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Driving Sustainable Behavior in the Office at Arizona State University
University Sustainability Practices

Abstract

The purpose of this project is to drive and enhance the sustainability behavior of office workers at Arizona State University. Sustainability behavior here is understood to mean behavior that is not solely pro-environmental in nature, but also that which provides clear economic and human benefits to ASU and its employees. Pro-environmental interventions and outcomes, while critical, are just one third of the holistic sustainability sought by ASU. This project focuses on pro-environmental behavior (PEB), as a driver of overall sustainability.

The definition of pro-environmental behavior provided by Kollmuss and Agyeman will be used throughout the project. PEB is “behavior that consciously seeks to minimize the negative impact of one’s actions on the natural and built world” (2002). The problem for this project is that participation with the ASU Sustainability Certification for Offices is low, and to date, the certification has not enhanced the sustainability of offices at ASU.

I was contracted by University Sustainability Practices, who administer the office certification, and much of ASU sustainability efforts, to provide ways to drive greater participation and engagement with the certification. I have done this in three ways. I have completed data collection of the office worker population at ASU, using surveys, focus groups, and interviews to ascertain the attitudes of workers surrounding office culture and sustainability, and to identify barriers to their greater participation in PEB.

The conclusions drawn from this phase of the project informed a robust set of recommendations that will help overcome key barriers revealed by the research, such as a knowledge gap among ASU office staff about the existence of the office certification. My conclusions and solution sets will be provided to USP in a set of documents that will allow them to readily implement my recommendations, and provide a path for next steps.

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Introduction and Background

Large institutions like ASU must be leaders in sustainability performance, or humanity cannot hope to meet and beat the Paris Accords climate target of no more than 2° Celsius temperature rise this century. That includes the performance of its office staff. Pollution in and from offices directly contributes to fatal air pollution, and indirectly to a myriad of other societal costs, such as decreasing or stagnant life expectancy and burdens on the health care infrastructure (Wyon 2004, Intro to IAQ 2018, Bryan 2019). Because there are many affected aspects of office life related to sustainability or lack thereof, there is no single simple solution. A more sustainable office will have to take account of key focus areas such as its purchasing policies, its air quality, its energy and water use, and its waste generation. Because office supplies and equipment are sourced globally, this issue extends across all of ASU's campuses, and because health and waste issues can have degrees of cascading effects, this problem is both place based, but has dispersed, complex effects.

Because of these and other issues, ASU's economic performance will also suffer if they fail to mitigate these risks, and revenue and brand enhancing opportunities will elude ASU leadership. If the University cannot encourage higher and sustained rates of pro-environmental behavior (PEB), then as it fails to meet its goals, it's already significant contribution to regional and global climate change will continue unabated. Lack of sustainability performance at ASU will also impose other significant and increasing costs in addition to indoor air quality issues, as unmitigated energy demand and waste generation will become more expensive in a variety of ways. Some of these expenses include decreased resiliency to southern Arizona's frequent droughts by way of exceptional peak electricity and water demands, plus steadily increasing capital costs to maintain overworked and deteriorating infrastructure. Further, opportunities to increase employee satisfaction, productivity, and intimacy with the ASU community will be deferred.

One of the ways that ASU attempts to lead in sustainability is through voluntary environmental certification programs covering most aspects of university life. For

example, these include certifications for events, classrooms, housing, and offices. These certifications are offered through University Sustainability Practices (USP).

Unfortunately, the ASU Sustainability Certification for Offices to date have not significantly contributed to ASU's stated sustainability goals. This is a central problem for the University. Higher performance and engagement with the certification will help USP meet the University's sustainability leadership goals, leading to lower economic costs, enhancement of the ASU brand, clear environmental benefit, and higher rates of worker satisfaction and productivity.

My project client is USP, which falls under the authority of the office of the CFO. The project was initially proposed to me by USP, which among other requests, needed to understand who was interested in pursuing the certification, so that upcoming outreach efforts can correctly identify potential markets.

Literature Review

As this project is primarily concerned with effecting behavior change in office workers, the literature review takes a close look at past and current efforts around behavior change, as well as prominent theories of psychology and marketing. Scholars recognize that "pro-environmental behaviors are generally defined as behaviors that reduce the environmental impact caused by human beings, and behaviors that improve environmental quality" (Kaida 2017). However, to include the full sustainability problem and solution set, PEBs should be understood to include behavior that increases feelings of individual well-being and productivity at work. This concept has been addressed at points in the literature. "We argued that biospheric appeals—more than economic appeals—enable people to perceive compliance as morally good conduct, and thus feel good about their decision to act." (Bolderdijk 2012).

As Bolderdijk et al. found, there is evidence to support this, although a variety of obscure factors play roles in shaping both attitudes towards and engagement with pro-environmental behavior (PEB). These factors can be internal or external, such as inherent beliefs, and institutional support. They can even include seemingly unrelated factors, such as sleepiness and its effect on pessimism and PEB. (Kaida 2017). These factors can lead to unintended consequences as well; pessimism can drive pro environmental behavior, as studies have "confirmed that pessimistic anticipation of future subjective well-being facilitated pro-environmental behavior in the present. (Kaida 2016).

This selection of literature seems to challenge the prevailing wisdom that economic or personal benefit appeals are the most effective drivers of PEB. Instead, depending on the circumstance, the barriers to PEB can be varied. Because of this, it is wise to use a theoretical framework for this project that accounts for the importance of identifying contextual barriers to PEB, and that psychology plays a greater role than generally understood. After initial research, and a suggestion from the client, I settled on Community Based Social Marketing (Tabinoco 2007; McKenzie-Mohr 2000) (CBSM) as the primary paradigm for this project.

However, subsequent research identified complementary frameworks that can enhance the solutions suite. Project methodology, such as the survey design, has incorporated the initial and subsequent literature review. The Framework for Strategic

Sustainable Development as described by Broman and Robèrt (2015), as well as its practitioner oriented analog, The Natural Step, both describe backcasting from vision creation as central to creating sustainability solutions and identifying intervention points and barriers. This complements CBSM's mandate to identify internal and external barriers in a context dependent fashion.

Further understanding of barriers as concerned with power dynamics and individual and group rules and roles can be supported by Ostrom's Institutional Analysis & Development framework, or IAD (Ostrom 2011). This framework is also useful for the prerequisite institutional mapping required to identify the relevant actors and actions (Aligica 2006).

Additional supporting literature reveals that behavior in the office can be different than at home, and subject to a greater variety of influence (Blok 2015). Other frameworks like TPB, theory of planned behavior, can correctly identify intention as the biggest predictor of PEB, but don't account for external factors present in the workplace. Behavior is motivated by internal, external, and demographic factors, with the presence of leadership support being an example of an external factor (Blok 2015).

