or environmental benefits).

Additional Criteria

3. Local & global projects - How important is it that the offset project has a "local" impact?
4. Additional co-benefits considerations (e.g. educational benefits and/or ecological benefits)

Colgate Forest Carbon Credits:

Colgate's Forest Carbon Inventories (2013, 2018)

The commitment to become a more sustainable campus allowed Colgate to reevaluate many aspects of life on campus and institutional functions. Colgate University owns and manages 1,059 acres of forest lands to meet a wide variety of teaching initiatives, research objectives, recreational opportunities, and timber production. Colgate has historically followed management practices outlined in the Forest and Open Lands Stewardship Plan which balance numerous interests and priorities such as teaching, research, and recreational benefits. During

Colgate's journey to reach carbon neutrality, increased knowledge and clarity regarding the effects of management were necessary to incorporate the forest into the institution's annual greenhouse gas inventory. With inventories, the sequestration in forests could be calculated and considered as an offset towards net emissions.

The studies are conducted using the US Forest Service GTR NRS-18 *Measurement Guidelines for the Sequestration of Forest Carbon* method. A Forest Carbon Inventory & Projections was conducted first in 2013 to create a baseline inventory to predict the amount of carbon Colgate's forests sequester. In 2013, the baseline estimate for total sequestered carbon dioxide in Colgate University Forests was 165,491 tons, with an annual carbon, dioxide sequestration estimate of 1,578 tons (Forest Carbon Inventory & Projections, 2013). The second inventory, conducted in 2018, provided updated calculations of the actual sequestration rate since 2013. In the report published in 2018, the baseline estimate had increased to 193,755 tons, estimating annual carbon dioxide sequestration rates of 3,776.4 tons (Forest Carbon Inventory & Projections, 2018). The sequestration rates measured in 2018 were higher than the US Forest Service model predicted. The greenhouse gas inventory has since been updated to reflect the new calculations of stored and sequestered carbon as an element of Colgate's net emissions. The next inventory will be conducted in 2023 and so on in 5 year increments.

Potential Use of Colgate's Forested Lands as Carbon Offset Project

As of 2017, Colgate's gross greenhouse emissions were 13,233 metric tons of carbon and the projected 2019 gross emissions are 13,139 (State of Sustainability, 2017; Colgate University, Bicentennial Plan for a Sustainable and Carbon Neutral Campus, 2016). Since 2013, carbon reductions from the Forest Sequestration Project have been incorporated into Colgate's net carbon footprint. Previous analysis conducted by ENST 390 students showed that the Colgate community values carbon offset projects that encourage local initiatives and focus on ecological benefits (ENST 390, Spring 2018). If Colgate reevaluate land management objectives, the Forest Sequestration Project could be redesigned and accredited as a carbon offset project, and meet community values.

Conducting a carbon inventory for the forest was important to inform future land management decisions as well as provide additional insight to a potential local carbon offset project on Colgate owned land. Colgate hired TerraCarbon to investigate the feasibility and cost

benefit analysis of potential projects to make the university's forest land a carbon offset. In 2018, TerraCarbon released their analysis entitled Colgate Forest Carbon Feasibility Study which used the forest carbon inventory measures from 2013 (Colgate Forest Carbon Inventory & Projections, 2018). They developed five potential initiatives and provided analysis regarding the duration, cost, and carbon offsets that each would generate. Two of the proposals were relating to avoided conversion (AC), or forest protection, projects and another two were improved forest management (IFM) projects. The fifth project suggested no managerial change and investigated the benefits of Colgate continuing to manage forests and monitor sequestration to be reported as part of the institution's net emissions (TerraCarbon, 2018). This techniques of measuring sequestration to be incorporated in the net emissions is referred to as "Stock Change" (TerraCarbon, 2018). The review showed that the traditional AC plan - where all plots would become conservation easements - would create the largest offset, sequestering an estimated 134,638 tons over twenty years (TerraCarbon, 2018). If implemented, the project would cost over $775,000 in the first twenty years and the site would need to be maintained for at least 110 years. In addition, they provided a sensitivity analysis that shed light on the potential scenarios in cost fluctuation and how this variability could impact the budget of the process.

In 2017, Colgate sought to explore the potential to accumulate verified carbon credits from its forested properties (ENST 390, Fall 2017). Specifically, in the FY of 2017, Colgate released approximately 91 tons of stored carbon due to the removal of 2.5 acres of trees in preparation for the construction of two new residence halls. In addition to the rest of Colgate's forested land which sequestered 1,578 tons of carbon via annual tree growth as well as 5,000 emissions from Colgate Patagonia Sur Project. These biogenic emissions were subtracted from the total footprint of FY 2017. Assuming that these emissions remained constant till FY 2019, Colgate still generated emissions that could not be addressed by current sequestration projects (5,932 net emissions as mentioned previously). Additionally, we will need to add 117 MTeCO2 to Colgate's emissions for Benton Hall (as the building went online in 2018) (Bicentennial Plan, 2016), to reach the final number of 6,049 MTeCO2. Using Colgate's own forested lands as a carbon offsets project would not offset enough carbon to reach neutrality. The Sustainability Council affirmed that it would be essential to integrate the purchase of carbon offsets in the Climate Action Plan in order to reach its goal of carbon neutrality by FY 2019.

Conclusions Reached Regarding Colgate's Forest Carbon Project

Colgate is projected to produce net emissions of 6,049 MTeCO2 in 2019 (Inventory & Projections, 2018). The Colgate Forest Sequestration Project could address a substantial amount of Colgate's emissions and save the institution approximately $1 million in avoided offset purchases over a 20 year period (ENST 390, Fall 2017). However, the project would require the land to be permanently managed as conservation easements and requires significant initial developmental and implementation costs paired with a lag in carbon offset credits. While there is no risk of Colgate's forests of being developed, they do serve multiple purposes beyond sequestration, including research, education, and recreation. Additionally, Colgate might not want to commit to permanently eliminating potential future development.

After reviewing the proposed plan, Colgate's Forest Carbon Project would have an initial cost between $240,000 - $330,000 in that same time. This project is appealing for multiple reasons. First, it will be cheaper than any other offset option Colgate could purchase from the open market (ENST 390, Fall 2017). In addition, while Colgate must produce strict management guidelines, the project would may not require Colgate to put the land under permanent conservation easement (ENST 390, Fall 2017). However, there are a number of disadvantages. The development process will be labor intensive, prohibitively costly, and will postpone the implementation for several years. Implementing all projects would still require Colgate to eventually purchase carbon offsets to reach net zero carbon emissions. For example, while the traditional avoided conversion project's carbon credits would surpass the emissions reductions needed for the first ten years, annual sequestration after that period will decrease below the level that the institution needs to offset (TerraCarbon, 2018). Finally, the Forest Carbon Project would not be complete before the neutrality deadline of 2019 (Carbon Offsets Update, 2018). All projects will reduce the flexibility Colgate currently experiences and will impact the current use of resources. While the projects are feasible and are appealing as cheaper options over time, the initiative would demand a significant number of resources in initial stages and will impact the current uses of the forested land.

Evaluative Criteria

Just as there are certain 'evaluative criteria' one uses when buying a minivan (e.g. seating capacity, easy-clean seats/carpets, safety rating, color, make and model, miles per gallon, etc.),

there are also evaluative criteria used by institutions when they are shopping for carbon offsets. There is evidence that mitigation measures (such as carbon offsets) have a range of positive human health, ecosystem functioning, macroeconomic, social, and/or equity side effects that can add value to the climate change mitigation benefits. These have been often referred to as co-benefits or ancillary benefits (Ürge-Vorsatz, Herrero, Dubash, & Lecocq, 2014). Through conducting interviews with John Pumilio (Director of Sustainability at Colgate), Andrew Pattison (Colgate Environmental Studies Professor), Richard Klotz (Colgate Economics Professor), Bob Turner (Colgate Economics Department Chair), and Keisha Payson (Bowdoin's Assistant Director of Sustainability) we explored a variety of evaluative criteria regarding carbon offsets. As a group we have identified five criteria that we recommend Colgate consider when making carbon offsets: (1) price per ton of carbon omitted, (2) local vs distant, (3) educational co-benefits, (4) ecological co-benefits, and (5) third-party verified offsets vs. peer reviewed/innovative offsets. The following subsections will provide more details on each of the five criteria:

