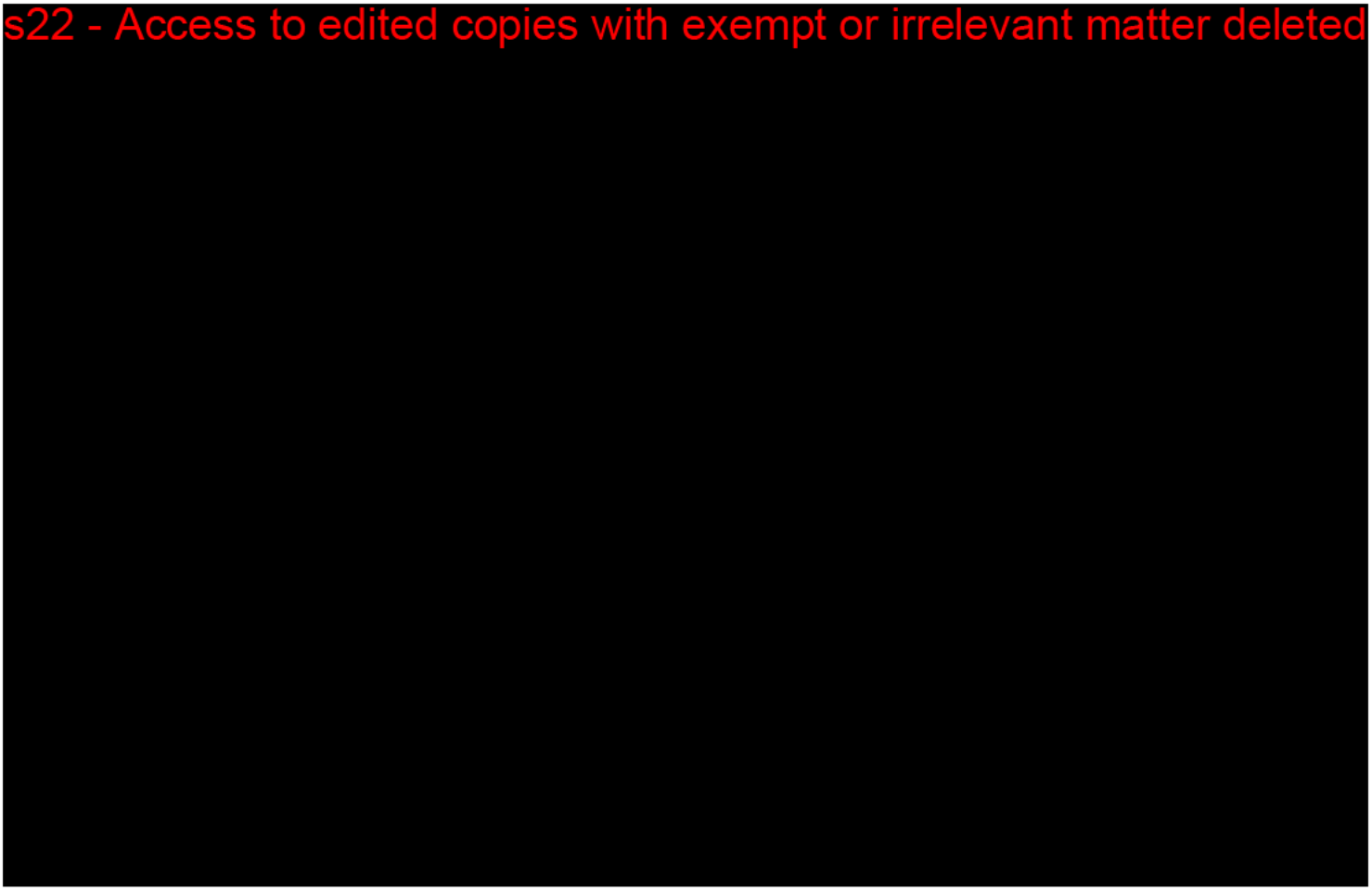


From: Clare de Castella Mackay
Sent: Wednesday, 19 February 2020 7:46 PM
To: Mark Howden <mark.howden@anu.edu.au>
Subject: Fwd: Carbon Negative

Hi

Just got this from John - also v useful for our meeting tomorrow.

Yes, it will be crucial to ensure clear direction from the top on this.

The point that John makes is that we have some of the strategies already (eg Acton Campus Energy Management Strategy) but there is resistance to implementing them. We need to set dates for implementing existing strategy & then stage 2 would be implementing a strategy that is more aggressive.

Thanks

Clare

Clare de Castella
Business Manager
ANU Climate Change Institute
s22 - Access to edited copies with exempt or ir
W: climate.anu.edu.au

I am not at ANU on Wednesdays. Please call my mobile if you need an urgent response.

Begin forwarded message:

From: John Sullivan <John.Sullivan@anu.edu.au>
Date: 19 February 2020 at 7:34:46 pm AEDT
To: Clare de Castella Mackay <clare.decastella@anu.edu.au>
Subject: Carbon Negative

Hi Clare,

as discussed today the ANU has a requirement to report carbon emissions through the National Greenhouse and Energy Reporting Section 19 (NGERS) this report covers emissions from scope 1 and 2 , energy produced and energy consumed for the corporate group Australian National University . These reports cover a financial reporting year.
The ANU areas cover - Acton Campus , ANU Fleet Services, Mount Stromlo Observatory, Siding Spring Observatory and Unilodge ANU.

the 2018/2019 period saw the ANU generate the following

Entity	Scope 1 t CO2-e	Scope 2 t CO2-e
Acton Campus	15208	77804
ANU Fleet Service	428	0
Mount Stromlo Observatory	187	980
Siding Spring Observatory	0	1333
Unilodge ANU	1389	3340

The ACT Government has through its procurement process delivered carbon neutral electrical supply , which would suggest that approximately 80% of the Acton Campus emissions are now offset.
This would need to be confirmed as per the NGERS reporting process we would still be reporting these emissions.
The Acton campus also has other sources such as SF6 (sulphur Hexafluoride) which has a global warming potential 23,900 times more that co2e.