The use of CBSM allows the practitioner to explicitly identify barriers for a given behavior (McKenzie-Mohr 2000). CBSM in case studies has shown promise in identifying and removing barriers to behavior change. (McKenzie-Mohr 2000.) "Unfortunately, a variety of studies have established that enhanced knowledge and supportive attitudes often have little or no impact on behavior, (McKenzie-Mohr 2000)." Other scholars (Redman 2012) have also noted that information and awareness alone is insufficient in driving lasting behavior change, and that more targeted forms of knowledge, such as procedural, or social knowledge, are more effective drivers of pro-environmental behavior.

Most of these studies mention the importance of correctly identifying barriers to change, and the primary focus of CBSM makes it a valid framework for the marketing recommendations contained in this project. CBSM is most effective when it identifies a single behavior and the relevant barriers to it. (Tabanico 2007) The behavior this project will focus on is the behavior of completing the ASU Office Sustainability Certification. Care should be taken to ensure that marketing efforts do not have unintended consequences and actually decrease PEB (Jones 2007). Proper marketing can enhance the brand and increase engagement with concepts of sustainability. Marketing must also take into account the complex array of factors that influence the decisions of an individual and target its message properly on an individual level (Jones 2007). This framework and methodology will provide an effective solution to the problem central to this project, namely how to increase participation and performance on the ASU Sustainability Certification for Offices. The ability to clearly identify barriers and focus on actionable solutions is a far better approach than just information and awareness campaigns. For basic data and insights on the prevalence and effects of indoor air pollution, sources were from EPA, NIH, and Dr. Harvey Bryan, who teaches SOS 598 Topic: Green Building Practices. These sources reveal that deleterious effects from poor indoor air quality can result from a single exposure, including allergies and sinus irritation. This can be caused by a myriad of pollutants from VOC emissions in carpets, to dirty air ducts and poor ventilation. Repeated exposure can cause asthma and other

problems. Wyon found that workers in polluted offices type an average of 6% slower (Wyon 2004, Intro to IAQ 2018, Bryan 2019)

On a final note, great understanding has been provided on how to properly conduct focus groups and interviews by the work of Richard Kreuger at the University of Minnesota (2002).

Project Approach and Intervention Methods

This project collected digital survey data designed to identify barriers to pro-environmental barriers in ASU office workers. The literature discussed above supports this methodology. In addition, focus groups and interviews provided further insight.

I have improved the average survey response rate of 3% in USP's previous efforts, which alone has provided the client with a much needed path forward and better survey recruitment methodology. Because of time and scope constraints, there will not be a chance to evaluate the performance of any marketing and outreach campaign, nor the efficacy of the toolkit after the fact. However, the final client report will outline ways to do so. If more people pursue the certification, and achieve higher scores on it, then that will be an effective and axiomatic way to ascertain the viability of the solutions suite.

The focus groups and interviews intended to supplement the survey allow for more open ended questions and voluntary insights by the participants. These three components and their analysis comprise the research portion of my project. The analysis reveals common barriers to PEB and identifies intervention points and opportunities to overcome the identified hurdles. As discussed in the literature review, frameworks like community based social marketing (CBSM), the framework for strategic sustainable development (FSSD), and institutional mapping will directly inform the creation of marketing and outreach recommendations micro-targeted for maximum effectiveness.

As part of my final recommendations, I will propose an assessment tool to evaluate the effectiveness of the marketing and outreach. As this project seeks to drive human behavior and institutional change, and because behavioral and organizational change is typically concerned with governance and politics at multiple scales, this assessment could potentially borrow from the principles of adaptive management for natural resource management.

Research Approach

To achieve the project goals, after first reviewing the existing literature, I developed a custom survey targeted towards ASU office workers. The respondents were chosen semi randomly. This means that although certain departments were targeted, within those departments, individuals were selected randomly. The following departments were targeted after discussions with subject matter experts, based upon the logic that selecting departments not necessarily known for their affiliation with life sciences or sustainability would capture potentially recalcitrant departments and their staff. If it can be ascertained how these individuals and departments can be pushed to increase their PEB and sustainability performance, then it will be all the easier when targeting schools and departments more associated with affinity for sustainability, such as SOS, the School of Human Evolution, The School of Life Sciences, etc. The survey explicitly targeted staff, avoiding leadership and faculty.

The selected schools and departments selected for the survey were:

- W.P Carey School of Business (154)
 - Facilities Management (106)
 - Cronkite School of Journalism and Mass Communication (48)
 - College of Nursing and Health Innovation (85)
 - School of Public Affairs (9)
 - University College (66)
 - Herberger Institute for Design and the Arts (36)
- Total survey size = 504 individuals.

The following protocol was used to select potential respondents:

- W.P. Carey - Staff page on the web. Selected alternate last names, alphabetically.
- Facilities Management - ASU Directory, search term “Facilities Management.” Selected alternate last names, alphabetically.
- Cronkite School of Journalism and Mass Communication - <https://cronkite.asu.edu/about/faculty-and-leadership/staff>. All staff except executive leadership and the Dean’s Chief of Staff
- College of Nursing and Health Innovation - Google, search term “ASU nursing school staff.” All staff, excluding executive leadership and faculty.
- School of Public Affairs - Staff page on the web. Very small department. All staff selected with the exception of executive leadership and faculty
- University College - College directory page, staff tab. Sorted alphabetically. All selected with the exception of executive leadership and faculty.
- Herberger Institute for Design and the Arts - Directory page, staff tab. Sorted alphabetically. All selected with the exception of executive leadership and faculty.

Through this process I identified 504 individuals meeting the criteria for inclusion in the survey. Using Qualtrics software, these individuals were emailed from my ASU email address with a standard recruitment script and link to the survey. This included an invitation to participate in a raffle for one of three \$50 Amazon Gift Cards.

Focus Group and Interview Recruitment

I conducted two focus groups and one phone interview to provide more qualitative insight to supplement the survey. Two focus groups and numerous interviews were cancelled or not scheduled due to lack of interest and time.

By necessity, recruitment here was undertaken in a somewhat scattershot approach. I contacted the ASU Staff Council, and they were kind enough to send my recruitment script via their listserv. I also attempted to identify key individuals at the Tempe and West campuses to assist with recruitment. I sought out individuals (when possible) that had “executive assistant,” or “assistant to the dean” in their title, and emailed them with a personal request to forward my recruitment scripts to staff that might be interested. I was successful in contacting three such individuals.