1. *Price Per Ton of Carbon Omitted*
    - Although there are a number of regional carbon trading markets programs dealing with carbon credits, no single uniform price per ton of carbon exists globally or nationally. There are varying levels at which an institution could value carbon which can lead to questions of overspending when there are cheaper alternatives. However, there is a risk when purchasing cheap assets for there can be verification/validation issues. They also may have co-benefits involving relevance to the community the offsets are located in. Price should obviously be considered heavily as it will likely mean that resources from somewhere else at Colgate may decrease, so it is important that there is consensus at Colgate concerning what price per ton of carbon omitted we adhere to.
    - Price of offsets shouldn't be the sole focus; the goal should predominantly be the quality of the offset. It would be preferable if our offsets could come in the form of avoided emissions, rather than sequestration because of the permanence issue (Herzog, Caldeira, & Reilly, 2003)
2. *Local vs. Distant*

- The location of the offset, as in its geographic proximity to campus, will influence the way in which the Colgate community can interact with the offsets. Professor Klotz mentioned that the Carbon Offsets Committee tends to think of Local vs Distant in terms of levels that range from local to distant -- Level 1: Watershed, Level 2: National, and Level 3: International. Of course, these levels are just one way to construct the local vs distant aspect, and the definition regarding locality are still flexible.
- The advantage of having geographically close offset projects is that it allows for further interaction with students, potentially increasing the feasibility through which our offsets can be verified, and allowing us to know we are making meaningful investments in the Central New York community, an area in need of economic assistance.
- Some believe that local projects provide Colgate an opportunity to further ingratiate itself into the community, impacting the overall quality of the environment and the economy in central New York by providing jobs and preserving natural resources and landscapes.
- Though having carbon offsets located close to campus could be helpful for research purposes (educational and environmental co-benefits), it might not be economically efficient. Local offsets might not be the most contributive forms of offsets as they have been recognized to be much more expensive per unit of carbon they offset than other options. The logical approach is then to have a medley of projects, in order to cover a wide spectrum of available co-benefits.

3. *Educational Co-Benefits (Ürge-Vorsatz et al., 2014)*
    - An example of this would be involvement of the offsets with students and classes in order to provide further educational or research opportunities for students.
    - Educational co-benefits are defined as added potential academic/research/or other form of scholarly activity that is associated with the investment in an offset. An example of this would be forestry studies done on land Colgate uses for carbon sequestration through forest management. As an institution of higher education, Colgate ought to seek every possible opportunity for students to learn or grow and

carbon offsets should be held to the same standard. It is also imperative that Colgate does not take the approach of donating their problems away, and that their investments have meaning for all the stakeholders involved: the university, its students, and the managing body of the offsets.

- However, not everyone believes that seeking out carbon offsets in terms of educational co-benefits is the most economically efficient way to garner these educational benefits. Professor Turner emphasized that educational co-benefits are certainly nice, but that we must remain cognizant of the price-tag of these co-benefits (whether they are educational, ecological, etc.) and ask ourselves if there is a more cost efficient way to reap these benefits.

4. *Ecological Co-Benefits (Ürge-Vorsatz et al., 2014)*
    - Ecological co-benefits are those felt by the environment that the offset is located in. An example of an ecological co-benefit would be the preservation of a forest's biodiversity through the purchases of offsets. As climate change continues to threaten ecosystems and species, Colgate can accomplish two goals: environmental stewardship and carbon emissions reduction.
    - Recent studies done by the World Wildlife Fund (WWF) have shown that populations of mammals, birds, reptiles, amphibians and fish have declined on average by 52% in the last 40 years (Saha et al., 2018). By preserving the species and ecosystems, Colgate can profit in that ecological co-benefits can provide educational co-benefits as well. But institutions must consider at what price tag are these co-benefits coming and what the trade-offs are.
5. *Third-party Verified Offsets vs. Peer Reviewed/Innovative Offsets (Second Nature, 2017)*
    - Third-party verification is often a highly costly and time intensive process that is geared towards large-scale offset projects. This rigorous and costly process of verification make investing into local small-scale offset projects not worth it. Peer reviewed or innovative offsets created by the Climate Committee of Second Nature present a flexible alternative, so institutions can implement local small-scale projects at a reasonable cost, tie offset projects back to campus research and education, and help the local community. Colgate and other institutions are allowed to offset up to 30% of scope 3 emissions using this approach.

Bundle Formation:

When assessing carbon offset options, budgetary questions and obstacles can dictate the feasibility in implementation and have effects on the actual and perceived quality of the offset project (mentioned by Bob Turner when interviewed). Bundles are arrangements or groupings of different offset projects that one could add to a portfolio. the portfolio is the group of offsets that an institution is currently involved in. Portfolios are effective representations of values in addition to offsetting emissions that identify a university's main objectives and define what neutrality looks like to them (Bookhart, 2008). These bundles are designed to help mitigate the desired amounts of carbon. Establishing and explaining the contents of each bundle will theoretically empower students and faculty alike in making decisions concerning Colgate's future offset plans.

To best survey and educate the Colgate community on the upcoming Carbon Offset purchases, the Carbon Offsets Working Group is creating a variety of bundles to include in a survey that will be sent out to the Colgate community. The Carbon Offsets Working Group at Colgate is in charge of developing these bundles to ensure that a diverse array of viable offset projects are considered. The results of this survey will guide the Carbon Offsets Working Group's recommendations on carbon offset purchases in the direction that best applies the Colgate's community's values and beliefs regarding co-benefits. It's important to note, non-carbon benefits associated with bundles should be examined as well.

- Levels of Bundles Based on Cost-Intensiveness
    - Cheap (often most cost-effective for offsetting carbon, drawback of low spillover benefits)
        - Landfill gas offsets, wind certified RECs, etc.
    - Medium (somewhat expensive project, expected co-benefits)
        - Forestry, renewable energy, methane capture
        - Could be more local, educational, environmental
    - Costly (resource intensive but may provide a lot of co-benefits)
        - Based on government's social cost of carbon, using highest grade available RECs, switching to electric vehicles, distributed energy projects, faculty switches

Figure 4. Hypothetical Bundles: from Open Forum on Carbon Neutrality & Carbon Offsets (12/6/18)

Bundle Name	Co-benefits	Cost of Carbon per ton
Local tree planting	social: medium ecological: low educational: medium	$12
African tree planting	social: high ecological: high educational: low	$8
Local landfill gas to energy	social: low ecological: medium educational: high	$4
Honduras cook stoves	social: high ecological: high educational: medium	$9
Chinese household biodigester	social: high ecological: medium educational: medium	$6
Oklahoma nitrous oxide abatement	social: low ecological: medium educational: high	$1

Colgate's Governance Structure

Now that we have discussed how theoretical carbon offset bundles might be compiled, it is essential to take a good look at the governance structure within which the final decisions of the first bundle of offset purchases will be made. Both advisory committees and faculty governance committees at Colgate make recommendations to the President as well as inform other administrative staff about institutional management and campus wide decisions. Colgate's Sustainability Council is an advisory committee, meaning that all members (students, faculty, and staff) are appointed to the committee by the President of the University. The number and institutional range of members is flexible in the sense that each individual is appointed. For example, the Sustainability Council is involved with all things sustainable, i.e. recommendation

initiatives to the President, collaborate with departments and programs, and produce greenhouse gas emissions inventories. Unlike an advisory committee, faculty governance committees have members (faculty) that are elected by Colgate's faculty. While some groups have a list of administrative consultants, only faculty are elected to serve on the committee. In addition, Faculty governance committees are more formalized in that they report an agenda and minutes. These formal committees also present at full faculty meetings, allowing for transparency and information across the institution.

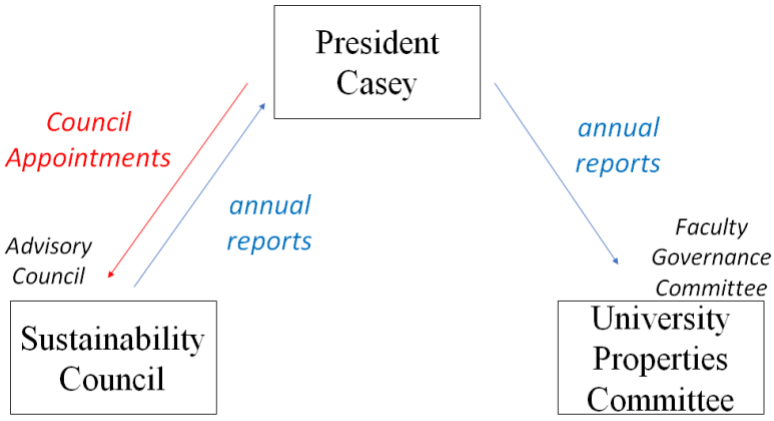


Figure 4. The current advising structure of the Colgate Sustainability Council on budget issues and campus wide initiatives.