The recently endorsed ACMP and ACEMS should be the key drivers for ensuring that energy efficiency is a key focus point in ensuring that no energy is wasted through poor building performance.
The proposed transition from gas to electricity is also a major task that will require an immediate commitment to all new building works and refurbishments to being 100% electric.
The current energy balance would need to have significant infrastructure works to enable the continued transition.
Energy recovery systems should also be an essential element , the potential heat recovery from the NCI is an example that would see the ANU demonstrate excellence in the area of sustainable design.

Regards
John Sullivan

BELOW ZERO STRATEGY

Environmental Management Background

In 1999, the ANU developed an Environmental Policy to showcase its commitment to being a leader in environmental management. By 2001, the Policy transformed into the ANU Environmental Management Plan (EMP), which at the time and for many years later was above and beyond other organisations as the Plan had clearly defined targets and strategies. Following on from the development of the EMP, the Sustainability Office within the Facilities and Services Division was established and was tasked with the implementation and management of the strategies identified within the EMP on behalf of the ANU.

ANU has seen the development of four EMP's with 9 key areas:

- Culture
- Built Environment
- Energy
- Water
- Waste
- Pollution
- Landscape/ Biodiversity and
- Heritage

The 2017-2021 EMP remains in draft form for the last five years awaiting endorsement.

Below Zero Carbon

The ANU State of the University address in February 2020 noted a commitment to going beyond carbon neutral and that ANU would become carbon negative in its operations across all campuses. The recently endorsed Acton Campus Master Plan and Acton Campus Energy Management Strategy refer to the ANU carbon reporting to include Scope 1 (direct emissions - company owned vehicles and fuel combustion), Scope 2 (direct emissions – purchased electricity own use) and Scope 3 emissions (indirect emissions – employee business travel, waste disposal, contractor-owned vehicles, outsourced activities, product use and production of purchased materials) and to be carbon neutral across all scopes. Currently, ANU reports only on Scope 1 and 2 emissions and the inclusion of Scope 3 will result in an increase in emissions.

Current Status

The ANU as an entity triggers the threshold for reporting under the National Greenhouse and Energy Reporting (NGERS) Section 19 and is required to report emissions associated with each facility[1] under its operational control each financial year. The 2018/19 reporting period saw a combined total of scope 1 and 2 emissions of 101,173 tonnes of CO2e.

The NGERS and other statutory reports are completed by the Sustainability and Heritage Office. The team is also responsible for the management of the following contracts:

- Electricity
- Gas

[1] Under NGERS reporting, 'facility' refers to *an activity or series of activities that generate greenhouse gas emissions*

- Water
- Waste and Recycling and
- Cleaning

The management of these contracts also ensures access to data required for reporting purposes.

The ACT Government's commitment of 100 per cent renewable electricity by 2020 allows the ANU Acton Campus to be carbon neutral for Scope 2 electricity emissions in 2020 and subsequent years. To ensure electricity within the ACT is carbon neutral in the future, renewable sources need to be increased to account for factors such as an increase in population growth. ANU can assist a carbon neutral ACT by identifying and implementing energy efficiency projects across the ANU Acton Campus and by on site generation.

The table below identifies the emissions as reported in the 2018/19 NGERS report per facility[1] for both Scope 1 & 2 and excludes Scope 3 emissions such as air travel (approx. 9000 tonnes in 2018/19) and waste (approx. 1500 tonnes in 2018/19). With the Scope 2 emissions related to electricity calculated at the 2018/19 ACT emissions factor of 0.212 tCO_2-e/MWh, the residual emissions are approximately 53,000 tonnes of CO2e (20,115 tonnes of CO2e emissions related to electricity).

Facility	**Scope 1 tonnes CO2e**	**Scope 2 Tonnes CO2e**
Acton Campus	15208	77804
ANU Fleet Service	428	NA
Mount Stromlo Observatory	187	980
Siding Spring Observatory	0	1333
Unilodge ANU	1389	3340

Next Steps

The transition to below zero carbon requires the development of a strategy or pathway that enables an immediate response (Stage 1 below) and then the ability to lock in an ongoing model that ensures the below zero carbon target is achieved and maintained into the future.

The establishment of a governance structure would require the input of several key stakeholders such as:

- Climate Change Institute
- Energy Change Institute
- Facilities & Services Division
- University Procurement and Contracts Office
- ANUSA/ PARSA
- ANU Finance
- ANU Legal

It may even be appropriate to re-establish the Environmental Management Planning Committee as a governance committee.

Stage 1

Investigate and establish a comprehensive carbon monitoring database that is able to capture data for Scope 1, 2 and 3 emissions. This database will enable compliance with the required Carbon Neutral Standard for organisations. Investigation into the purchase of offsets which are in alignment with the National Carbon Offset Standard to negate the 2018/19 carbon emissions.

