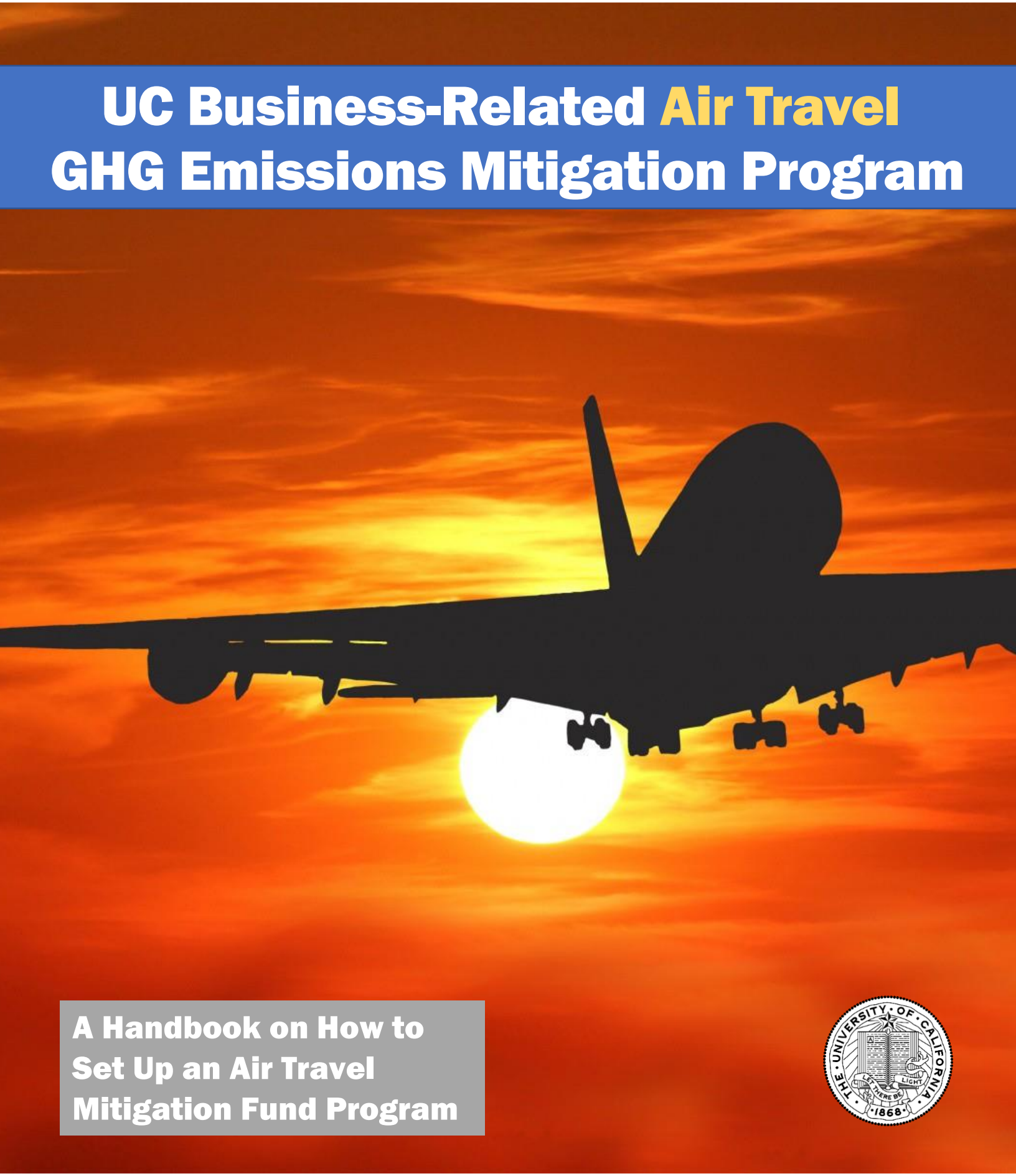
UC Business-Related Air Travel GHG Emissions Mitigation Program



A Handbook on How to Set Up an Air Travel Mitigation Fund Program

ATMF Handbook

This Handbook is intended to serve as an introductory guide as to how to set up an Air Travel Mitigation Fund Program at University of California campuses. It covers the basics of what to consider when thinking about offsetting or mitigating university business-related air travel emissions, what data and reporting are necessary, reviews the political considerations that need to be managed for such a program, and seeks to impart lessons learned from the UCLA experience when it set up the first mandatory, air travel mitigation program in the country.