After interviewing J.S. Hope, Colgate's Senior Vice President for Finance and Administration, and Brian Casey, President of Colgate University it became clear how essential the Carbon Offsets Working Group's recommendations are to decision makers like J.S Hope and President Casey. Due to the group's expertise, consistent transparency, and swiftly approaching deadline of 2019, it is informally assumed and agreed that the President will review and purchase whatever offset portfolio the Offset Working Group will recommend. Currently, the Sustainability Council can only make recommendations. There is no other formalized mechanism for recommendations to be evaluated and sent to the President. While the current structure has not affected the success or function of sustainable initiatives, its informal structure may hinder its legitimacy as Colgate continues to pursue objectives in the future. That is, while, from an external perspective, carbon neutrality is a objective, not the beginning of a larger commitment.

In addition, the President proposed on November 5, 2018, that there be a two year pilot program reorganizing the Advisory and Planning Committee (APC). Instead of being a conglomerate of elected members, this pilot program incorporates representatives from all faculty governance committees. Among other university and campus wide issues, the APC addresses annual budget allocation and makes recommendations that the President will review

and present to the Board of Trustees. Since the Sustainability Council is currently not a faculty governance committee, leadership form this campus initiative will not be included in the APC pilot.

Analysis of Peer Schools:

After gaining a better idea of how current decision making processes regarding carbon offset purchases operate and learning about the governance structures within Colgate currently, it was essential to look beyond Colgate to our peer institutions. We investigated nine peer schools and one peer institution, many of which came recommended to us by John Pumilio and/or pertained to our research of sustainability initiatives. We focused on schools that have strong sustainability programs, schools invested in carbon offsets, and schools that already have reached carbon neutrality and are developing their next steps. These schools have similar portfolios to Colgate, such as small liberal arts institutions, located in rural areas. We chose these institutions in the hope of finding trends across institutions that will help Colgate avoid obstacles and communicate our initiatives more clearly to the community.

Interview Summaries

1. **Colgate**

a. Brian Casey (President of Colgate University) - Interviewed by Sabrina, Manny and Michael

President Casey was pleased with the strides the university had taken to reduce on-campus emissions. Particularly, he mentioned satisfaction in the recent planting of trees around campus and achieving the LEED silver standard. With this being said, the president noted that he wishes to go beyond that standard. Given that Colgate generates a large amount of emissions from travel, President Casey discussed that there future possibilities to further reduce emissions on campus. Specifically, he noted that the University could take substantial strides if they prioritize instituting a sustainable source of energy such as geothermal. In addition, he noted that he has already envisioned campus-wide projects that would implement sustainable infrastructure such as water management. In regard to carbon offsets, specifically the Patagonia Sur Projects, President Casey felt somewhat sympathetic to the viewpoint that offsets are regarded as "cheap" and does not regard offsets as the end goal. Given how controversial 3rd party verified-based offsets can tend to be, the president

is wary of this approach. In addition, he noted that he believes that prioritizing this approach is not the best way to achieve carbon neutrality. However, the president discussed the fact that both the Board of Trustees and the administration were on the same page in regard to the set bicentennial date for carbon neutrality. Furthermore, the president discussed several components of the structural limitations of the university the decision making process of ascertaining what specific projects to invest in. There should be administrative/governance body that is responsible for thoroughly identifying and advising the president on trade-offs, in this case trade-offs for carbon offset bundles. Colgate's Advisory and Planning Committee which is comprised of members from other governance committees such as building and grounds and financial aid, to name a few. Because this governance committee is comprised of administrative bodies with competing interest and goals, it difficult for them to reach a strong consensus. For example, while looking at financial aid and purchasing offsets, the school would have to consider the trade-off of purchasing offsets and sacrificing funds for students on financial aid. As of now, the carbon offset working Group which is part of sustainability council advises and reports directly to the President. In regard to offset bundles specifically, the working group will suggest certain bundles which the president will recommend a budget for those bundles to the Board of Trustees. However, due to the fact that the sustainability council is not an official governance committee, the council does not hold the same level of influence and standing as other governance committee. President Casey recommended that it could beneficial to address the transparency of the sustainability council as well as potentially legitimize the council in order to increase advocacy for sustainability across the administration. Legitimizing this council would also allow for more student involvement within this field, an element that is crucial to the student body.

b. John Pumilio (Director of Sustainability) - Interviewed by Manny and Sabrina

Colgate's largest emissions factor is its buildings, though transportation as a lump sum is also pretty large. As far as reaching carbon neutrality, carbon offsets are kind of like a fallback at this point since there is no alternative means of reducing emissions that falls within Colgate's current time-scope and budget. The way John Pumilio looks at carbon offsets is like a carbon tax. Local Projects are more expensive and we need to work around the fixed budget, thus offsets in the Midwest, or "dirty states", have projects that

are more appealing because their results are tangible. Carbon neutrality and how the university is working to become more sustainable is not on every president's speech and is not broadly recognized yet. Student haven't made this a large priority. The office of sustainability had held community forums, Maroon News, Newsletter, Interns, ambassadors, etc. Getting the word out is a tricky task since there is always the challenge of re-educating new classes of students.

> Students keep graduating and thus it is intensive work to "relight" the fire and keep it constantly burning when it comes to sustainability.

Regarding *governing structure*, there seems to be a structural issue with Sustainability Decision Making at Colgate. John tries to get feedback, in order to try to inform and justify the decisions the Office of Sustainability makes. There is a challenge in higher education since Sustainability crosses so many different sectors and subjects at Universities. As Director of Sustainability, John's role is to facilitate a campus-wide conversation. He believes that if we can benefit a community or a damaged ecosystem in the process of buying our Carbon Offsets, then our purchases have more value to them. However, he notes that we could spend a lot MORE money, and sequester a lot LESS Carbon by investing in local projects. So, in terms of offsetting Carbon in an economically efficient manner, it makes more sense to invest in projects that aren't necessarily the most local to Colgate.

c. Christopher Wells (Senior Advisor to President): Interviewed by Michael

Mr. Wells finds that, at Colgate, offsets and the discussions around them can suffer from a multitude of issues. Whether it be lack of awareness or education, partisan ideology, or issues of funding allocation, the decision around quantity and quality can be constrained by a variety of causes.

> Mr. Wells hopes that in spite of all the impediments to funding offsets, that Colgate prioritizes offsets that can make impact on a global level that reduce emissions.

Mr. Well believes locality ought not to be a priority, from an administrative perspective when it comes to offsets, because community engagement does not necessarily depend on locality nor local offset projects do not necessarily help people who need it most. However, if a local offset can embody both of those items, there is no reason not to invest. When it comes to

spreading awareness, Mr. Wells discussed how students and faculty alike can be so inundated with information, events and initiatives that carbon offsets and carbon neutrality are forgotten. However, he believes that offsets can be used as a way of promoting difference making from an institutional standpoint. He hopes that offsets can be an example of how to make positive, sustainable change, especially given a plethora of offset options. Mr. Wells noted that these conversations often play out over the course of the year, so it may take a very long time to reach a consensus. He notes that, from an administrative perspective, unfortunately people tend to have resolute stances on offsets despite not being experts in the field, which makes consensus and progress difficult.

> From a student aspect, Mr. Wells discusses how it is not hard to get people to care about offsets and the larger carbon neutrality commitment, but getting people to commit time and engage is hard because Colgate students are often so busy.

Mr. Wells advocates for using offsets to cover the remainder of our carbon emissions, only because it is a feasible/realistic option if we want to achieve neutrality in time. He stated that the situation explaining why we are choosing to purchase offsets be made clear. A lot of on-campus improvements and modifications have been implemented and accounted for in the most recent reporting: offsets need to be purchased in order to account for the remaining tonnage produced that can realistically be afforded.

d. Richard Klotz (Economics Professor): Interviewed by Sabrina

Professor Klotz admitted that the amount of money we will be spending on Carbon offsets is a small number of dollars in comparison to the overall budget, but points out that it is not insignificant. He states that any money we save on this is beneficial to the University, so spending less money on this (Carbon offsets) while achieving our goals will be beneficial.