Research Administration

- ASU's Institutional Review Board approved the research for this project in February 2019.
- The survey was created, distributed, and administered using Qualtrics Software under an SOS department license.
- The first question on the survey was consent wording. They could either click "I give my consent, take me to the survey," or "I do not consent, take me back." Those who did not consent were redirected to www.asu.edu. Respondents who fully completed the first survey were bounced to a second survey, where they had the option to enter their name and email address for a random chance at a gift card. 109 respondents completed the first survey (n=109).
- The focus groups were selected from respondents to a recruitment email that offered a free catered deli lunch with vegetarian options. A doodle poll was created for the volunteers on the various campuses. The volunteers were able to vote on their preferred time and date. A final notification was then sent via doodle poll letting participants know about the finalized time and place.
- The Tempe Focus Group had 3 participants, and Polytechnic Focus Group had three. The sessions lasted about 45 minutes.

Research Design

The survey was structured into three types of questions: demographic questions, key and probing questions, and exit questions. This structure was arrived at by referring to various sources such as Qualtrics help pages, academic articles, and speaking with subject matter experts.

Researchers also made use of branching questions. Branching questions are designed to show a unique follow up question linked to their response on a previous question. This survey asked ASU staff if they were interested in pursuing the certification. Those who answered yes were shown a different follow up question to those that answered no. This is done to reduce survey fatigue (and enhance validity) by ensuring all questions are relevant to that user. It also allows researchers to ask very specific questions of select respondents.

The survey asked for demographic data in the first section, and this has a few advantages. First, if respondents don't finish the survey, they usually have at least done the first section. Second, basic, innocuous questions can help the respondent feel at ease, and get them comfortable with the format. Numerous questions on the survey request subjective opinions. This is done because there is no perfect benchmarking tool to correlate certain responses to predicted actions. In addition, knowing the thoughts and values of survey respondents is crucial to devising a compelling behavior change strategy. Exit questions solicit final information and give the respondent instructions for entering the raffle. The focus groups and interviews were structured in the same way. Introductions were made, and the questions were asked and answered in a loose format. Short answer format was possible here, so that was utilized in soliciting opinions and feelings from volunteers.

Exit questions in the interview and focus groups took the form of asking interviewees if there was anything they would like to add that could be useful, and thanking them for their participation.

Subject Matter Experts

I spoke with numerous experts who could provide insight into my project execution, particularly in regards to my marketing and outreach recommendations.

- *Park Howell* - (<https://businessofstory.com/>) I was first introduced to Park as a guest speaker in a class with Dr. Basile. I reached out to him after getting reacquainted with him during a course on corporate sustainability programs. Park provided superior insight into the power of story and of providing agency to implementers during a grassroots marketing campaign.
- *Furman University (SC)* - I first spoke with Laura Bain at Furman University's Chi Center for Sustainability. She is an associate director of sustainability assessment, and we were able to chat on the phone on February 4.
- *Kelly Grant Purvis* - Ms. Purvis is the associate director of sustainability programs, and we also spoke on February 4. Despite the overlap in knowledge, I found it useful to speak with each individual for a slightly unique perspective on Furman's sustainability efforts. For example, I learned that at Furman, their green office program is less than two years old so their efforts are more nascent than ASU's. The program is very simple, offices are either designated as participating or certified. It was initially rolled out to academic departments and their first year reported a 100% participation rate. It has been difficult since then to match those rates. Each department was awarded a group certificate and individual stickers. How the awards were presented was key. Awarded group picture and an indoor plant. Awards were given at regular staff meetings.
- *Aaron Bryant* - I was referred to Aaron by my clients at USP. He is a PhD candidate in marketing and works in the office of the CFO, with responsibility for marketing communications strategy. He was able to provide practical insight into what is possible within the ASU context.
- *Mick Dalrymple* - I met Mick once and had a good chat with him about my project. He is the director of University Sustainability Practices, my client.
- *Nicole Darnall* - Dr. Darnall is a professor in the School of Sustainability, and an expert on voluntary environmental programs. She met with me several times throughout the semester.

Outcomes/Findings

The primary mechanism this project employed to drive sustainable behavior in the office at ASU was the use of qualitative research to expose weaknesses and gaps ASU's current efforts. This research ultimately comprised the overwhelming bulk of my project, and the insights gained from it informed my recommendations for USP. Future efforts can begin to implement and make my recommendations actionable, through creation of a more capable educational toolkit, an explicit marketing and outreach strategy, and continual evolution of the office certification itself.

Survey Findings

The survey received complete responses from 127 individuals across various departments at ASU. It should be restated here that the respondents were chosen in a semi-random fashion. Following conversations with subject matter experts and looking at departments that have a low participation rate with Seeds of Sustainability (an

educational website for the ASU community), I decided to choose departments and schools across ASU that were more likely to have an ambivalent or less knowledgeable orientation towards sustainable behavior in the office. To that end, departments like nursing, business, and facilities and maintenance were selected.

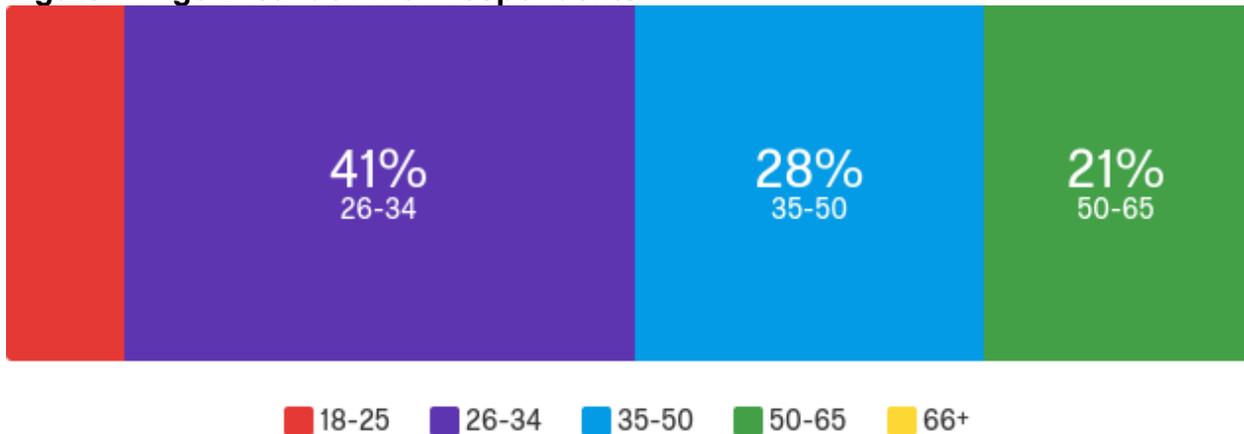
The survey itself was subdivided into three major categories of questions: demographic and basic information questions; probing/key questions, and follow up and exit questions.