Stage 2

The development of a comprehensive carbon inventory that covers all ANU campuses (this is currently being undertaken by the Sustainability and Heritage team) to enable the development of strategies for each campus to be developed. The smaller campuses represent less than 2% of the total ANU emissions, however, they will play an important role in providing test beds for the implementation of strategies and reporting platforms. They also play a key role in providing a visible presentation of the Universities commitment to the Below Zero program to the broader community within the local regions.

Stage 3

The development of strategies that would:

- enable a reduction in campus energy use through energy efficiency initiatives and behaviour change programs
- consider options for energy recovery systems
- investigate the transition from natural gas to electricity
- review procurement contracts for content related to environmental performance and scope 3 emissions
- incorporate research and teaching opportunities associated with the strategies
- implement a reporting platform for scope 1, 2 and 3 emissions
- outline project timelines and deliverables

Development of Programs Associated with Stage 3 Strategies

1. **Energy Efficiency**
   - The consumption of electricity and gas within our built environment is primarily responsible for our carbon emissions. The journey to below zero for the ANU requires an understanding that a focus on reduction in energy consumption is a primary element of the Below Zero Strategy.
   - Insisting on design outcomes that consider the full life cycle of the project will ensure long term value for the ANU and reinforces a commitment to the ANU Strategic Vision.
   - To ensure energy efficiency initiatives are implemented in built environment projects, all new projects and major refurbishments will need to be modelled to enable the operational cost to be compared to the build cost.
   - A review of the Campus Building Requirements Manual (CBRM) would be required to ensure the targets as noted in the Acton Campus Energy Management Strategy are included. This would ensure that all new works and refurbishments are informed of the required standards and ensure optimum efficiency.
   - Data has identified that 80% of our energy consumption is from 20% of our building stock. A review of the top 50 energy consuming buildings will need to be undertaken to identify opportunities for energy efficiency projects within these buildings. The review would need to be undertaken using an accepted audit tool.
   - The opportunity for the introduction of energy recovery systems should be investigated with all new developments. This needs to consider the potential use of the energy outside the point of generation. An example of this would be the waste heat capture from the NCI facility that could be used in either the JCSMR or APF Facility to offset their gas usage.

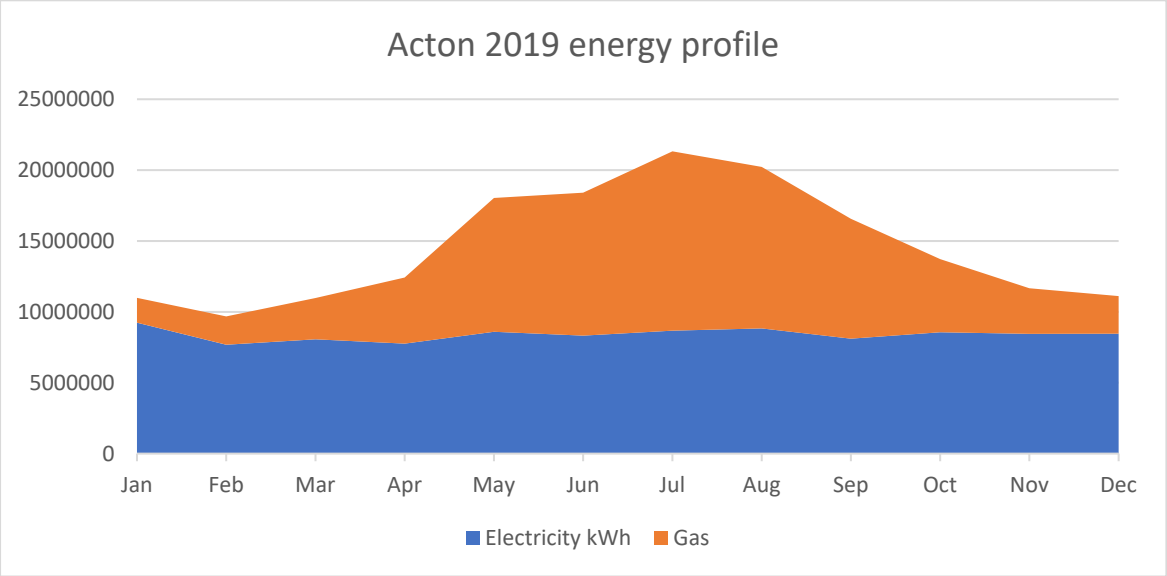
2. **Community Engagement and Education**

The ANU community plays an important role in underpinning the success of the Below Zero campaign. The ANU will need to support the education and engagement programs through all operational activities. This will enable the University to become a role model demonstrating the ability of the community to drive the move towards a low carbon future.

3. Transition from Gas

This project will require the identification of the individual gas metering points on the Acton Campus and remote sites to confirm the type and purpose of the appliances connected to the point. An assessment would be required of the plant to determine where it is within its' life cycle, and take into account the ability to schedule its replacement with another technology within the normal asset management life cycle. A critical element of this proposal is the capacity of the existing electrical network to carry the load resulting from the switching from gas to electric options.

The graph below shows the Acton Campus energy profile over the 2019 calendar year with gas representing 59% of the total campus load in the June period. The GJ profile has been converted to kWh to show the equivalent.



4. Review of Procurement Contracts

The ANU is a large consumer and as a result will need to take into account the emissions associated with the procurement of goods and services. The topic of carbon being discussed at the initial stages of procurement will ensure that potential suppliers of goods to the ANU are aware of the need to be able to provide the required information on carbon associated with their service or goods.