> In terms of addressing co-benefits, not everyone is going to value the co-benefits the same way, but this doesn't mean we can ignore the co-benefits.

He points out that the survey the Carbon Offsets Working Group will be sending out is geared to ask people, HOW much do you value these co-benefits? Professor Klotz was of a similar mindset to Professor Turner, and echoes Professor Turner in his question, "Why tie those benefits to a Carbon Offset instead of investing directly into ecological/educational

benefits?". So far these are the aims of the survey soon to be circulated by the Carbon Offsets Working Group:

- Brief explanation of Carbon offsets
- Explanation as to why we need Carbon Offsets for Colgate's Carbon Neutrality Pledge
- Define some evaluative criteria we might use to compare and contrast various carbon offsets (e.g. price per ton of Carbon, location -- local vs. distant (3 levels -- watershed for near, national, international), educational co-benefit (e.g. are students and classes involved?), ecological co-benefits (e.g. forest biodiversity protection)
- Blank slot that people can fill-in / open ended
- Present Various Carbon Offset Bundles (e.g. Package A, B, C, or D)

It is important to note that as of December 14, 2018 the Carbon Offsets Working Group plan was to send out an alternative campus-wide message to inform their recommendations regarding the December 2018 carbon offset purchases Colgate must make in order to reach carbon neutrality by 2019. This campus-wide outreach cannot be labeled a campus-wide survey because the Carbon Offsets Working Group was recently (in the month of December) notified by Colgate's Office of Institutional Planning and Research that they were not approved to send a campus-wide survey (due to recent restrictions regarding campus-wide surveys).

e. Robert Turner (Department Chair of Economics Department): Interviewed by Sabrina

Carbon Offset purchases can be done very cheaply, however part of the Carbon Offset Working Group's job is it determine what co-benefits people value so they can purchase a bundle of offsets that not only satisfy the carbon requirements necessary for Colgate to reach neutrality, but also are purchases the Colgate community can be happy with.

> Predetermined budgets set the constraints as to what bundles are possible. In terms of what is usually recognized as a priority co-benefit, people tend to like the idea of local impact (though the local options are usually the most expensive Carbon offset options).

Professor Turner is in favor of buying the cheapest Carbon offset options as possible because he personally does not believe the co-benefits are worth the amount of money it would cost to bring about. Instead, he thinks we should invest directly towards educational benefits and/or ecological benefits as this would be a more efficient method of utilizing university funds.

f. Trish St. Ledger (Associate Provost): Interviewed by Manny and Mey

Trish St. Ledger noted that it was extremely important, from an administrative perspective, to involve the Colgate community in the process of organizing guiding criteria that will influence all future decisions on carbon offset projects and purchases. This type of inclusive involvement also provides transparency and a greater understanding of the decision process. While everyone cannot be fully involved during every project proposal, these values can guide all purchases and provide uniformity even when the carbon offsets may vary in co-benefits and execution. While all decisions regarding Colgate's purchases are ultimately up to President Casey, Ms. St. Ledger notes that he has been very attentive and fully supports the activities and advice of the Sustainability Council, subcommittees, and other advisors. Transparency of the discussion and advising process has been a concern articulate by certain faculty members. However, faculty governance committees address these concerns by recorded committee agendas and minutes, which are readily available to faculty members. Ms. St. Ledger emphasized that reaching carbon neutrality in 2019 will only be the beginning. This action is a commitment to pursuing continuous improvement towards a greener and more sustainable campus and community. Due to the nature of this campus and its educational objectives, there will always be carbon emissions that must be offset, not to mention further sustainable improvements the campus can adopt. Ms. St. Ledger used The Green Revolving Loan Fund as an example of an essential step towards the institutions duty and perspective on sustainability across the Colgate campus.

g. Pamela Gramlich (ENST and Sustainability Program Coordinator): Interviewed by Gordon

Pamela sees carbon offsets as a very necessary and cost-effective tool to mitigate carbon and reduce Colgate's carbon footprint.

> She states that first and foremost, Colgate is an institution of higher education, and a project that can offer education co-benefits is definitely worth the cost.

She also believes that it is important to have high-quality offsets that Colgate can measure and demonstrate carbon savings. Going off of education, Pamela believes it is very possible to have a carbon offsets class offered every fall -- take for example a CORE course entitled "Carbon Neutrality". She sees this class conducting and analyzing our annual greenhouse gas

inventories, creating recommendations of what Colgate should do. In terms of further extrapolating academic opportunities where students can learn about Colgate's carbon offset portfolio and decision-making process, Pamela likes the idea of stakeholder engagement and could see a forum happening possibly once a year or maybe a Green Submit to be part of a bigger whole of sustainability. An important point Pamela mentioned about forums, however, was that carbon offsets should only take up a small portion of discussion time. Pamela makes a valid point, expressing that carbon offsets are only a slice of the pie, and that moving forward Colgate should not paint a picture that is not true by focusing on offsets, because Colgate's sustainability program is so much more.

h. Catherine Cardelús (Biology and ENST Professor): Interviewed by Mey

Promoting sustainability initiatives across campus is a significant theme in Colgate's Bicentennial plan. Since 2008, Professor Cardelús has been highly involved with the number of initiatives including chairing the Sustainability Council, to promote the education and incorporation of sustainability across academic disciplines. It is incorrect to assume sustainability is an obligation for Environmental Studies Department alone. Rather, it is the department's prerogative to educate all actors that sustainability is an obligation shared across the institution. Professor Cardelús described this work as iterative and continuous, and demands a great deal of effort from the council and administration to enact sustainable changes. Colgate has involved more faculty, staff, and student groups in their decision making process and improved outreach to faculty members to expand a sustainability them in the curriculum.

Colgate community has improved their outreach to faculty, staff, and students across campus by expanding the number of members on the Sustainability Council. Beyond faculty and students, other groups include buildings and grounds staff, administrative assistant, custodial managers, and staff involved in the Energy Master Plan all take part in decisions. More activities across the institution are engaged and invested in Colgate's sustainability commitments.

To improve outreach across departments through interdisciplinary syllabus, guest lecturers, and sustainability modules. Professor Cardelús and other faculty biannually host "Teaching Table" events to engage junior faculty and encouraged them to incorporate

sustainability themes as an interdisciplinary component of their curriculum. In addition, faculty members who are knowledge about environmental initiatives have listed themselves as potential guest lecture for any class that wishes to incorporate sustainability as a theme. Professor Cardelús noted that faculty underutilize the opportunity to invite guest lecturers or incorporating a sustainability module, and sees opportunities to implement these tools in CORE culture classes, since global warming and sustainability afflict all countries, cultures, and people around the world.

Though Colgate has found success in a variety of their outreach programs, misunderstandings and insufficient knowledge regarding carbon offsets has still created barriers to sustainability activities and goals. Colgate has struggled to highlight the achievements in carbon emissions reductions, so these improvements are rarely recognized across campus. In addition to a lack of information, Professor Cardelús brings attention to the resulting misunderstandings and confusion surrounding carbon offsets. Colgate's Patagonia Sur Project was an example of misunderstanding regarding what kind of project Colgate was investing in and the confusion whether Carbon offsets were a choice over emissions reduction. It was this project that highlighted the need to identify criteria and values by being inclusive and transparent about future carbon offset decisions. While there is a clear top down push to incorporate sustainability across the campus, there is a need for improved information diffusion and celebration of achieved goals and future commitments.

i. <u>J.S. Hope (Senior Vice President for Finance and Administration): Interviewed by Sabrina</u>

When making financial decisions, J.S. defers to the folks who have done the work/research regarding the issue(s) and effect(s) in question. He states that it's his job to give the framework of where we can go as far as the budget (he sets the constraints and he leaves it up to the 'experts' to decide how to spend their allocated funds). J.S.'s father passed away during his junior year and he was given a full ride senior year at Colgate.

> Things that take away significantly from financial aid are hard to give priority to for J.S. However, he acknowledges that it would be great if we could put a face to a name -- so local would be nice (he states this was a personal preference but not something he thinks is necessary).