Demographic Findings

Over half (54%) of the survey respondents (n=109) primarily work at the Tempe campus, with about a quarter working at the downtown campus. Almost 7% described themselves as remote workers. This is mostly expected, as most of the potential respondents were selected from departments such as W.P. Carey or Nursing, which are location based departments. Efforts were made as well to select departments at other campuses and through selection of facilities management, to recruit respondents whose department had responsibilities across multiple campuses. Overall, the survey did an acceptable job in recruiting a diverse array of respondents.

The age breakdown of respondents is shown below in figure 1. About half of respondents were under the age of 35 and half were over.

Figure 1: Age Breakdown of Respondents



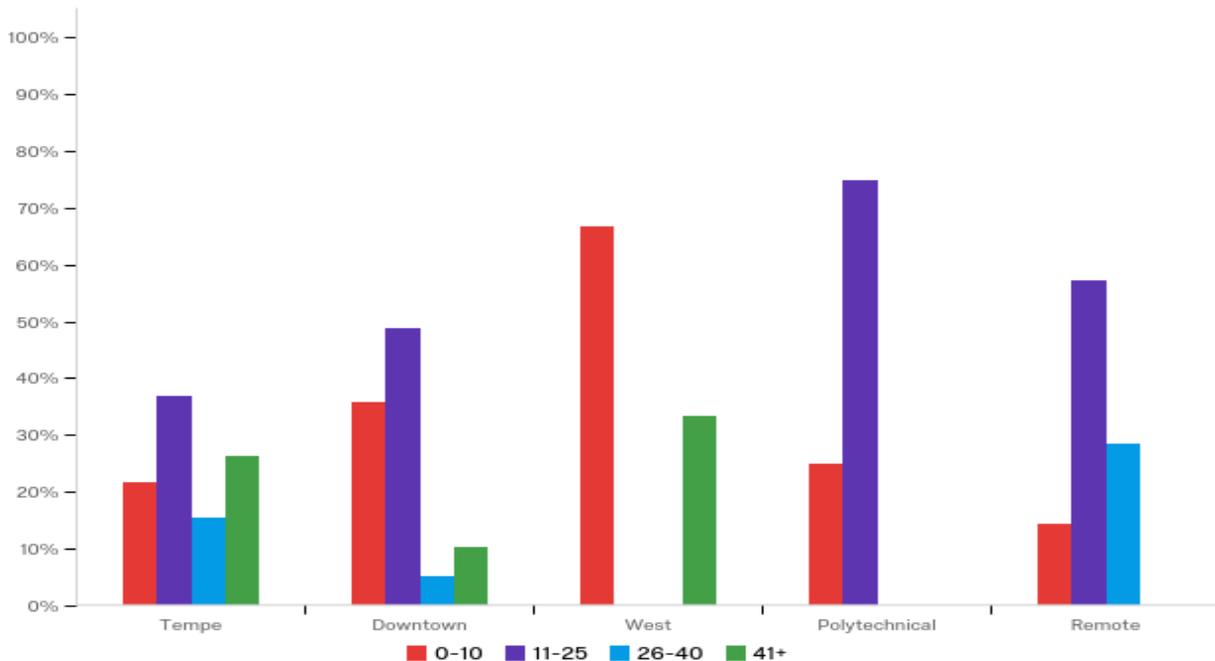
Additionally, respondents displayed diverse work experience. 55% of respondents have worked at ASU for at least 4 years, and only 13% described themselves as holding entry level positions. See figure 2 below.

Figure 2: Respondent Job Roles



The last basic information question asked respondents to estimate the size of their immediate office (not department). Most people surveyed worked in small to medium offices. About 70% work in offices with 25 people or less. However, a full 19% work in offices with more than 40 people. Responses from Tempe and Downtown Phoenix campuses skewed more towards smaller offices, while remote workers and workers at the Polytechnic campus were more likely to work in larger offices. At the ASU West campus, respondents reported employment in either small or large offices, with no responses from workers in medium-sized offices. Overall, Tempe campus respondents provided the most diverse set of office sizes. See figure 3 below:

Figure 3: Office Size by Campus



Probing and Key Questions

These questions comprised the heart of the survey, and were designed to tease out personal attitudes and understanding of PEB (pro-environmental behavior) in the

office, in an effort to identify barriers to greater participation. I first polled respondents on their basic knowledge in regards to PEB, and further questions became more specific in regards to PEB at ASU and their office.

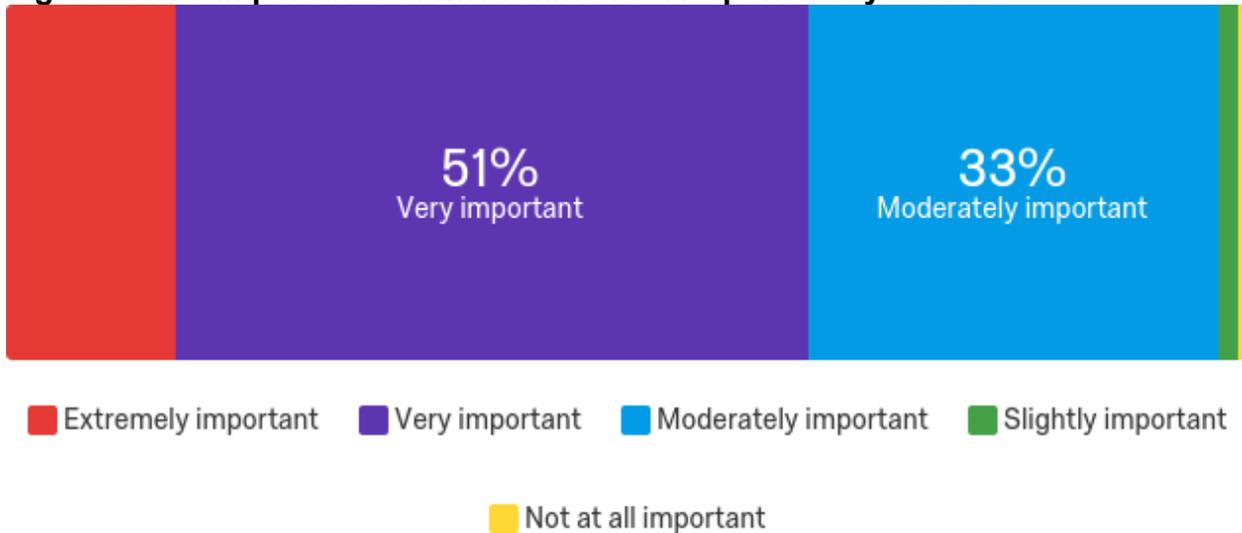
The vast majority of respondents (85%) described themselves as “knowledgeable about environmentally friendly behavior in the office.” The answer options here were “yes, no, or unsure.” Interestingly, 8% reported being unsure of their knowledge level.