Forward

Greenhouse gas emissions (GHGs) are now broadly recognized as a negative externality of the burning of fossil fuels. The transportation sector, in particular, has seen little progress in upending reliance on fossil fuels for propulsion technology, and this is particularly true for air travel. It is only within the past several years that electric propulsion systems for air travel have been experimented with, and there is much progress to be made before any viable alternatives exist to flying jets around using jet fuel, which is as carbon intense as any fuel used today.

In its 2008 Climate Action Plan, the University of California, Los Angeles, designated business-related air travel as a major source of greenhouse gas emissions, representing fully five percent of the campus' GHG annual emissions inventory. Efforts were undertaken to create initiatives to reduce the carbon footprint from mobile sources, but the initiatives for air travel—mostly centered around reducing flying by the campus community—proved ineffective. Flying for transportation is virtually a requirement in today's modern world, with conferences held around the country and beyond, with eager faculty and staff seeking to address and solve many of society's problems, to educate Californians, and to discover and advance science and technology. The efforts of the UCLA community to improve our planet and society were adding to climate change via all the emissions from flying to and fro in pursuit of the University's mission of education, research, and civic engagement. The Air Travel Mitigation Fund Pilot Program at UCLA was set up to capture, and reduce, many of the impacts from UCLA business-related air travel GHG emissions.

This Handbook should serve as an introductory guide as to what needs to be considered, and handled, in setting up a local Air Travel Mitigation Fund Program, and should help campuses avoid common pitfalls in establishing a carbon mitigation fee as a way to reduce air travel climate impacts.

01

Introduction & Background

State of Commercial Airline Travel Emissions

Flying via an airline jet unavoidably involves the burning of jet fuel, which is essentially kerosene, and it is an intensive, carbon-laden fuel. This contributes to climate change through the creation of CO_2 via the blending of expelled carbon from the jet fuel mixing with oxygen in the atmosphere. Additionally, several other greenhouse gases exist (e.g. nitrous oxides) in small quantities in jet fuel and also contribute to climate change. Unfortunately, greenhouse gas emissions from air travel have increased significantly worldwide and have almost doubled since 1990, with little sign of abatement, especially as more portions of the world move towards frequent air travel as a societal feature. Asia, in particular, has seen an explosion of air travel over the past several decades.

Figure 1. Distance flown worldwide over time. Airlines for America, 2017

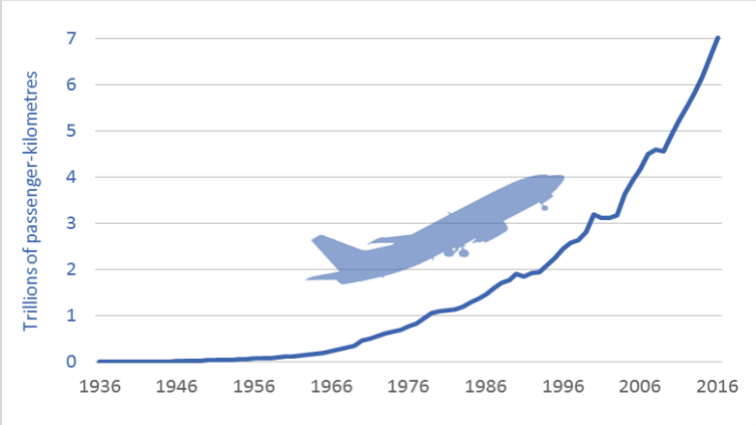
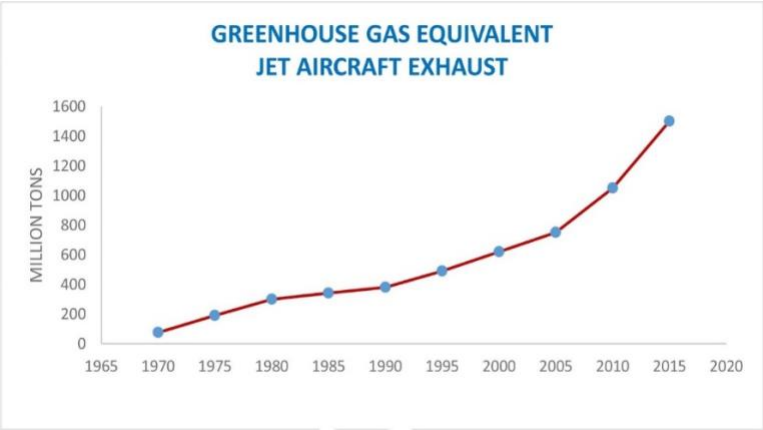


Figure 2. GHG Emissions from Air Travel Over Time. Oregon Business, 2018



Therefore, it is imperative that efforts be undertaken to reduce the GHG impacts of air travel. Like most other types of mobile source emissions, the most pragmatic solution is to not hope for less travel but rather to work to change propulsion technology to other energy sources that are not carbon-intensive, such as electricity generated from renewable sources or hydrogen fuel cells. As the development of such propulsion technologies is a long way from commercial flight use, jet fuel remains as the only source for commercial and freight flights as of 2020.