Regarding Colgate administration's role in deciding which offsets are pursued, J.S. indicated that 'at the end of the day, it's similar to the entire financial process. He's not the expert on which offsets to choose, because it would be impossible for J.S. to be an expert on every financial area in which decisions must be made. John (Pumilio) and the committee know better and so J.S. takes their recommendation on which offsets to buy.

2. **Bowdoin**

a. Keisha Payson (Assistant Director of Sustainability): Interviewed by Sabrina

For their sustainability initiative, Bowdoin's definition of success is first achieving their baseline goal of carbon neutrality. After achieving this external goal, the next steps include setting internal goals outlined in Bowdoin's new climate action plan. "Bowdoin Achieves Carbon Neutrality: Now for the Next Step" was released and is published on Bowdoin's News Archive on April 19, 2018. This article describes in detail the different Carbon Offset purchases Bowdoin made in April of 2018 and emphasizes that Bowdoin is in the process of creating an Updated Climate Action Plan for 2030. Keisha describes the decision making process regarding offset purchases in the following manner: 'Bowdoin has a certain amount of money that we spend on CO2 reducing projects ($500,000 each year). The university didn't want to spend all of this budget on offsets, but wanted to invest in on campus projects primarily. The committee made the decision to invest in a solar project in Maine. Bowdoin is one of several buyers who are helping build this project. The project in Maine will help reduce Bowdoin's electric emissions by 48%. Next, Bowdoin decided to fill out the rest of the offset portfolio through the purchase of wind offsets in Texas since this option was MUCH cheaper than more local offset options.' As far as the formal decision making process -- Bowdoin looked at a range of Carbon Offsets and the final decision as to purchasing was made by the Sustainability Implementation Committee. The make-up of the committee included a few students, as well as an Economist, Biologist, and Government faculty member. Bowdoin wanted to have "the diverse portfolio approach", and thus feel pleased with their purchases. Even after offsetting the amount of carbon to reach neutrality, Bowdoin's sustainability office felt like there was still opportunity to invest on-campus. Because of this, they invested in the Maine project (which technically can be considered "additional offsets" since they are not essential to Bowdoin reaching neutrality). The general responses to the April 2018 Carbon

Offset purchases were those of excitement and positivity. Keisha stated that about 50% of students indicated they would want to just keep investing in on-campus projects, while the other 50% just wanted to reach Carbon Neutrality (and purchase offsets). Keisha recognizes that there are always students who say "you are just buying your way out" but the majority of those students don't understand the reality of the situation. In order to garner student engagement and awareness Bowdoin is offering a class this fall that looks at institutional climate plans.

3. **Duke**

a. Matthew Arsenault (Carbon Offsets Initiative Program Manager): Interviewed by Mey

The Duke Carbon Offset Initiative (DCOI) was formed in 2009, two years after the President of the university signed the Second Nature Climate Commitment. They are aiming to reach carbon neutrality in 2024 and have invested in many emissions reduction projects, as well as carbon offsets, a combination of programs necessary to meet their target. The DCOI is made up of many stakeholders, including students, and is tasked with researching, investigating, and pooling offset project options for the school to consider. While Duke could technically become carbon neutral tomorrow, DCOI's objective is to find offsets with a variety of co-benefits, such as student engagement and ecological conservation. Cost is not a demanding concern and proximity is a highly valued aspect of each project. Mr. Arsenault descried the DCOI as 'learning through doing' meaning the organization has evolved values and objectives through their research and investigation of carbon project options. While there was some speculation from the public that Duke could establish an offset program on their campus forest, DCOI determined that effective offset projects would be better if they were off campus. While they have seen little skepticism from their own community around their offset projects like swine waste-to-energy, Mr. Arsenault noted that one of Dukes challenges has been educating the community and broader public about carbon offsets and sustainable living. The sustainability office has circulated pamphlets and experts have been invited to speak at classes with environmental sustainability focus. Mr. Arsenault indicated that another form of education is directly showing individuals what a carbon offset is by engaging student in offset projects, meaning that they value close proximity of the projects to their campus. For

example, the Swine waste-to-energy is a ten year project that has supported student research and captured greenhouse gasses for over seven years to date.

4. **Hamilton**

a. Aaron Strong (Assistant Professor of Environmental Studies): Interviewed by Michael

Despite no dire rush to achieve carbon neutrality (Hamilton's carbon neutrality goal is for 2050) and still a level of obscurity surrounding Hamilton's interim sustainability goals, Professor Strong noted that times are changing on campus. Professor Strong notes that while Hamilton does not simply want to donate their way to neutrality, there is no comprehensive plan that will help Hamilton make the necessary steps to become carbon neutral. Professor Strong is still hopeful that with such a distant neutrality goal, a robust and thorough plan can be thoughtfully developed and implemented. Professor Strong also would like to see more students involved in the process of achieving carbon neutrality and developing a climate action plan. Professor Strong believes that Hamilton has suffers from monetary restraints, administrative discord, and a lack of public interest when it comes to achieving neutrality. Professor Strong attributes a lot of this to how hard it was to predict how feasible it would be to divest from fossil fuels as they are ubiquitous in daily operations. Professor Strong mentioned that Hamilton holds themselves to a 1.5 C degree warming world (which he also notes was not necessarily a broad and inclusive conversation but he was also not working at Hamilton at the time). Professor Strong notes that students are avidly participating in sustainability related groups and activities and are excited to see faculty on campus championing sustainability and sustainable best practices. Professor Strong now sees that sustainability has become disseminated throughout curriculum and courses now (such as the development of a first-year carbon offsets class), with growing interest from students. Professor Strong mentioned that Hamilton has not always pursued leadership positions in sustainability mainly because of a lack of champions on campus, not because of resistance from any groups. Professor Strong also believes that Hamilton doesn't want to fall far behind from peer institutions on the sustainability front. Hamilton has a good endowment to student ratio, but Professor Strong believes that they could be doing more in terms of funding sustainable initiatives. Professor Strong stated he is excited to see an increase in sustainability dedicated personnel, such as the Hamilton Sustainability Coordinators (who are students

working with director on project implementation throughout campus that works with administration) and the Hamilton Environmental Action Group (who are students that handle more advocacy-related activities and initiatives on campus). Professor Strong elaborated that while there are on-campus emissions that could be reduced before the necessary purchase of offsets come into the picture, but it mainly revolves around budgetary allocations for sustainability-related investments.

5. **Second Nature**

a. Steve Muzzy and Ruby Woodside (Climate Programs Senior Manager and Manager of Innovative Services): Interviewed by Gordon

Second Nature noticed in institutions with similar portfolio as Colgate trying to reach carbon neutrality were conservation projects, projects that protect and preserve ecological valuable resources. They noted that institutions typically implemented conservation projects that had to do with energy. For instance, renewable energy projects such as installing solar panels, and fuel-switching to biomass. Many institutions invested in renewable energy through onsite generation and also buying from an outside source. Another general trend among schools is that schools are working in formation with other campuses as a collaborative group effort for renewable energy projects.

> Ruby and Steve recommended Colgate pursue offsets based on the following criteria: (1) offsets are minimum level third party verified, (2) offsets have relatively recent vintage years (no more than 5 years old), and (3) that Colgate takes education co-benefits into consideration.

Drawing knowledge from other institutions, they pointed out that maybe Colgate could match their offset with initiatives, such as in locations where students study abroad in. In addition, they explained that it is very popular for institutions to align with carbon offsets that support their sustainability goals. Steve and Ruby also recommended moving forward after reaching carbon neutrality in the following steps: First, Ruby and Steve believe that it is important for Colgate to not only reach carbon neutrality, but make neutrality core to what the institution is doing, while having a buy-in and communication aspect to it. Campuses, then, should incorporate sustainability into institutional goals and be represent sustainability

in the decision structure on institution decisions as a whole. Second, Colgate should continue to have discussion across institutions. Something that is important to note from this is how this connects to institutional goals and leadership opportunities by higher education. Third, to continue on with carbon neutrality, they say that we should slowly try to reduce dependence of carbon offsets purchasing, reduce campus emissions level, and be more involved in energy reduction projects moving forward. To make decisions in the future, they stressed the point that the key is bringing on as many of the campus community onto the issue. This means that campuses should make sure to spread awareness of their intended actions to the community, and be sure to consider the perspectives of all stakeholders before coming to a decision.