The results of the survey were surprising in regards to respondent knowledge about sustainability. Despite attempting to select potentially recalcitrant respondents, the survey revealed that the large majority of respondents had a higher degree of general knowledge about sustainability than was expected. This high level of knowledge is indicative of the success of ASU’s efforts to date to increase basic awareness. This data can be cross-referenced with certification responses to more accurately determine *how* knowledgeable respondents are, whether they claim to be or not.

For example, response data from questions on the certification itself that request knowledge of sustainable practices and opinions can be compared to the percentage of respondents in a survey who claim to be knowledgeable. A question on the office certification asks users if anyone in their office has received sustainability training. Lack of training could imply a lack of knowledge and uncover potential response bias in self reported knowledge. Cross-referencing two similar questions in this survey yielded interesting results. The question asking respondents if they were knowledgeable about PEB in the office was compared to respondent data from a later question asking respondents if they were aware of ASU’s Green Purchasing Guidelines. Of the 85% who claimed to be knowledgeable, only 80% were actually aware of the guidelines. However, of the less than 15% of ASU staff who reported *not* being knowledgeable, almost 86% were still aware of the guidelines. It is hard to draw conclusions from this, but with larger data sets, discrepancies would have greater statistical significance. Cross Referencing data this way is immediately useful, and USP should take every relevant opportunity to do so.

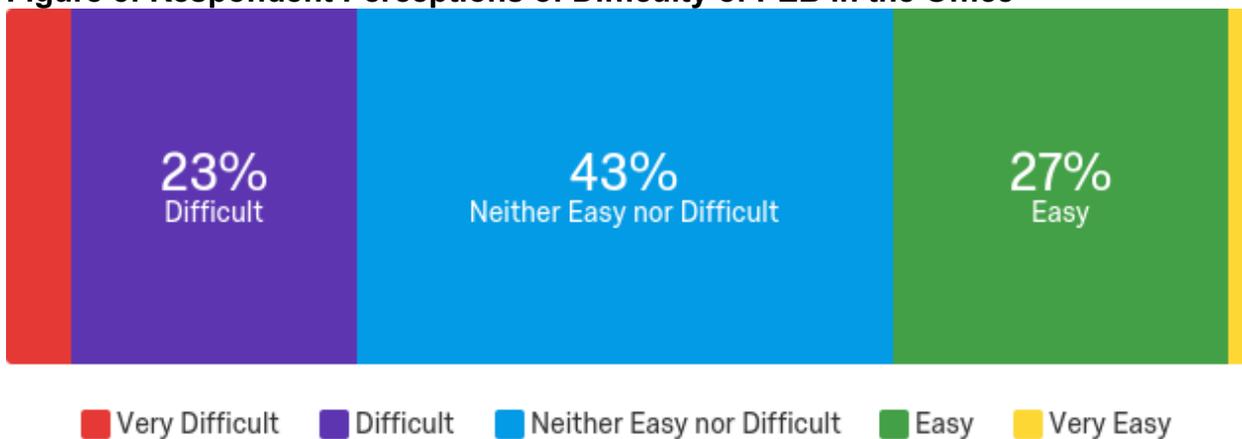
Independently of their knowledge of sustainability, almost all respondents felt that being environmentally responsible in the office was at least somewhat important. See figure 4 below.

Figure 4: The Importance of Environmental Responsibility to ASU Staff



The next questions yielded intriguing results. Respondents were asked “to what extent do you think it will be difficult to make your office more environmentally friendly?” See figure 5 below:

Figure 5: Respondent Perceptions of Difficulty of PEB in the Office

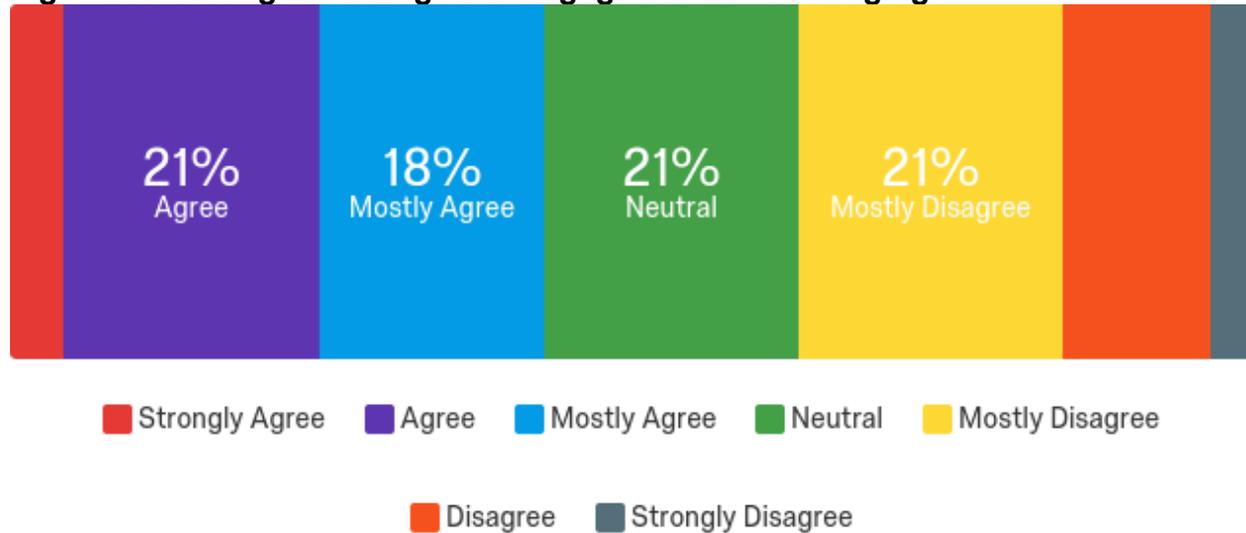


The majority of respondents hedged their bets and took a neutral stance, agreeing that engaging in PEB would be neither difficult or easy. However, I expected more survey takers to perceive difficulty. A neutral response is almost the same as a response of easy in this question. The way the neutral choice was proffered explicitly did not allow for the perception of difficulty. Project researchers feel that as humans are more attuned to possible pain than to the rather amorphous concept of “not easy,” or “neither,” a reasonable interpretation of a neutral response here is to focus on the fact that respondents who selected this option *did not* perceive difficulty (pain). When viewed through this psychological assumption, perceiving a lack of difficulty is very similar (at least linguistically) to the concept of “easy.” The neutral choice in this question may have represented a paradox for ASU staff attempting to answer the question, and for researchers attempting to interpret the data. Future surveys should

both reword this question, and design future questions to identify those likely to give a neutral response, and learn more about them.

Of particular note were the results from a follow up question in which respondents were asked a similar question, “To what extent do you agree that being encouraged to engage in environmentally friendly behavior is challenging?” The answers overall displayed less confidence. See figure 6 below:

Figure 6: Is Being Encouraged to Engage in PEB challenging?