Given that the University of California is a leading research university with ten campuses and several medical centers, it was not practical to aim to significantly reduce air travel. In its 2008 Climate Action Plan, UCLA proposed to reduce its campus community's annual flying by five percent (5%). This initiative was unsuccessful, particularly once the Great Recession ended and seemingly pent up demand for attending conferences and conducting research in far flung locations was unleashed. Air travel records began to show a steady increase in year-over-year flying by UCLA staff and faculty, and by 2015, business-related air travel at UCLA had increased by fifty-five percent (55%) post the 2008 Climate Action Plan.

Since efforts to reduce air travel at UCLA were not effective, as air travel had become part and parcel of a successful university's practices, and there were no reasonable alternatives to flying to get to some locations (travel time for sailing across oceans has not appreciably shortened), and no other jet propulsion yet existed but for traditional jet engines, UCLA decided that if it can't reduce GHG emissions resulting from air travel, the next best path to reduce climate change impacts would be to offset or mitigate the emissions by the purchase of carbon offsets, or the funding of projects that would decrease carbon emissions directly.

University of California Climate Change Commitments and Policy

ACUPCC Agreement

The University of California's President Dynes, in 2007, signed the American College and University Presidents' Climate Commitment (ACUPCC), which stipulated that the University would complete five actions:

1. Complete a greenhouse gas emissions inventory
2. Within two years, set a target date and interim milestones to become carbon neutral
3. Take immediate steps to reduce greenhouse gas emissions via short-term actions
4. Integrate sustainability into the curriculum and make it part of the educational experience
5. Make the action plan, inventory and progress reports publically available

UCLA Climate Action Plan

Following the University-wide commitment, the UCLA campus developed its Climate Action Plan in 2008, which included numerous initiatives focused upon reducing mobile source GHG emission, including business-related air travel.

Mobile Source Emissions -1990, 2000 & 2007

	1990	2000	2007
Fleet	8,032	4,569	5,277
Commute	56,323	57,182	36,858
Airline Travel	10,363	10,400	12,463
Mobile Source Total (metric tons of CO2)	74,718	72,151	54,598

Source: UCLA Transportation, 2008.

Setting the Table for UCLA's Efforts

Behavioral Change

Reducing air travel in general remains a worthy goal that is further challenged by behavioral factors driving travel mode decision making. However, behavioral changes take time and the reductions seen in places like Sweden, where flygskam—literally, flight shame, the social pressure and embarrassment of those who fly, particularly for easily mode-substituted travel that could instead be completed by less environmentally impactful options such as train travel—was born, has been notable, and yet has itself not reached a five percent reduction in Swedes' air travel and its attendant emissions, although it indeed has had an impact. Conditions in the United States are more difficult in that Sweden, and much of Europe, has an extensive, high quality rail network that easily affords switching between air travel and train travel for short to intermediate trips. But in the U.S., the physical size of the country, and the immature passenger rail network, seemingly makes similar reductions in air travel wrought by social pressure unlikely.

Still, each campus should assess opportunities to creatively employ behavioral nudges to reduce business-related air travel, especially for trips that can be completed, conveniently, via another mode. Fortunately, establishing an ATMF Program presents just such an opportunity.

The Presidio School Graduate Student Project for UCLA and UCOP

In early 2015, UCLA was approached by UCOP sustainability staff to discuss working with a team of MBA students at the Presidio Graduate School who wanted to conduct an in-depth analysis of air travel emissions and carbon offsets for these emissions. UCLA was already actively exploring the same question—how to set up an offset program, including all parameters associated with how to price carbon, how to handle the logistics of setting up a per flight fee, and how to cement such a program into the business processes within the University.

The Presidio team conducted a thorough analysis of existing university programs across the country, all of which were voluntary programs at that time. They analyzed the data sources and methodologies available for emissions tracking and reviewed the types of offset fees, looking at options such as a flat fee per trip, a tiered flat fee per trip, fees based on miles flown, and fees based on ticket price. The team completed an air travel demand forecast for UCLA, analyzed carbon prices, and provided a forecast of future carbon costs. They also reviewed air travel offset types, for example verified offsets and local offsets, delved into mitigation fund setup, and recommended marketing strategies, process components, and steps to implementation. Their final report is included as an Appendix to this document.