5. Research and Teaching Opportunities

The ability to enable students and researchers to engage with the many aspects of the ANU Below Zero program would provide an opportunity to drive the concept of the 'Campus as a Classroom'. This would enable research and teaching to be directly linked to the Below Zero program and have real time input to its operation. The program would be underpinned by a series of operational partnerships working towards a common goal of below zero.

6. Establishment of a Reporting Platform for Scope 1, 2 and 3 emissions

The operation of the campus results in a constantly varying level of activity and consumption of both energy and products, and as such will require a platform that can capture and report on the activity and emissions associated with the ANU business as usual, and to track the results of Below Zero projects. The ANU has data for a large proportion of the scope 1 and 2 generators, however has not officially reported on scope 3 emissions other than air miles. The ANU will need to clarify the boundaries around its intention to report on Scope 3 emissions. This may necessitate a project to further refine the ability to capture Scope 3 data and introduce the reporting and offsets as the data becomes available.

7. Project Timeline, Deliverables and Funding

The Below Zero Strategy will require considerable resources and funding. The Strategy will need to determine timeframes such as immediate, short-term and long-term. If we are to achieve below zero as soon as possible, when would this be?

It should also be noted that the ANU has several Plans in place:

- The ANU Strategic Plan
- The Acton Campus Master Plan
- The Acton Campus Energy Management Strategy
- The Acton Campus heritage Framework

The Below Zero Strategy whilst covering similar areas, must be able to stand alone and be resourced accordingly. Without this commitment, it will not initiate and maintain the momentum required.

ANU Below Zero Emissions – Updated notes – V3

Notes prepared and updated by Climate Change Institute following meetings between Brian Schmidt, Paul Duldig, Dom Haywood, Mark Howden, Frank Jotzo, Ken Baldwin & Clare de Castella

Friday 27~~16~~ March 2020

Executive Summary

The ANU Council have called for urgent action to address climate change. The VC has announced that ANU will move to below zero emissions as soon as possible.

To achieve this, we are recommending the following broad approach:

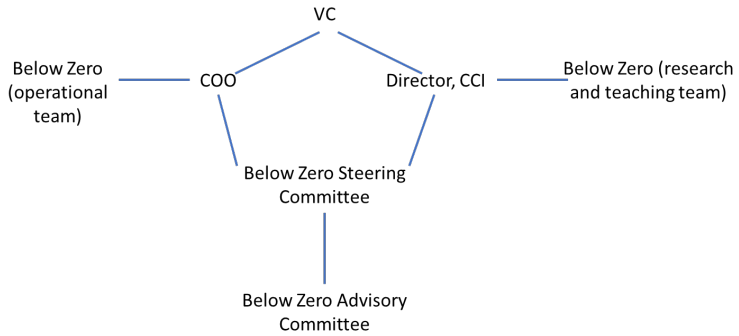
1. Immediate use of socially responsible carbon offsets sourced within Australia (this will be predominant approach in 2020)
2. Ongoing reduction of enterprise emissions (these measures should start immediately and build over time)
3. Development of ANU carbon sinks / offsets (ultimately this will become the predominant approach)

We suggest a staged approach:

- Stage 1 – Mitigate / offset all direct campus (Scope 1) and energy (Scope 2) emissions as well as professional travel-related emissions (which are classified as Scope 3)
- Stage 2 – Mitigate / offset all other indirect emissions (Scope 3) ie procurement, waste, water etc

Immediate actions required to start this process

In the short-term we need to establish a governance process and staffing to facilitate this transition as soon as possible:



- Appointment of a Below Zero Project leader – As soon as possible

- Establishment of an ANU Below Zero Steering Committee (including Research & Teaching and Operational teams) – by early~~3~~ April 2020 (subject to constraints due to COVID-19 responses)konica

Please see attached excel spreadsheet for a draft timetable. Further detail is outlined in the document below.

Rationale for action

Climate change is here. The impacts are damaging and likely to get worse. There is a widespread and deeply held desire from the broader public for institutions to take action to curb climate change. ANU is well placed to incorporate on-campus response with research and teaching. In a resolution from its meeting in Feb 2020, the ANU Council has called for urgent action to address the growing challenge of climate change. It also said the University will act and "speak strongly in public" to help address climate change across the University and more widely. This is also required as part of the Global Alliance of Universities on Climate Change agreement, of which ANU is a signatory.

ANU should and can lead the nation in its response as an organisation to minimize its carbon footprint, in line with world's best practice. That practice is now to aim for negative emissions, and over time to compensate for past emissions, so that the organisation overall will be a net zero emissions entity in the near future (as per Microsoft's new commitment).

Background - the status quo

ANU GHG inventory

- ANU keeps track of Scope 1&2 emissions as part of NGER reporting.
  - Campus energy use – generates approximate equivalent of 20,000 tonnes of CO_2-equivalent (tCO_2e) p.a
  - This estimate excludes emissions from electricity in ACT based ANU operations, as ACT electricity supply is deemed carbon neutral.
- Some work has been done on Scope 3 emissions e.g. air travel – approx. 9000 tCO_2e in 2019 (not including the impacts of radiative forcing which would almost double this total). Further work is required to explore air travel related emissions further as this is based on travel booked through the ANU central system and is probably a very conservative estimate (eg Uni of Melbourne air travel emissions equates to 70,000 tCO_2e p.a). It also doesn't adequately differentiate according to the length of flight and doesn't take account of the type of aircraft or the class the passenger travelled in. It may be preferable to tap into the airlines' emissions estimates for individual flights which are provided by booking agents. This would also need to be scaled up to include radiative forcing. On the basis of significant uncertainty in this area, we might estimate that ANU air travel emission could equate to as much as 30,000 tCO_2e. So it is possible that flight emissions may make up the largest proportion of our total emissions.
- Based on this, scope 1 & 2 + professional travel emissions attributable to ANU are estimated to be in the order of 30,000-50,000 tCO_2e per year, or about 1.29-2.15 tCO_2e per staff member and student per year (pending more accurate flight emissions).