Steve and Ruby also recommended reaching out to Duke, Yale, Middlebury, Clarkson, Colby, Bowdoin, American, Greenmount, and Smith College. We did interviews with Duke, Yale, Colby, Bowdoin, Middlebury, and Clarkson. We chose these schools, because we found contact information to the sustainability directors online. We struggled to get in contact with American, Greenmount, and Smith early on. Therefore, we did not interview them, because we concluded that we could not conduct, transcribe, and analyze additional interviews given our fall semester time frame for conducting this study.

6. **Yale**

a. <u>Ginger Chapman (Director of Sustainability): Interviewed by Sabrina</u>

How Yale's Community Carbon Fund became a reality: The Community Carbon Fund initially offered energy-saving installations in low- to middle-income homes, but they found it was difficult to assess data and ensure long-term impact. They then tried funding energy audits, but found that many lower income homes were ineligible because of health concerns. Yale now offers three options: First, to donate to CT Healthy Homes for Children to add energy audits onto health remediation visits for low-income homes; Second, to plant trees through Urban Resources Initiative; and third, to donate to a verified offset initiative. The rationale for this is that the first two give back to the local community, but are not verifiable and some people want the assurance of one-to-one translation for offsets. We had a student research the standards that we should use for selection and offer his top choices for our purposes – our final selection was made based on transparency and ease of use. Some challenges Yale is facing in its pursuit to become Carbon Neutral include converting current

campus energy systems to greater efficiency, addressing the need to retain legacy buildings yet make them extremely energy efficient, and implementing major campus changes with speed yet avoiding major disruptions to the academic mission of the university. After reaching neutrality a possible goal will be to become net positive. Yale does not have one set way of engaging students. Instead, the university does things like writing action plans for various academic groups, developing campaigns and outreach for living and learning spaces, presenting and tabling during orientations, and connecting with curriculum in various disciplines. Students, faculty, and staff were engaged as part of the outreach to the Yale community during the process of creating the Yale Sustainability Plan 2025 (though Ginger did not specify how exactly these parties were engaged).

The 2025 Sustainability Plan includes Climate Action as one of its nine ambitions. It includes among others, the goal of meeting Yale's 2020 GHGe reduction target (set in 2005) and achieving campus carbon neutrality by or before 2050. On Yale's website outlining their 2025 Sustainability Plan, it reads: "Carbon offsets represent one part of the mix of strategies to achieve carbon neutrality". The website goes on to describe The Carbon Offsets Task Force as "a group of students, faculty, and staff—formed in the Spring of 2017 and recommended an actionable policy that would guide the use of carbon offsets, including criteria for meaningful offsets, pace of acquisition and retirement of offsets, and a governance structure to support an ongoing program". After meeting for over six months and consulting with experts from academia, industry, as well as the Yale community, the task force recommended that Yale pilot an internal carbon charge in the 2015-2016 academic year. According to Yale's website describing "The Yale Carbon Charge" "the pilot was a success, and led to the implementation of the current carbon charge program" (Yale University Website).

7. **Colby**

a. Sandy J. Beauregard (Director of Sustainability): Interviewed by Michael

Ms. Beauregard started last September as Colby's Sustainability Director and selected carbon offset projects for 2017 and 2018. When it comes to offsets, Ms. Beauregard and Colby share the belief that they are an important tool in reducing their transportation-related emissions. Purchasing offsets provides an effective opportunity for reducing otherwise avoidable emissions. Colby uses the UN sustainable development goals to guide their offset selection

process, where they select three to five projects, in a range of locations with at least one in the US. Colby's Environmental Advisory Group discusses which offset options the school should pursue, but there is no set criteria for deciding which of the UN goals are achieved/satisfied. The Environmental Advisory Group at Colby is a group comprised of four elected students, two appointed faculty members, and three to five appointed administrative staff that help direct sustainability measures on campus, including offsets. Ms. Beauregard shared that while this group is doing excellent work, especially the students in these positions, they could improve on transparency. Colby is happy to share if asked about any sustainability decisions or plans made, but Ms. Beauregard feels they could communicate the process more while it is ongoing.

> Students are aware that Colby is carbon neutral, but not necessarily well informed as to how they achieved it and what other projects are going on.

Ms. Beauregard attributes a lot of this to a lack of resources, but has begun to see more resources coming their way. One of those ways is a communications and social media intern, who aims to disseminate news about sustainability initiatives and news at Colby in an engaging and accessible way. Ms. Beauregard thinks that sustainability is working towards holistically integrating at Colby, not just in the environmental studies department, and that sustainability is incorporated in some way throughout campus. Ms. Beauregard cited student-led, grassroots advocacy as the driving force behind the decision to pledge to become carbon neutral. She discussed how a lot of the improvements made towards achieving carbon neutrality also would end up saving the university money on operating costs, which helped spur on their implementation such as their green energy investments and biomass plant. While they are buying offsets to cover the rest of mainly transportation emissions, Ms. Beauregard says Colby is still pursuing other options to reduce emissions of that category like charging for parking (which they currently do not do) or increasing their bike-sharing program. Ms. Beauregard also discussed Colby's participation in the Green Campus Consortium, where all schools in Maine gather together quarterly to discuss sustainability issues felt on and across campuses and how they can solve them. She discusses the benefits of having different viewpoints coming to one table for brainstorming solutions to unique

challenges. As some schools are publically funded whereas others are private, a diversity of knowledge and methodology is shared for the betterment of all parties involved.

8. **Swarthmore**

a. Nathan Graf (Climate Action Senior Fellow): Interviewed by Gordon

> Nathan notes that Swarthmore is not even close to the stage of considering offsets yet and see offsets as a last resort. However, if they were to consider offsets, he believes that offset projects on landfills such as UC Irvine's are very compelling, because landfill projects offer a lot of mitigation for very little cost.

Nathan is a big fan of putting renewable energy on the grid, because Nathan thinks it may get us past certain thresholds that offset even more. Nathan explains the challenges to becoming carbon neutral mainly revolve around obtaining reliable emission data for financial modeling and mitigation projects, especially in transportation, procurement (e.g. food and furniture), and construction. In addition, Swarthmore constantly needs to delay objectives and re-define their carbon neutrality plan, as they figure out barriers and more urgent issue along the way. Nathan also express cost and available staff time as barriers in moving towards carbon neutrality. In terms of engaging community, Nathan mentions that Swarthmore sustainability is actually driven by students. Nathan explains that the campus has a Green Advisors Program, that includes twenty student volunteers to be student green advisers (leaders within individual dorms that focus on compost, peer-education, and working with faculty and staff). Swarthmore also hires twelve students to be President and Sustainable Research Fellows that work eight hour per week and participate in a ten hour week credit class to work with the sustainability office on larger-scale projects. Moreover, the school presents an annual sustainability showcase to show the rest of the community what the community has done (134 people showed up last year). In terms of decision-making, students were running sustainability efforts at Swarthmore before sustainability committee was empowered to make recommendations. No one was necessarily responsible for making decision making, so Swarthmore added some other sub-committees, to make decisions, pass questions and report to the president. The decision-making process for sustainability initiatives depend on their current climate action plan and sub-committees, which involve students that use allocated

amounts of the green initiative funds. For larger sustainability efforts that require more administrative attention, however, proposals are passed on for approval from an executive committee, or the president's cabinet.

9. **Middlebury**

a. Jack Byrne (Director of Sustainability Integration): Interviewed by Mey

Middlebury successfully achieved carbon neutrality in 2016. The school embarked on their ambitious goal after concerned students and knowledgeable faculty insisted the college adopt a climate action plan. In 2007, this group presented the board of trustees with a proposed plan to achieve carbon neutrality by 2016. A group of students and members of the board of trustees were tasked to develop a neutrality plan. While they have made a significant amount of progress in reducing emissions by converting to renewable energy sources, Middlebury has also invested in multiple offset projects including a biomass plan, three solar panel projects, and carbon-offsets. The President and Trustees were the main drivers in the decision making process of placing the forest under conservational easements, with additional support and data from staff and Middlebury's Lands Advisory Committee, which conducted a number of ecological assessments. For Middlebury, their Land Advisory Committee was involved with the decision because it was conducting the ecological assessments of 6,000 acres of land in the area. The institution valued co-benefits, which Mr. Byrne specified were ecological, educational, and recreational. The application of these values were apparent when the institution chose to conserve their 2100 acre Bread Loaf Forest surrounding the institution to be used for carbon offset credit. While a document published in 2003 indicated that investing in off campus, third-party carbon offsets may be more cost effective, Middlebury's actions are more oriented in providing students an opportunity to be involved through the process of protecting, declaring, and monitoring these forested lands (Carbon Neutrality at Middlebury College, 2013; Middlebury reaches 2016 Carbon Neutrality Goal, 2016). There was very little opposition and strong engagement from students throughout the monitoring process. One of the obstacles that the university has faced since its achievement is ensuring that they are investing in a long term path to maintaining neutrality as well as developing a plant that was distinct from neutrality. Now, after a significant amount of evaluation and planning, Middlebury's Office of Sustainability Integration is working with other administrators and departments towards a

campus that uses only renewable energy sources, with a 25% reduction in consumption by 2028. Like Colgate, this office conducts an annual GHG emissions inventory. And is a partner in many other sustainability initiatives.