Ultimately, the Presidio team's work propelled UCLA towards implementation of its Air Travel Mitigation Fund program, laying the groundwork for the final form of the ATMF at UCLA and illuminating the core decision points that each campus must make if it seeks to set up a similar air travel mitigation or offset program of its own.

02

Steps Needed to Build a Local ATMF Pilot Program

"The Nuts and Bolts"

Although the number of variables and challenges to establish an Air Travel Mitigation Fund Pilot will vary from campus to campus, there are certain fundamental elements required to help evaluate the feasibility of establishing a successful pilot. The following elements, or categories, of criteria necessary for this pilot have been assembled to help each campus ascertain just that. These criteria categories consist of: data, politics, evaluation, and fund setup. It is important to realize that these are the larger points for *evaluation* related to deciding to set up an ATMF program. A detailed list of the mechanical or logistical steps needed to fully set up a program is provided later in this section.

"All Politics are Local"

Political acumen is as important as any other element in ensuring a successful launch of an ATMF Pilot. The environment on University of California campuses is complex and typically entails multiple constituencies, each with a separate agendas and goals. This is often spurred by the limited funding available for departments who are focused on cutting edge research or

solving issues present in our world; anything appearing to erode their resources ignites likely resistance from the impacted departments. Thus, introducing a program that levies fees will likely garner such a reaction, so there should be careful contemplation of how to navigate the politics on your campus in order to ensure that an ATMF pilot attempt succeeds.

Two campus 'champions'—an *executive sponsor* and an *operational champion*—should be identified in order to guide the pilot towards a successful launch. The operational champion should be an individual who directs or heads a department; tasked with steering the pilot along its path to fruition. The operational champion would need to do the heavy lifting, meeting with the various stakeholders on campus and maintaining persistence for such an effort, while the executive sponsor would provide the needed backing to demonstrate that there exists an institutional appetite for such a program within the higher echelons of campus hierarchy. For example UCLA's executive sponsor was the Executive Vice Chancellor & Provost, while the operational champion was the Executive Director of Events & Transportation.

The campus's cultural climate and sensibilities towards such a program should be evaluated. As the University of California we tend to be progressive on environmental issues. It will prove useful to harness the support for environmental action that likely exists on campus in setting up an ATMF pilot, and utilize it to counter any resistance that you will confront. One way to address potential opposition to carbon offset fees is to limit carbon mitigating efforts to on-campus projects. This gives campus departments the potential to take advantage of the funds and gives visibility to the sustainability projects showing that their dollars at work, and in a way that is benefitting their campus.

It is essential to identify the primary stakeholders of the pilot in order to predict their potential reactions. The student body generally likes to feel a degree influence on campus, and through their representatives, draft policy recommendations to university administrators in the form of resolutions. UC has a student body that on average is politically progressive (environmental issues no exception), hence working with student government to draft resolutions in support of an ATMF pilot could help tip the scales in your favor. Athletics will almost certainly be the biggest contributor to the ATMF fund, and thus there should be an expectation that they will resist this effort. UCLA has found that informing them of the ability to apply for the funds as an on-campus department alleviates their concerns. Financial Services, which will likely be a department on your campus necessarily involved in setting up the pilot, may resist because of the extra work it will bring them. The roles of the major and minor champions will be useful here in limiting the resistance by such departments. Drafting a stakeholder registry and identifying levels of support (or a lack thereof) on this initiative will serve you well.

Of course, each UC will have political elements unique to its campus, so it is ultimately your responsibility to assess the overarching political situation and strategize in order to use the political winds as a way to accelerate, rather than hinder, your journey. At the very least, we hope this section motivates some thought on how important the political atmosphere is in the pilot effort, and on ways you can ensure that it works to your advantage.

Data

In 2017, the Economist Magazine published an article titled: "The world's most valuable resource is no longer oil, but data", and it not only highlights the relevance and value information has in these current times, but also strikes a direct parallel to the important role data availability plays in establishing the ATMF Pilot. In this particular case, necessary data has been listed in order for the practical purpose of calculating GHG emissions, establishing baselines, and determine appropriate mitigation fees.

Existing air travel GHG emissions inventory

Locate any available inventory of GHG emissions related to university-business air travel. Ideally, an inventory covering at least three years, including a breakdown of who and how much is flying (e.g. staff, faculty, athletics, study abroad programs, etc.).