- In the absence of the ACT Renewable Electricity Strategy, ANU Scope 1&2 emissions would be much higher (more than 100,000 tCO_2e). Emissions from earlier years would need to be estimated and for years prior to the renewable energy strategy they will be higher than current emissions. The point is that accumulated emissions could be large compared with current net emissions.

ANU CO_2e emissions

Table 1 – Projected emissions for 2020 calendar year

Entity	Scope 1 tCO_2e	Scope 2 tCO_2e
Acton Campus	16880*	0
ANU Fleet Service	428	0
Mount Stromlo Observatory	207	0
Siding Spring Observatory	0	1333
Unilodge ANU	1541	0
Other ANU premises outside ACT	(await data)	(await data)
TOTAL:	**19,058**	**1,333**

Notes:

- The table above assumes that GHG emissions resulting from electricity in the ACT are zero, but in fact there are emissions in the production and implementation of all renewable technologies. Across the life cycle it seems the number is about 5g of CO2-e per kW hour for solar and 3g of CO2-e per kW hour for wind (Pehl et al. 2017 Nature Energy 2: 939–945). As we confirm data, it will be important to include these emissions.
- This table does not include Kioloa, Spring Valley Farm, ANU North Australian Research Unit, Melbourne, ANU students housed at UC, Batemans Bay Medical Clinic, Young Medical Clinic.
- We have assumed the same level of growth rate for gas and waste for 2018-2019 as for 2019-2020 (ie electricity increase 7.6%, gas increase 11%, waste increase 15%). This may be conservative as the current building program may increase this growth.
- Scope 2 emissions from ANU campuses within the ACT have been set to zero to reflect the fact that all ACT electricity is now carbon neutral (as of Oct 2019).
- *Approx 6,000 tCO_2e are fugitive emissions, which aren't currently being mitigated even with world's best practice protocols – these will need to be offset / drawn down.
- Other known Scope 3 emissions include Acton waste to landfill at approx. 1731 tCO_2e.

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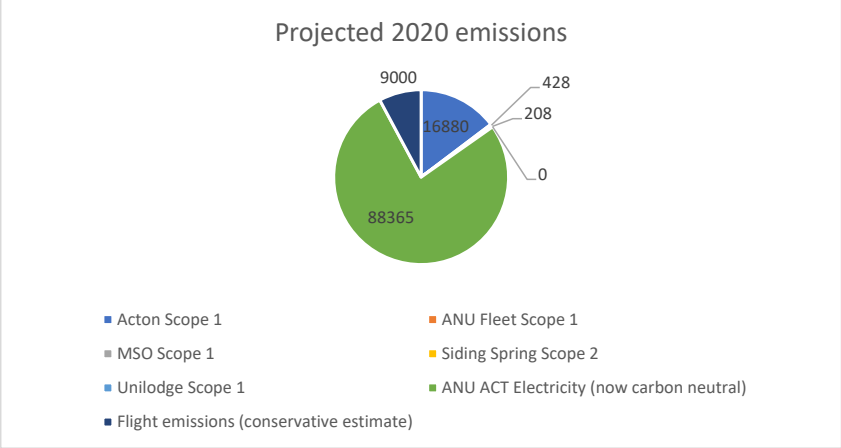
Chart 1 – Projected emissions for 2020 calendar year

The chart below demonstrates the relative proportions of different sources of emissions. The main point here is that the green section represents ANU Scope 2 electricity in the ACT – this

demonstrates how much we are being helped by the ACT 100% renewable electricity target as this is actually carbon neutral. (Again please note that this chart doesn't include many smaller ANU sites outside ACT and includes only conservative estimates of professional flight emissions.)



NB – Please note this chart uses the v conservative estimate of ANU flight emissions. They could be as much as 30,000 CO_2e per annum.

Action to date

- The ANU Acton Campus Energy Management Strategy has been developed, but has no plans for implementation, no dates, concrete targets etc http://imagedepot.anu.edu.au/scapa/ANUACEnergyManagementStrategy.pdf
- An ANU Environmental management strategy has been drafted but not approved since 2015
- ANU Green have already done much of their own analysis. They are in the process of developing an analysis of Go8 emissions, what other universities are doing, onsite solar & reporting strategies
- A report on Go8 global emissions projections is due to come out within the next 1-2 months – this has been conducted by consultancy Point Advisory.
- ANU is involved in Go8 sustainability initiatives and conferences and is part of IANU sustainable campus initiative, but is currently lagging in terms of action.