10. **Clarkson**

a. Alex French (Sustainability Coordinator): Interviewed by Sabrina

Clarkson recognizes that there is currently no responsible way to reach carbon neutrality without utilizing the purchase of carbon offsets. The university has not outlined which criteria to use as far as the purchasing of these offsets and recognizes that other universities have been taking a portfolio approach. The portfolio approach is one that includes a mix of different offset options with various co-benefits and price-tags. As far as who has the final say to these offset purchases, the CFO, Director of Sustainability, and campus sustainability committee will all be involved in the decision making process. Some of main challenges Clarkson faces in its pursuit of carbon neutrality are misconceptions. Alex recounted a time when he spoke with a previous Dean of the Business school in the hopes of making international trips carbon neutral by staying in cheaper hotels and then using the savings to buy carbon offsets. Instead of seeing this as a way to pay for the real cost of the international trip, the Dean viewed Alex's proposal as an added "carbon tax". Additionally, a huge barrier Clarkson faces is the desire to have a local project.

It is important to notes that Clarkson's desire to put sustainability dollars towards on-campus projects can also be viewed as a barrier to reaching carbon neutrality.

For example, Clarkson did a big chiller upgrade (cost $5 million) and is now extremely energy efficient. For $5 million Clarkson is saving 500 tons of CO2 per year, whereas for 1/10 of that price tag Clarkson could be sequestering 30,000 tons of Carbon per year through the purchase of more price-efficient offsets. In terms of student involvement with Clarkson's sustainability goals, a couple of students have been sent to Uganda to map out trees and work on future planning processes. Additionally, this coming summer Alex French will be leading a school business trip with students to teach about Carbon Markets. Reaching carbon neutrality by 2025 in an affordable manner that includes student engagement and various co-benefits will be considered "success" for Clarkson.

Institutional Progress Across Peer Schools

The table below lists the University interviewed, their carbon neutrality pledge date, along with details regarding the carbon offsets purchased, student engagement, and the governance involved in the purchasing (past, present, or future) of carbon offsets. Five out of nine institutions have already purchased carbon offsets. It is important to note that only two of the nine peer institutions, Colby and Middlebury, reached carbon neutrality prior to the beginning of this research (denoted with asterisk).

Figure 5: Progress by Peer Institutions on Carbon Purchases and Neutrality

Bowdoin	**Clarkson**	**Colby***	**Colgate**	**Duke**
2020	2025	2015	2019	2024
Carbon Offsets Purchased: April of 2018: (1) solar projects in Maine, (2) wind offsets in Texas (cheaper than local options)	**Carbon Offsets Purchased:** None	**Carbon Offsets Purchased:** (1) solar projects in Maine, (2) city of Presque Isle (ME) GHG landfill reductions	**Carbon Offsets Purchased**: Patagonia Sur Project and Forest Sequestration Project	**Carbon Offsets Purchased:** swine waste-to-energy project at Loyd Ray Farms
Student Engagement: (1) Bowdoin offers a class this fall looking at institutional climate plans, (2) a few students sat on the Sustainability Implementation Committee	**Student Engagement:** (1) sent a few students to Uganda to map out the trees, and to work on future planning processes, (2) business school trip, to teach about Carbon Markets	**Student Engagement:** (1) Environmental coalition, (2) Colby alliance for renewable energy focused on divestment, (3) Eco Reps (student employees for sustainability office doing various projects), (4) Environmental advisory group (contains 4 students, 2 faculty, 3-5 staff)	**Student Engagement:** students visited Patagonia Sur Project, Sustainability Interns (though not involved with Carbon offset decision making)	**Student Engagement:** urban forestry projects, and research co-benefits, as well as DCOI initiatives to educate across campus

Governance Structure: Sustainability Implementation Committee, there were a few students on the Committee. Looked at a range of Carbon Offsets and then made a decision. Took the "diverse portfolio approach".	**Governance Structure:** Alex French mentioned that there is currently no outline of what criteria will be used to select Carbon Offsets. He added that the CFO, Director of Sustainability, and the campus Sustainability Committee will likely all be involved.	**Governance Structure:** Environmental advisory group contains 4 elected students, 2 appointed faculty, appointed 3-5 administrative staff.	**Governance Structure:** Carbon Offsets Working Group made up of 7 members (1 student, 4 professors, 2 staff)	**Governance Structure:** Duke's Carbon Offset Initiative (DCOI) has 2 staff, and is a subset of the Office of Sustainability. The Campus Sustainability Committee (CSC) is a standing committee appointed by the President and has 11 faculty members, 11 administrators, and 10 students.

Hamilton College	Middlebury College*	Swarthmore	Yale
2050	2016	2035	2050
Carbon Offsets Purchased: None	**Carbon Offsets Purchased:** Previously worked with Native Energy, a Vermont carbon offsets company, to facilitate the purchase of carbon offsets for study abroad travel. This partnership no longer is active.	**Carbon Offsets Purchased:** None, however, purchase of renewable energy credits/certificates (RECS) in form of wind power since 1999.	**Carbon Offsets Purchased:** None -- but option to donate to a verified Offset Initiative through Yale's Community Carbon Fund
Student Engagement: working on developing a first-year specific carbon offsets class, HEAG (Hamilton Environmental Action Group) is a student-run environmental advocacy group.	**Student Engagement:** The Office of Sustainability Integration develops, implements, and supports sustainability initiatives that achieve environmental, social, and economic goals throughout the campus community, College operations, and the community at large. The Sustainability Solutions Lab (SSL) program	**Student Engagement:** Hires 20 student green advisors and 12 president and sustainable research fellows to assist with sustainability implementation. Has an annual sustainability showcase	**Student Engagement:** Students engaged through surveys as part of the outreach to the Yale community during the process of creating the Yale Sustainability Plan 2025

Governance Structure: No clear committee currently set-up to handle the possibility of in the future purchasing carbon offsets.	**Governance Structure:** Environmental Council made up of students, faculty, and staff. Has monthly committee meetings to advise the President and address sustainability matters of policy and practice. E.g.: What impact would a proposed project have on net carbon emissions?	**Governance Structure:** The Ecosphere—a committee governance structure comprised of Swarthmore's entire sustainability community. Contains a formalized reporting system that connects working groups to sustainability-related committees and then to the president's staff—facilitated and convened through the Office of Sustainability.	**Governance Structure:** The Carbon Offsets Task Force—a group of students, faculty, and staff—formed in the Spring of 2017. In charge of recommendations to guide the use of carbon offsets, including criteria for meaningful offsets, pace of acquisition and retirement of offsets, and a governance structure to support an ongoing program.

Note: Schools with * be their names in the chart reached Carbon Neutrality before interviewed for this study.

Trends Gathered From Comparisons Between Institutions

Trend #1: Value and Co-Benefits

We found 5 of the 9 institutions have already purchased carbon offsets and a majority of the institutions we spoke with emphasized support for diversified offset portfolios either through explicit confirmation and/or their previous carbon offset purchases. For example, Duke has two offset projects they are currently invested in. The waste-to-energy contract produces carbon credits which the institution uses to offset emissions. In addition, they have generated carbon credits by investing in their Urban Forestry project in their local community to create offsets, which they have since expanded to communities beyond Duke's campus. Another example can be found in Middlebury's Bread Loaf sequestration project that provides both ecological and educational co-benefits. From this project, Middlebury was able to offset their emissions fully with their Bread Loaf sequestration project, which was certified as a carbon offset and they have not needed to invest in additional offset projects. Additionally, it is important to note that even those institutions who have not yet purchased carbon offsets indicated that they too are planning on buying a diverse portfolio of offsets.