University business-related flights information

If an air travel GHG emissions inventory exists and is available, what information is contained? The granular components of data often used to calculate air travel-related GHG emissions may include:

- Total number of flights
- Most recent inventory available
- Domestic, international, intrastate, athletics, etc.

Methodology used to measure GHG emissions

If air travel GHG emissions inventory exist, determine method(s) used to calculate said emissions (e.g. SIMAP, Campus Carbon Calculator, etc.). Also, determine if a radiative forcing (RF) factor was used. What is radiative forcing? The IPCC definition is detailed but not overly useful for most people. Generally, emissions at altitude have a more significant impact than emissions released on the ground, and the historical impacts of air travel over time are considered within the factor. RF, as it's commonly referred to, is not used by many organizations (TerraPass, UC Berkeley, UCLA, etc.) but is used by others (WRI, UK DEFRA).

The University of California does not prescribe to either use or not use RF in airline travel GHG emissions, and the reason why UCLA does not is due to the variability of the RF factor and the lack of consensus on what figure the RF should be, or even whether to use it. However, since the factor ranges from 1.9 to 4.7 (2.7 is a typical average and the most common factor level used), it is important to understand whether or not your calculator includes RF or not. For example, UCLA uses University of New Hampshire's Sustainability Indicator Management & Analysis Platform (SIMAP) as its air travel carbon calculator, and SIMAP does use RF in its calculations. Therefore, UCLA staff complete the GHG emissions calculation in SIMAP, but then remove the factor from the result.

Campus travel program and tracking systems (e.g. Connexxus and/or other agencies)

If no air travel GHG emissions inventory is available, nor university-related flight information, UCOP's Connexxus system data may be helpful in order to calculate travel information based on travel itineraries. Connexxus data typically only covers a portion of business trips, unless your campus has a mandatory Connexxus use policy. Additionally,

access to information from reimbursement systems such as Express, may also be used for these purposes. The following are examples of the basic components needed in order to begin calculating air travel-related GHG emissions in the absence of an existing inventory:

- Origin/Destination information – where are people flying to and from?
- Average miles traveled – per roundtrip itinerary, usually
- Airline information – which airlines were flown
- Survey results – if your campus is lacking full data, surveys can augment or supplement what data you have

GHG emissions inventory/data administrator

Identify local campus contact to assist with collecting information afore mentioned

Evaluation

The "Data bucket" covered all the necessary pieces of raw information needed prior to establishing the ATMF pilot. Assuming most, or hopefully all, of the listed data requirements have been met, there are additional elements that will require evaluation. These elements are both tangible and non-tangibles that will further help decide whether developing an ATMF pilot is feasible at each campus:

Campus reimbursement systems (e.g. Express and/or other corporate financial services)

Determining what reimbursement system(s) are used on each campus is crucial to figuring out who is flying where. Reimbursement systems such as Express provide a glimpse into departmental reimbursement information as well as flight itineraries

Review grant and contract FAU's

Grant-funded travel may be exempted from fees due to sensitivities and prohibitions against using certain grant funds for administrative taxes or fees such as the ones incurred by an ATMF pilot program. This may expand to study abroad program related flights and Athletics charter flights. It is necessary to verify if these would be included or exempted once a pilot is established

Structure of reimbursement application

The availability of a Financial IT Manager/Consultant to assist with process of setting up mitigation fee collection will be necessary, along with flexibility to change/adjust systems as needed. Also, funding for the application programming changes needs to be considered. Will this be advanced or provided early on by existing funding that will need to be recouped from the ATMF program revenue, i.e. Carbon Mitigation Fees? Or will this be funded by a source that does not need to be recouped from ATMF revenue?

Fund Setup and Distribution

The last step towards a fully functioning ATMF Pilot consists of administering funds collected through the program. While seemingly simple and straight forward, effective and efficient management of funds is necessary to successfully endow projects from conception to completion. The following list outlines the major objectives required in this step of the pilot program implementation:

Setup FAU to collect fee

Determine appropriate FAU for fund collection

Identify fund owner/administrator

The designee may consist of a department head or high level administrator who will oversee and manage collected funds, while ensuring the pilot program is performing optimally by cross-referencing fund account ledger or other financial tracking mechanisms. The fund owner/administrator may be in charge of fund allocation and disbursement once mitigation projects have been selected

Develop criteria to select projects/awards

Depending on total funds collected through the ATMF pilot and the number of project proposals, it may be necessary to take the following into account:

- Determine grant size allowances and parcel out funds
- Establish grant expiration to avoid project delays/bottlenecks
- Consider awarded project's impacts to campus and larger community
- Determine restrictions for usage of funds

Develop possible projects funded by program

Developing and setting up an ATMF pilot program may be challenging. However, the projects funded through its collected fees will provide tangible and quantifiable benefits to each campus community and the environment. Therefore, early on in the process, outline possible projects that may be funded by the pilot program

03

Self-Evaluation Survey: Are You ATMF Pilot Ready?