Goals and objectives

The initiative could encompass various emissions sources and areas of action:

- **Energy** – energy efficiency, electricity generation (eg solar panels), heating, cooling, water heating

- **Buildings generally** – vital to incorporate climate adaptation (particularly increasingly frequent heatwaves and other extreme events) & embodied energy (this overlaps with energy)
- **Travel**
    - ANU Business travel, mostly air travel but also ANU vehicles, private cars used for business – reduce travel where possible, offset through quality offsets negative emissions over time
    - Private travel to and from campus – facilitate and encourage emissions-free commuting options
- **Negative emissions** – drawing down carbon into landscapes, building materials and via other technologies such as direct carbon capture. This is key for how much negative emissions per year can be achieved.
- **Investment strategy** – further reducing the emissions intensity of the ANU investment portfolio
- **Behaviour change** – individual and collective – will require thorough engagement across campus
- **ANU procurement generally**
  Waste management – including composting, landfill, recycling & potentially energy from waste etc

What's included:

Scope 1 (direct emissions from our campuses and venues), scope 2 (indirect emission from electricity and energy) and scope 3 emissions (all other indirect emissions e.g. bus and plane travel, procurement, waste and water)

- Stage 1 - Scope 1&2 and professional travel-related emissions (which are Scope 3)
- Stage 2 - Scope 3 – this is more complex and will take some time

- Including all ANU campuses/sites i.e. Action, Stromlo, Spring Valley, Darwin, Melbourne, Kioloa, regional clinics etc and activities

- Below Zero – how far below? There is uncertainty about emissions etc, so one option would be to go at least as far negative as the uncertainty bars. Another option is to aim to compensate for past emissions by a certain target year

- And by what year, on what trajectory, with which interim targets? Net zero with the aid of offset credits could be achieved effectively immediately on enactment of the strategy but noting a range of concerns about offsets. Question is how quickly to aim for genuine negative emissions that are not based on offsets. Note, Energy Management Strategy lasts to 2038 but as written is still not carbon neutral by that stage.

Broad approach

Firstly it will be important to establish a robust baseline and agreed measurement protocol. We are recommending a staged approach as outlined below, with action moving increasingly from a) to c) as time goes on

a) *Offset emissions using socially responsible Australian schemes*

We can reduce emissions via purchase of emissions offsets (but there is no learning, no integration with research and teaching, reduces our capacity to invest in actual emission reductions or invest in climate change solutions). Offsets for total ANU emissions could cost currently in the order of $450k p.a. (30kt * $15/t) but the price of offsets is increasing & this is based on the conservative calculation of air travel related GHGs so might be considerably more. This will form the bulk of action in 2020 and reduce over time.

b) *Reduction of enterprise emissions*

We invest in on campus energy efficiency measures, in transitioning away from gas and towards electricity, from petrol and diesel vehicles to electric vehicles. We also explore options for mitigating non-energy related emissions.

c) *Development of ANU carbon sinks / offsets (over time this should become the predominant approach)*

This approach could include land-based sinks such as tree planting, remineralization as well as the development of approaches that use carbon based materials as a building material.

Note re use of offsets

We are recommending an approach akin to ACT Gov't approach. The gap between the below zero goal and actual emissions for any year is used along with a social cost of carbon (SCC) to calculate additional funding for campus actions and climate research and teaching. So we would offset every tonne of GHGs emitted by ANU (at a cost of approx. $15 per tonne). We would then take the difference between the cost of those offsets (eg $15) and the social cost of carbon (eg $60) and spend the difference (eg $45) on mitigation eg project team, infrastructure upgrades, vehicle switch etc. This means ANU would not just be offsetting but would also be paying their fair share. For example, if ANU is emitting 30k tons of CO_2 per annum then if using say an SCC of $60/ton there is a rationale for a minimum 'fair contribution' for ANU to address these emissions of $1.8M p.a.

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As we approach the genuine Below Zero target, this amount will drop (i.e. there is an incentive by the ANU to get to the target as quickly as possible). This approach will encourage integration with research and teaching as well as in leadership engagements (i.e. show and tells). The Cambridge Zero program is established along these lines. Note, there is a wide range of estimates of the social cost of carbon; a value in the order of $60-90/t would be justifiable but there are much higher estimates in the literature.

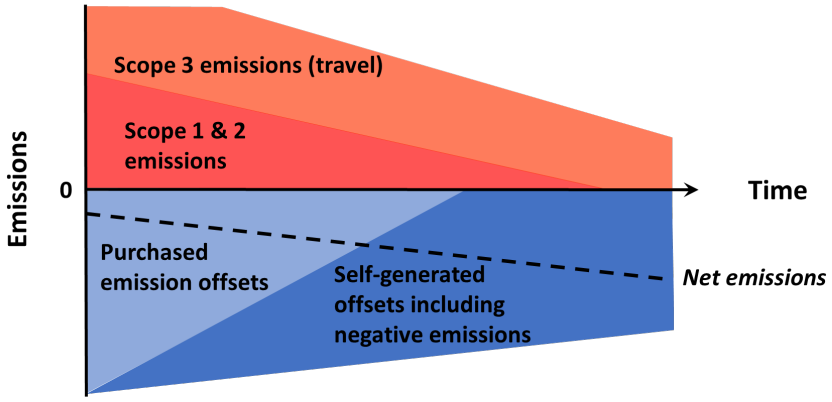
In order to apply the SCC to all financial and operational decisions, it should be incorporated into financial reporting documents. There are some existing constraints about cross charging – the new budgeting framework should help address this.

ANU could develop a dashboard to demonstrate both emissions reductions and energy savings, building a picture of how they interact. It would be worth reviewing projects that are currently underway to ensure that they consider this approach. Many infrastructure upgrades will pay for themselves in terms of energy efficiency but have not been implemented to date due to lack of prioritisation within F&S, so raising awareness via mechanisms such as this is vital.