Furthermore, there also seemed to be a lack of clarity when it came to how co-benefits were valued within the universities we spoke to. For example, Middlebury committed to making their forests a certified offset project. While this sequestration offset is a clear ecological co-

benefit, they also highlight that student involvement during the certification process and sequestration research provided essential and unique opportunities for education in offsets for students directly involved and across campus. Besides Colby, few other universities had a clear and concise articulation of how the value and weigh co-benefits during their decision making process. Even without clear articulation, they emphasized the need to consider and incorporate a variety of benefits. Colby had a very When evaluating and selecting carbon offset projects, Colby uses the United Nations Millennium Goals (otherwise known as the UN Development Goals) as their evaluative criteria. In doing so, the merits of the projects selected can be transparently and clearly communicable. There is no specified number of development goals required for a project to be selected. Colby mandates that at least one of their yearly offset projects (as they normally select between three and five) be located in the United States. More specifically, purposefully or inadvertently, Colby has selected local projects within the state of Maine. This could attributed to wanting to preserve the ecosystems in Maine, providing students access to the college's offsets, or another unspecified reason. It is important to note Colby's clear and transparent structure in regards to valuing co-benefits as Colby gives a good example of how to clearly outline how co-benefits are being assessed and considered.

Trend #2: Need For A Durable and Connected Governance Structure

There exists a clear struggle with knowing how to appropriately incorporate sustainability leadership in a meaningful and productive manner within an institution in a way that will maintain after offset are purchased and after neutrality is reached. While certain schools have strong advisory committees who are supported by the administration and campus community to continue to produce campus wide initiatives, other institutions have more formally incorporated sustainability into their governance structure and academic mission. In contrast, some schools have purposefully prioritized the academic mission of the institution, separating and prioritizing academic mandate over sustainability goals. The variation in institutional and administrative incorporation of sustainability advisory committees and governing boards seems to reflect the magnitude and seriousness of the institutions commitment to carbon neutrality and beyond.

Duke, who has committed to reach carbon neutrality by 2024, has institutionalized both a committee and hired office that are tasked to pursue and implement a variety of sustainability initiatives across campuses. Duke's Campus Sustainability Committee (CSC) is a committee of

faculty, staff, and students that are appointed by the President and are tasked with recommended and pursuing sustainable initiatives across campus including presenting GHG emissions and recommending institutional CAP agreements (Duke Office of Sustainability Website). Unlike Colgate who relies on the Carbon Offset Working Group, which is an advisory subcommittee, Duke's Carbon Offset Initiative (DCOI) is made up of hired staff who are tasked with researching and recommending carbon offsets. Their strong commitment to neutrality and sustainability is reflected in how they have institutionalized their administrative offices and advisory committees. Like their endeavor, these finite committees provide institutional support for the university to continue to pursue new goals protected from potential periodic fluctuations in management or student initiatives that may hinder or threaten these objectives in the future. However, there appears to be a disconnect between these offset committees and the rest of the universities' governing bodies.

In addition, Colby utilizes their Environmental Advisory Group, comprised of four students, two faculty members, and three administrators. The role of the Environmental Advisory Group is to advise the president and College community on issues related to the environmental stewardship of the campus and region. This group also is the primary communicator with outside contractors with whom the College does business.

Swarthmore, who has committed to neutrality by 2035, formed a committee governance structure called the Ecosphere. In this structure, working groups, who lead specific sustainability efforts report to three central committees: The Sustainability Committee, Crums Woods Stewardship Committee, and Carbon Charge Committee--all which are comprised of appointed students, faculty, staff, and community members. These committees collaborate together, and all report to the Ecosphere Executive Committee, also known as the Sustainability and Climate Executive Committee, which is a committee made up of the President's staff, the chairs of the three central committees, an appointed faculty from Swarthmore's committee of faculty procedures, and an appointed student from the student government organization, that reports to the president's staff and makes almost all approvals for sustainability implementation. Although Swarthmore is not at the stage to consider carbon offsets yet, it is highly likely that the decision-making of carbon offsets, a sustainability related issue, would go through the governing structure of the Ecosphere.

Generally, the strength of an institutionalist sustainability and neutrality commitment is reflected in the degree to which the sustainable decision making body or committee is incorporated into the institution. Sustainability decisions that encompass and have the power to impact actions across campus are more resilient and lead to transparency, legitimacy, and durability of initiatives and long term goals.

Recommendations:

Recommendation #1: Value Formation of Co-Benefits

The wide spectrum of objectives and values that carbon offset projects can entail cannot all be encompassed in a single project. Other schools have shown trends of procuring diverse portfolios of offset projects with differing objectives and co-benefits. In order for Colgate to receive support for purchasing offsets from the administration, the board, the faculty, and the students, the offsets ought to prioritize the goals outlined in the University's mission. In short, the offsets should provide ample opportunity for academic engagement as well as their intended environmental benefits. This may entail a narrower criteria when selecting offsets, perhaps even limiting the university to local options, but it will ensure that the decisions made will be coherent with the University's goals and responsibilities, as well as make progress towards neutrality.

If there is anything to be learned about the evaluation of co-benefits across our peer institutions, it is that the best way to produce a sense of legitimate engagement and support for offsets is to include a diverse array of voices around campus. This will involve deliberating how the university wants to decide on the allocation of resources towards offsets, at an agreed upon price per ton, that provide educational co-benefits or ecological co-benefits. It will also entail having a discussion concerning what proximity these projects are to the university. We recommend the use of a campus-wide survey, both as a measure for engaging interest across campus and for disseminating information about the university's direction for sustainability measures and carbon offsets alike. For Colgate to receive broader engagement and support for offsets, it will likely require dedicated channels of communication for news regarding initial selection, evaluation, and final decisions to fully commit to transparent communications. This increase in transparency will remind students and faculty of the university's commitment to carbon neutrality and perhaps provide information as to how community members can engage with particular projects or offsets and sustainability on campus as a whole.

Recommendation #2: Changes to Colgate's Governance Structure

The second trend identified throughout our research was a need for the formal integration of groups dedicated to handling offsets, or sustainability in general, that can communicate with the rest of the institution's governance structure. We conclude that it would be beneficial for Colgate to formalize and integrate the Sustainability Council, Colgate's current governing body on sustainability, within Colgate's institution-wide governance structure. We believe this could potentially happen in two ways:

1. The Sustainability Council could be established as a Faculty Governance Committee. This would mean that members are elected. This would perhaps provide for a greater degree of inclusion regarding stakeholder engagement than what currently exists. Additionally, as a full-fledged Faculty Governance Committee, the transformed Sustainability Council would have the opportunity to participate in President Casey's pilot program involving the APC (Advisory and Planning Committee). President Casey articulated that the one of the objectives of the APC is to provide transparency regarding trade-offs annually in the proposed budget, allowing for discussion and understanding across the institution. Therefore, this membership would give sustainability a seat at the table discussing important trade-off discussions dealing with Colgate's annual budget proposal. Not only would the university benefit from further reinforcing sustainability into our financial planning moving forward, the cross-pollination between other members of the APC and sustainability-related staff would benefit the implementation and furthering of sustainability at the university.
    a. This could potentially be a slow moving process as a result of the administrative measures involved in changing the group's nature from an Advisory Group to a Faculty Governance Committee. We would also like to recommend that the Sustainability Council establish transparent and available criteria for how its decisions are made, how members are elected or appointed, and who they are responsible with interacting with, both in and outside the university.
2. An alternative recommendation is the establishment and formalization of the Sustainability Council in an alternative manner (not a full-on Faculty Governance

Committee but still a structure of equivalent standing that could potentially have a seat on the APC). While we are not quite certain how this the mechanics of this work, the executive power of the presidency at the university could have some outlets for the creation, validation, and integration of legitimized governance groups. Colgate can demonstrate its commitment to sustainability and neutrality through the formalization of this group, one way or another.

Guiding Questions for Next Steps

- What would it take for the Sustainability Council to become a Faculty Governance Committee? Who needs to spur this into action?
- How might the makeup of the Sustainability Council be altered to be more inclusive? This is something to think about in order to maintain a fuller stakeholder engagement.
- What is the timeline of producing an updated Climate Action Plan post-2019 neutrality fulfillment?
- Who will be instrumental in creating this updated Climate Action Plan given the proposed changes to the Sustainability Council's structure and place within Colgate's governance committee?

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