Here, the difference was between general perception of difficulty, and the perception of the challenge created by *being encouraged*. As we can see, the challenge was perceived as lower when opinions were solicited in a general sense, with 72% of respondents taking a neutral or optimistic stance.

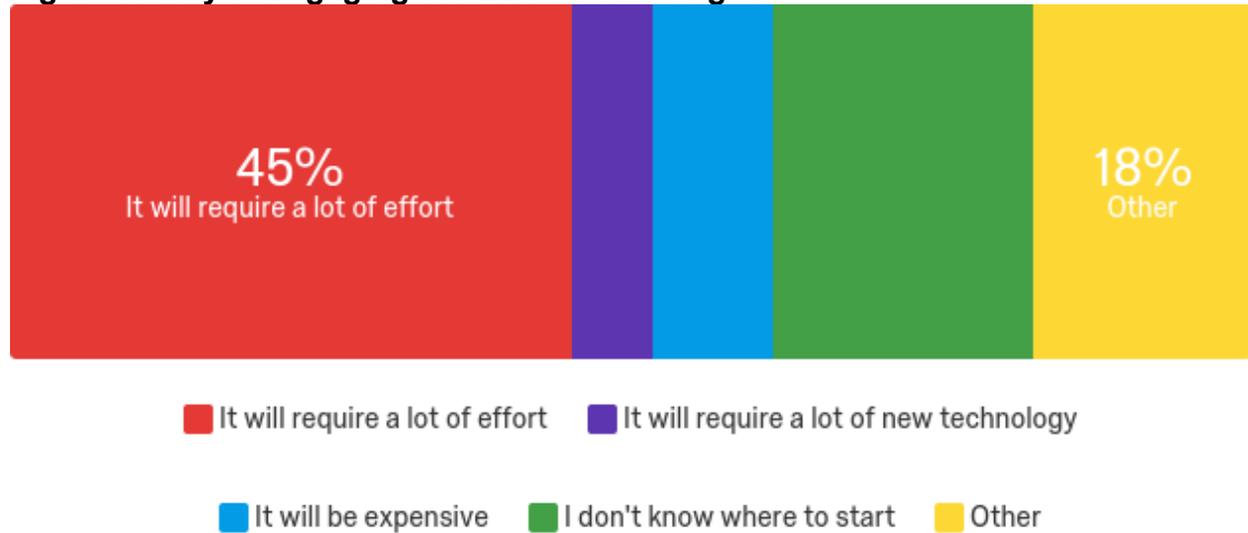
The challenge was seen as greater when it was phrased as a request, as in the second question where only 57% of people expressed a neutral or optimistic outlook. The second question may have been more effective at connecting the requested effort to personal actionability and reality. The second question was designed to make the respondent connect the desired outcome with more acute personal relevance (being encouraged), and make the further connection to how they perceive this challenge in relation to their other work tasks and time commitments. Further surveys should include a general question about how people perceive their daily workload. A correlation between the perception of difficulty in being asked to engage in PEB and perception of daily busyness probably exists here, especially if PEB efforts in the office are not officially supported or mandated.

I attempted to get more clarity as to why people perceive a challenge to engaging in PEB by brainstorming probable common reasons with SMEs and referring to research. A multiple choice survey cannot capture all of the possible reasons or anticipate them perfectly, so this is one of the reasons this project pursued focus groups and interviews as complementary research.

In the first branching question of the survey, respondents who gave a neutral or pessimistic response to the previous question were asked why they perceived a challenge. They were given the following choices. It will take too much effort; it will require a lot of new technology; it will be expensive; I don't know where to start; other.

The answers varied significantly depending on which campus the respondent worked at. About half of respondents at the Tempe and Downtown Phoenix campuses chose “it will require a lot of effort” as their answer. No remote workers however, selected that option, instead feeling that PEB effort would require a lot of new technology, be expensive, and that they don’t know where to start as their answers. See figure 7 below for the breakdown independent of campus.

Figure 7: Why is Engaging in PEB is a Challenge?



Follow up questions anticipated lack of knowledge as a potential reason, so ASU staff were asked if more knowledge by itself would be sufficient to encourage their personal PEB in the office. An encouraging majority here of 86% at least somewhat agreed that solely more knowledge would nudge them towards PEB. 13% strongly agreed and 42% agreed. Only 14% gave pessimistic responses. This indicates that lack of knowledge may be the major barrier to increasing sustainability in ASU’s offices. This contrasts sharply with ASU staff members’ self reported high sustainability knowledge.

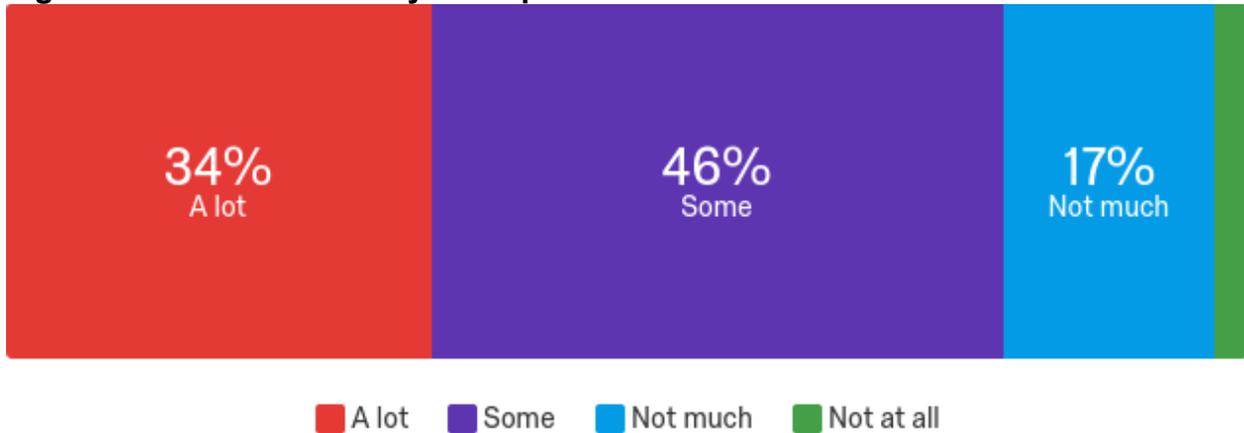
Research has shown that both negative and positive incentives can drive people to engage in desired behaviors in a workplace setting, so ASU staff were polled to find out if they thought that either personal recognition or penalties would motivate them. 27% felt that personal recognition, and 15% felt that penalties would have a “neutral” effect on them. This choice can probably be removed in future surveys, as choosing neutral here might be the same as saying they would have no effect at all, or that it would depend on the circumstance. 37% would be influenced by personal recognition, and 57% at least somewhat by penalties. Only 27% said penalties would influence them “not much” or “not at all.” 27% percent still seems high, and in reality, the numbers would change if an example of a penalty were provided. The conclusion here is that both positive and negative reinforcement could be effective, but penalties more so.