We will also need more thorough, finer grained information on emissions (e.g. for each building and each School) so that all decisions take account of climate implications. This is particularly the case for air travel where there is significant uncertainty around ANU emissions.

Recommendation: The overall goal is to go net negative emissions increasingly over time (the dashed line below) by both reducing our direct and indirect emissions and by offsetting and drawing down greenhouse gases as indicated:

Stage 1 – A draft framework



Suggested Principles for ANU Below Zero

ANU Below Zero can form part of the blueprint / organisational response for COVID-19 recovery, with the opportunity to redefine the kind of university we want to be and the way we operate. For example, as a result of being forced to change our travel habits, we are putting in place alternative processes with substantial emissions and cost reductions, which can be extended after this crisis. The response to the hailstorm can also form part of this narrative, providing opportunities to make the Acton campus better insulated / more energy efficient and equipped for rooftop PV. This narrative re: adaptive responses to COVID-19 (and other events) can be a powerful part of the ANU response: “a crisis not to be wasted” and a shift to a new model.

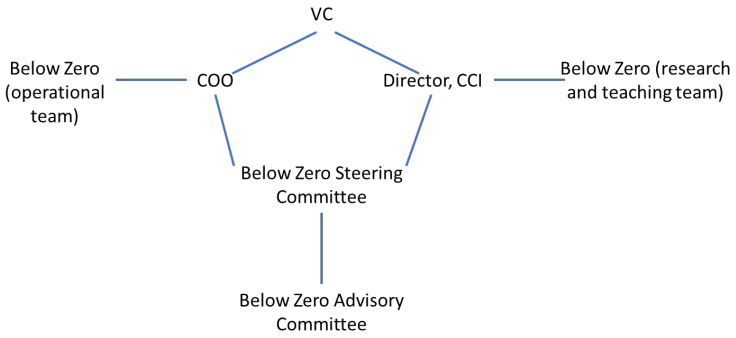
- Must combine academic involvement connecting research & teaching with implementation by F&S e.g. consider combining renewable energy, storage and landscape scale carbon drawdown projects with research e.g. at Spring Valley site
- Encourage as much student involvement as possible
- Action must range from institutional to personal
- Incorporate ANU expertise in social psychology and governance to design an initiative that drives behavior change
- Transition ANU away from gas to carbon neutral electricity asap
- Incorporate climate considerations into all infrastructure planning asap
- Operational decisions to aim for excellence (as opposed to compliance) in addressing green rating requirements
- Should provide opportunities for staff and students to achieve individual emissions reductions

Governance and capacity

Assuming that we are aiming to integrate campus emission-reduction action with teaching and research, then we will need two streams of activity: one with a focus on operational decisions and another with a focus on the research and teaching dimensions. Each requires a governance element and an overarching governance structure that integrates the two. There is also a need for a mechanism which will enable effective advisory input from across ANU and perhaps more broadly. We propose a consultation process with researchers within the School of Regulation and Governance & Crawford School to help design this. In the interim, this arrangement may look like:

- Steering committee – Paul Duldig and ~~(Chair?),~~ Mark Howden (~~Deputy~~Co Chair~~?~~s), Frank Jotzo, Ken Baldwin, F&S rep (ideally Zero-Emissions project Leader / manager – see below), ~~a DVC,~~ a Dean (consider Prof Sharon Bell) and a student rep (aiming for gender parity)
- New Below Zero Operational Team – reporting to the COO
- New Below Zero Research and Teaching Team – ~~reporting to the Director of the CCI~~Mark Howden (Chair), Ken Baldwin, Frank Jotzo.
- Broader ~~a~~Advisory ~~board~~Committtee (Chair and Deputy Chair TBD) including reps from across ANU schools & student rep plus ~~possible~~ external members. ~~Important to include bigger emitters such as the NCIS)~~ Currently making recommendations for this including high-profile independent Chair (pos Sam Mostyn), a member of ANU Council (Naomi Flutter), Drew Clarke (Chair of AEMO Board).
- Appoint a Zero-Emissions project manager – potentially with significant industry/ commercial/ regulatory experience. This manager would be given total responsibility for implementing the Below Zero plan, and would sit within F&S with a reporting line to the COO, but with a dotted reporting line direct to the VC.

The CCI has been scoping out various ANU researchers to establish small teams covering governance and community engagement.



Community and other engagement

We propose a consultation process with Staff in CPAS and the Crawford, Fenner and Psychology Schools to help design the engagement process.

Purpose & Objectives

- Seek input and advice from ANU community on best approach and strategies for achieving objectives
- Explore partnership opportunities and join initiatives with private and public sector partners
- Provide current, evidence-based information on climate impacts, mitigation and adaptation to improve the broader community's understanding
- Highlight that ANU is performing its role as the national university established to investigate and promote understanding of the biggest challenges facing Australia and our region

We envisage multi-level engagement possibly including:

- Opportunity for all ANU stakeholders (including Alumni) to contribute via digital platforms and 'town hall' style meetings
- VC's prize for best ideas?
- Include staff and student engagement through requests for ideas, volunteering, and provision of personal carbon footprint tracking. Include responses to initiatives such as the ANU SolarShare equivalent proposal (see below)
- Early engagement with ACT Government
- Engagement with the Federal Climate Active Program
- Engagement/briefings at sites other than Acton
- The Experience Accelerator at Kambri can be harnessed to explore how to motivate student behaviour change and engagement on climate change e.g. travel to campus, reduced energy use etc.