1. Does your campus have data on air travel?

- ○ Yes
- ○ No

2. Does your campus have a GHG inventory for air travel emissions?

- ○ Yes
- ○ No

3. Do you have total miles flown per year?

- ○ Yes
- ○ No

4. Do you have the number of flights flown per year?

- ○ Yes
- ○ No

5. Which GHG emissions calculator was used, if any?

6. What is the source of your campus' flight mileage data?

7. Does your campus use Connexxus for travel arrangements?

- ○ Yes
- ○ No

8. Is using Connexxus mandatory at your campus?

- ○ Yes
- ○ No

9. How is other flight data captured?

10. Does your campus have a single centralized travel reimbursement system?

- ◯ Yes
- ◯ No

11. Please identify the type, company, and product name.

12. If “no”, how many travel reimbursement systems exist on your campus? Please identify type, company, product name, and purview of each system.

How many exist?	
Type	
Company	
Product Name	
Purview on Campus	

13. How would you rate the political climate on your campus (please consider all entities and stakeholders) regarding setting up an ATMF program?

- ◯ Very favorable
- ◯ Favorable
- ◯ Neutral
- ◯ Unfavorable
- ◯ Very unfavorable
- ◯ Unsure

14. To provide political backing for such an effort, can you identify an executive level champion? (Vice Chancellor or above)?

- ◯ Yes
- ◯ No

15. Please identify their title/position.

16. To provide additional political backing for such an effort, can you identify a high-level staff champion?

- ◯ Yes
- ◯ No

17. Please identify their title/position.

18. Who on your campus would set up and administer the ATMF fund?

19. How would your funds be spent?

- ◯ Local Project on and Around Campus
- ◯ Purchasing Carbon Offsets
- ◯ Both
- ◯ Other (please specify)

20. Do you currently possess the resources to track projects and manage ATMF logistics?

- ◯ Yes
- ◯ No

04

Next Steps

After completing the previous sections' self-assessment survey, hopefully it helped shed some light on each particular campus' readiness to begin the process of expanding UC's efforts to reduce university business-related air travel GHG emissions. For this purpose, UCLA's Events & Transportation (E&T) Department will leverage its experience and lead the effort in assisting other UC campuses in developing similar programs. The next steps in this project will include:

- Developing an implementation toolkit based on UCLA's experience to be presented to all campuses via two separate virtual training conferences that will further inform interested campuses on all key elements required to establish an ATMF Program
- Two campuses (self-selected) will receive additional support and be provided by UCLA's E&T team with roadmaps (including customized tools and information) for developing air travel mitigation programs on their campuses
- For those campuses selected:
  - Conduct site visits and meetings to review each campus' data availability
  - Provide IT consulting services and guidance in data procurement
  - Assist each campus assemble and calculate GHG emissions inventory and flight data
  - Mitigation fund policy development support
  - Provide guidance with programming a carbon mitigation fee into the campus' travel reimbursement system via IT development work
  - Help liaise administrative structure for fund setup and operation
  - Provide recommendations for future projects funded via local ATMF Programs

For additional information on the scope and timeline of this project, please refer to Appendix 1.

05

Appendices

Appendix – 1

Overview of Pilot: Scaling-up UCLA's Model Air Travel Mitigation Pilot

This project will replicate UCLA's successful Air Travel Mitigation Fund (ATMF) by assisting 2 other UC campuses in developing similar programs.