The next three questions all asked for peoples’ perception of their workplace as environmentally friendly currently, in the past, and in the future. Out of ten, ASU staff overall rated efforts to date at 5.9, with Tempe rating efforts at 6.8. Across campuses, 63% of ASU staff stated that past efforts had resulted in “some” progress, but only 16% thought that “a lot” of progress was made. Staff opinions of the potential for

improvement were far more optimistic. Here 66% chose “some” and 25% chose “a lot.” Only a single respondent felt that no more improvement could be made in their office.

ASU staff also tended to think that ASU has provided more support for sustainability in the office than not. Tempe workers were more optimistic than their colleagues in this regard. Perceptions at other campuses may in fact accurately reflect lower support from ASU, remembering that support can take many forms. See figure 8 below for combined data from all four campuses.

Figure 8: Can Sustainability Be Improved In Your Office?



Indicating where future efforts can be made, few ASU staff reported having either an official or unofficial sustainability leader in their office. Only 11% have leaders, 55% do not, and the rest were unsure, which probably means they do not. Similarly, 54% of ASU staff have not heard of the ASU Sustainability Certification, and even at the flagship Tempe campus, only 31.75% have.

The next response may be key to ASU’s efforts moving forward. ASU staff were asked if they were interested in learning more about and/or pursuing the certification. Finding out who was interested was one of the key pieces of information requested by the client. I was able to make use of tools and filters available through Qualtrics software to cross reference the opening demographic responses with ones indicating interest in the certification. Table 1 highlights which groups are the most and least interested in pursuing the certification.

Table 1: ASU Staff Subpopulation Interest in Pursuing Certification

	Job Role	Age Range	Time at ASU	Office Size
Definitely Yes	(Leadership) 31.82%	(55-65) 38.10%	(0-6 yr) 31.82%	(11-25) 40.91%
Probably Yes	(Other) 34.48%; (Supervisor) 27.59%	(26-34) 44.83%	(0-3 yr) 41.38%	(11-25) 37.93%
Maybe	(Other) 43.59%;	(26-34) 46.15%	(0-3 yr) 51.28%	(11-25) 48.72%

	(Supervisor) 28.21%			
Probably Not	(Other) 54.55%; (Entry level) 27.27%	(26-34) 45.45%	(0-3 yr) 45.45%	(11-25) 40.91%
Definitely Not	0 responses	0 responses	0 responses	0 responses

(Data points in Table 1 were culled from multiple responses to multiple questions, and stand alone. These numbers will not add up to 100% on any column or row).

This table shows a few useful things. Leadership stands out as being most likely to support the certification, as do older workers and people who have less than seven years at ASU and work in medium sized (11-30 workers) offices. Those least likely to support pursuing the certification are younger workers that may have less defined job roles, and those in medium sized offices. This data can be interpreted a few ways, but the audience most receptive to certification efforts would probably be middle aged workers (55-65) in medium sized offices.. This table is intended to point to multiple audiences that should be focused on in future efforts. Unique outreach efforts need to be developed for each of these subgroups, not just the obvious ones.

It is ultimately reasonable to conclude here that initial efforts can see outsized results if they target leadership at ASU. This group both has greater personal agency than other groups, and has an influence on other groups. Change agents should leverage the unique characteristics of employees in leadership roles.

This table also hints at skews in the data. First, it appears that a large majority of respondents work at the Tempe campus, have six or less years of experience, and work in medium sized offices (11-25 people). There maybe other data skews but these were the most obvious to the eye. Future polling should find out if ASU offices as a whole reflect this. If most ASU office staff members do in fact tend to have less than seven years experience and work in medium sized offices in Tempe, then this reveals another unexpected success of the survey in gaining responses from an accurate cross section. This also means that this survey showed that working in a medium sized office was not a reliable predictor of interest in the certification. The groups most and least interested in the certification *all* reported working in medium sized offices.

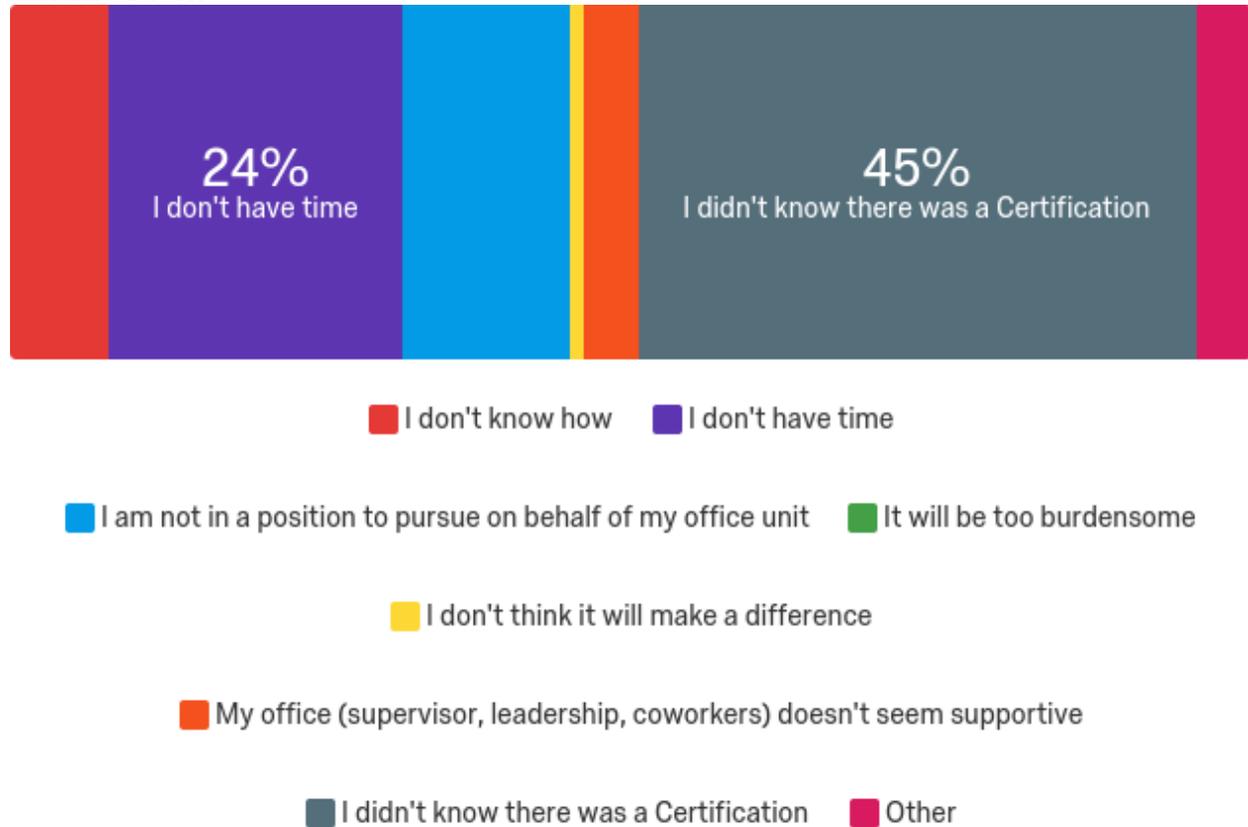
Despite some clear trends, there was a decent level of diversity among survey respondents. The major insight here is that overall, only 45% of ASU staff who responded to the survey said they were interested in learning more or pursuing certification. 35% answered maybe. About 20% said they would probably not be interested.