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Philanthropy

The CCI team have ~~Need to~~ engaged with Advancement to alert them to needs and opportunities in relation to ANU Below Zero:

- Looking for core funding (including from ANU Alumni ?) as well as for land-grants e.g. for an ANU solar farm (ANU equivalent of SolarShare which could allow students, staff and alumni to fund the solar/wind farm, getting a return on investment plus essentially carbon offsets to their own emissions). NB Currently ACT Govt are considering not renewing ANU lease for Spring Valley as it may be rezoned for housing. A renewables / battery storage / carbon drawdown in a site such as this close to ANU campus has significant value so this topic should form part of discussions with ACT govt.
- Advancement have also suggested that they can make recommendations for a community leader / potential donor who could be a member of the Broader Advisory Committee.

Resourcing

This is a world-leading initiative and will require additional, new resources (over and above those needed for direct costs such as payment of emission-offsets). Some elements may be:

- A Project leader (with salary commensurate with experience required) who would report directly to the COO and sit within F&S, as well as a Project Manager and dedicated staff within F&S. This is likely to be essentially the Below Zero operational team.
- The CCI h~~A project manager for the Below Zero research and teaching team with other staffing needs TBD~~
- ave appointed an~~Currently seeking a research assistant /~~ intern, Stephanie Penales, ~~for COO~~ for a 3 month project to research efforts to progress below zero in universities and other organisations around the world. ~~help gather information (CCI/ECI and Crawford are scoping options)~~
- The CCI are seeking an engineering intern who can work with F&S on helping model energy efficiency, building standards and transition away from gas.
- Vital to ensure that there are adequate resources for planning and implementation – e.g. currently the Energy Management Strategy hasn't been implemented.

Next steps

- Explore and develop governance structure & resourcing – In progress
- Meet with ~~with~~ Facilities & Services Director and ANU ~~Sustainabilty~~Sustainability – this has been delayed due to COVID-19
- Based on this, l~~Appoint Research Assistant to assist the COO – In progress~~
- ~~L~~iaise with HR to appoint Project leader
- ~~Explore and develop governance structure & resourcing – In progress~~
- Further discussion on timelines and scope ~~– To be discussed in the meeting~~
- Develop better GHG inventory suitable for decision-making – F&S

- Explore further resources such as Climate Active
- Research the models & strategies being used at other universities – Intern & ANU Green
- Engage with ACT Govt - CCI
- Brief ANU Council and University Leadership Group - CCI
- Initiate team to design community engagement – In progress

Appendix – Climate action by universities & corporations

Scope 1 emissions = direct emissions. Scope 2 emissions = indirect emission from electricity and energy. Scope 3 emissions = all other indirect emissions, e.g. bus travel, procurement, waste and water.

Corporate

- Microsoft – will be carbon negative by 2030, remove historical carbon emissions by 2050 and have announced a $1 billion climate innovation fund
- Amazon have announced that they will be carbon neutral by 2040
- Delta Airlines has announced a plan to become the first US airline to go carbon neutral, committing $1bn over 10 years to mitigate all emissions
- EY will be carbon neutral by end of 2020

Universities - Australia

- University of Melbourne
  - Sustainability Plan, 2017-2020
  - Net zero emissions from electricity by 2021
  - Carbon neutral before 2030
  - https://www.alumni.unimelb.edu.au/universitys-sustainability-plan-published
- Monash University
  - Net Zero emissions by 2030 – Energy only
  - Student nos anticipated to grow from 47,000 – 80,000
  - Doesn't discuss other emissions such as transport and land emissions
  - https://www.monash.edu/net-zero-initiative
- University of Tasmania
  - Carbon neutral from 2017 via offsets by Commonwealth National Carbon Offset Standard
  - https://www.utas.edu.au/infrastructure-services-development/sustainability/greenhouse-gas-emissions
- University of Queensland
  - no long term targets

Universities - UK

- Cambridge Zero

    - Comprehensive program linking climate and energy research with on-campus climate action. Reduce energy-related (scope 1 and 2) carbon emissions to zero by 2048
    - https://www.zero.cam.ac.uk/
- University of Newcastle, UK
    - Announced late 2018, 100% renewables by 2020
    - Carbon neutrality by 2025
    - https://www.newcastle.edu.au/newsroom/current-staff/standing-for-climate-action
- University of Bristol
    - Net carbon neutral campus by 2030
    - http://www.bristol.ac.uk/green/doing/pledges/
- Kings College
    - Carbon neutrality target by 2025
    - https://www.kcl.ac.uk/aboutkings/strategy/pdfs--resources/environmentalsustainabilityreport1718.pdf
- Keele University
    - Carbon Neutral by 2030
    - https://www.keele.ac.uk/estates/projects/currentprojects/lowcarbonproject/
- University of Nottingham
    - Net Zero by 2028
    - https://www.eauc.org.uk/net_zero_carbon_pledge

Universities - US

- MIT
    - A plan for action on climate change – 2015
    - Response to divestment movement – wide ranging recommendations including
    - (2015 target) – 32% reduction in GHG emissions by 2030 (from 2015 emissions)
    - Carbon shadow pricing
- UC Berkeley
    - Climate neutrality (Scope 1&2) by 2025
    - Climate neutrality (Scope 3) by 2050 or earlier
    - Reduce GHGs to 1990 levels by 2020
    - https://policy.ucop.edu/doc/3100155/SustainablePractices