Project scope and objectives

- Develop a toolkit for UC campuses that documents the steps and considerations necessary to build a local Air Travel Mitigation Fund
- Hold two virtual trainings for all campuses on implementing the guidance in a "toolkit" format
- Work with two self-selected UC campuses to develop a local air travel mitigation program based on UCLA's example. To participate, campuses must demonstrate support from internal stakeholders and a commitment to staffing and funding a local air travel mitigation program. Participating campuses will receive support to:
    - Assess their data availability and the local steps needed to implement an Air Travel Mitigation Fund
    - Gather and analyze their campus's air travel data and associated greenhouse gas emissions
    - Draft a customized implementation plan that identifies stakeholders, local program champions, and the department that will oversee this program
    - Develop the IT functions within the campus' travel reimbursement system to charge a carbon mitigation fee for each flight travel itinerary
    - Set up a framework for fund distribution, either for internal carbon mitigation projects or the purchase of offsets
- Recommend next steps for expanding this program within the UC system based on the experiences of the pilot campuses

Out of Scope

- Program implementation on the campuses. This project will put into place the systems needed for the campus to launch a local air travel mitigation program

Pilot Implementation Timeline

Milestones	Date
Webinar 1	3/19/2020
Webinar 2	4/16/2020
Participating campuses identified (two self-selected participants)	11/18/2019
Campus site visits	04/03/2020
Inventories completed (assembly, calculations, reporting)	06/05/2020
Local processes outlined for the program implementation	06/26/2020
IT consultants retained for both campuses	06/26/2020
ATMF Programs ready to go live at each campus	09/4/2020

Appendix – 2

ATMF at UCLA

In January 2018, UCLA launched a three-year Air Travel Mitigation Pilot Program, becoming one of the first university campuses in the nation to reduce the impact of greenhouse gas emissions by assessing a carbon mitigation fee for business-related flights. The campus recognized that while air travel by faculty and staff is necessary in pursuit of the university's mission, and often has no viable alternative, the greenhouse gas emissions from such travel are significant. As one might expect, faculty are responsible for a disproportionate amount of the flying to attend and present academic papers at conferences and colloquia to collaborate with colleagues at other institutions. However, as faculty accounts for only 1/6 of the UCLA workforce, the total miles flown overall is greater for staff.

UCLA business-related air travel increased by more than 33% over the last decade, reaching over 75 million miles flown in 2016 and accounting for more than 25,000 metric tons of greenhouse gas emissions. While UCLA looked at options for assessing fees based on various criteria, it ultimately settled on a tiered flat fee per trip as both easy to implement and equitable.

To determine what fees should be assessed, information on miles flown for both domestic and international travel was analyzed along with projections of future carbon pricing. The resultant tiered fees charged per trip itinerary for domestic and international trips will add only nominal amounts to the total trip cost. Charging only non-contract and grant accounts, UCLA collected approximately $400,000 since the program's inception. The first two projects funded through ATMF collected fees consisted of upgrading multiple lab freezers to newer and more energy efficient ones, as well as replacing 78 light fixtures at UCLA's Powell Library requiring 278 LED bulbs.

Appendix – 3

Air Travel Carbon Calculation Methodology

UCLA calculates the campus's annual air travel carbon emissions by totaling the miles flown by staff and faculty on University related business, and inputting that figure into a carbon calculator developed by the University of New Hampshire called SIMAP. Formerly known as the Campus Carbon Calculator, SIMAP is a relatively straightforward method to calculate carbon [as well as other GHGs] emissions for a variety of emitting sources. Regarding air travel, one only needs to plug in the miles flown in the respective section, and an output value is generated.

UCLA obtained miles flown for university business travel by extracting records from Connexxus, the University's in house travel booking platform, which is estimated to cover about 60% of UCLA business related travel. Express, the University's reimbursement platform, contains all travel records, but does not indicate any details about the itinerary except its status as a domestic or international flight. To get a more complete picture about air travel at UCLA, the data from the two platforms was combined in this way: the 60% sample from Connexxus was split into domestic and international flights, and the average miles flown in both categories was calculated based on origin and destination data available. The two averages were then multiplied by the respective number of domestic and international flights obtained from Express, and total miles flown was generated by summing these values. For additional information on these platforms and tracking miles flown for your program, please see Section 03 in this handbook.

While the value on SIMAP is, by default, calculated using radiative forcing (RF), UCLA has decided not to incorporate RF into the campus's carbon calculation for air travel. While there is strong evidence for the impact RF has on increasing the actual GHGs emitted from air travel, there is still a lack of consensus on the concept, as well as major disagreement on its estimated magnitude of impact. For these reasons, UCLA has omitted RF from its calculation by dividing the final carbon emission figure generated by SIMAP by 2.7, which is the RF value used by SIMAP when calculating air travel carbon emissions.

For more information on SIMAP, please visit: https://unhsimap.org/

Appendix – 4

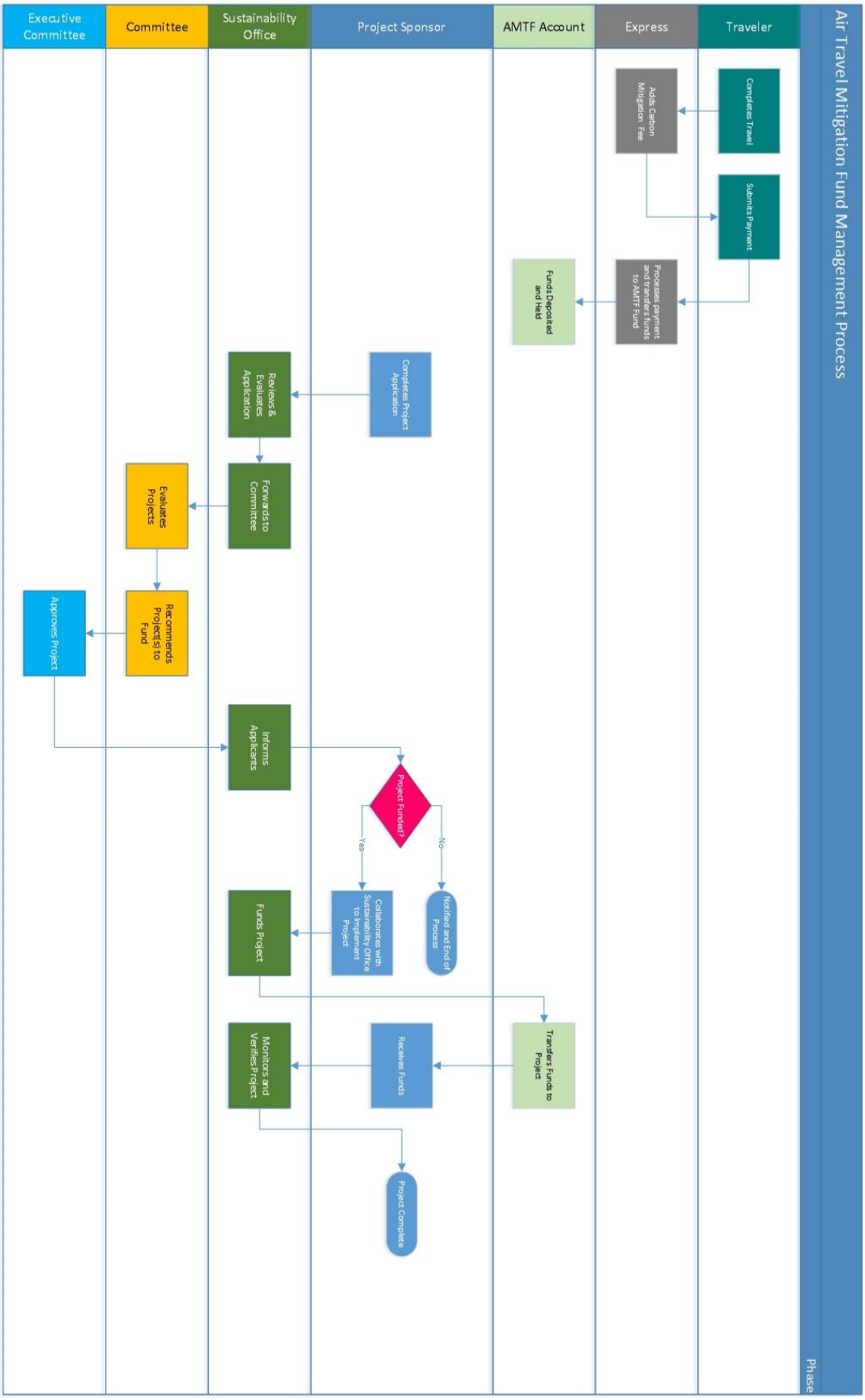


Figure 3. UCLA ATMF Management Process

Appendix – 5

Additional Resources

Proposal for Air Travel Offset Program **– Presidio Graduate School Report**
https://ucla.box.com/s/ec7yn2z64ge9sb4tlldctl4jzrq99u6u

ATMF Pilot Project Management Documents
https://docs.google.com/spreadsheets/d/1F68F6bfIQS-hozWvHxnY0udIppNLhSv1XT3kv0RCeSg/edit?usp=sharing

UCLA ATMF Pilot Program Smartsheet Dashboard
https://app.smartsheet.com/dashboards/Jr387M4f9xqrhjJ8XGv95XCcxv5rgm3JWj5mjrq1

Sustainability Indicator Management & Analysis Platform (SIMAP)
https://unhsimap.org/

International Civil Aviation Organization (ICAO)
https://www.icao.int/

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