Future surveys should account for potential skews in the data, and use multivariate analysis to do so. Regression analysis can also be used to compare relationships between variables. This also allows the researcher to compare more than two variables at once.

The question polling ASU staff on their interest in the certification was key, and so two branching follow up questions were included in the survey. The first follow up

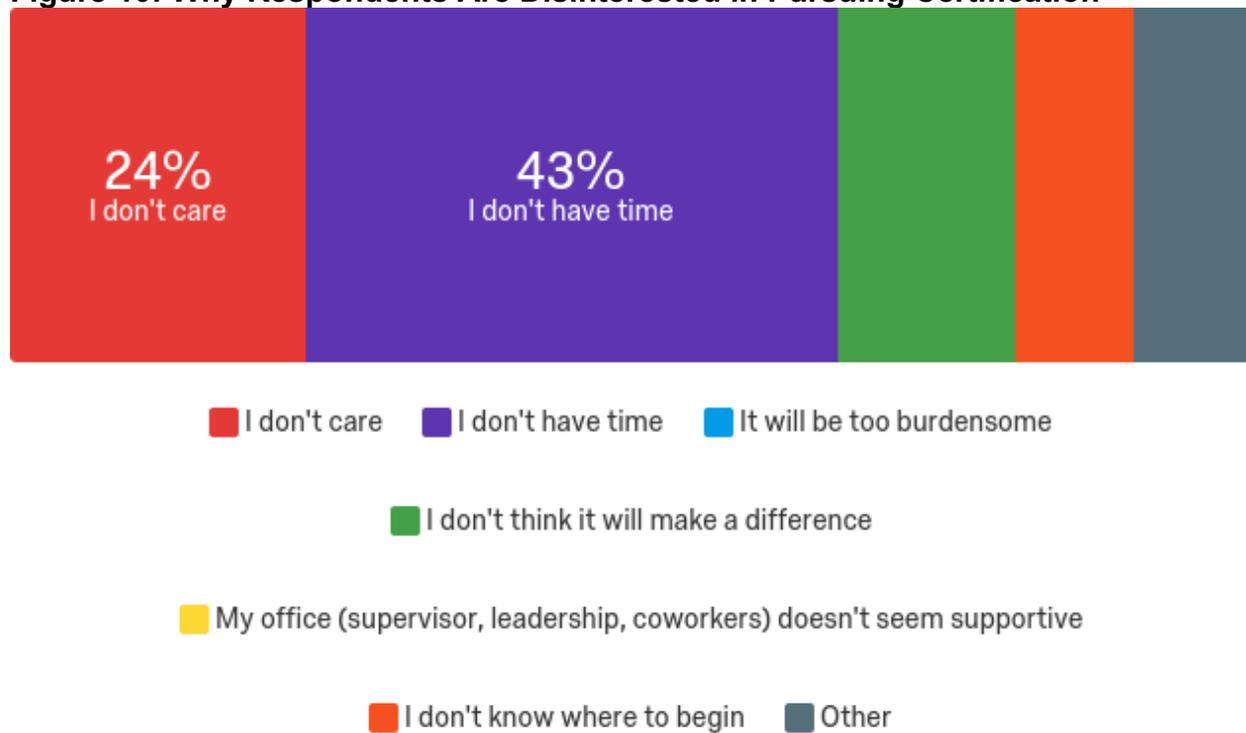
asked respondents who declared potential interest why they haven't pursued the certification. The biggest reason given for not pursuing the certification among those who expressed interest was that they did not know it existed. See figure 9 below.

Figure 9: Why Respondents Who Expressed Interest Have Not Pursued Certification:



The second question was directed to those who declared disinterest. ASU staff were given the following answer choices to account for their disinterest: "I don't care; I don't have time; I don't think it will make a difference; it will be too burdensome; my office doesn't seem supportive; I don't know where to begin; other. See figure 10 below.

Figure 10: Why Respondents Are Disinterested in Pursuing Certification

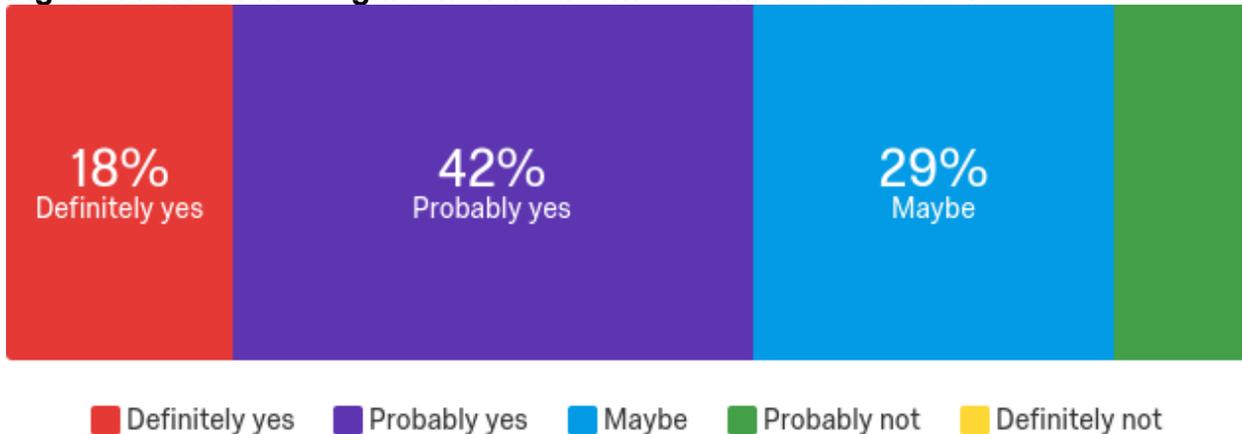


In both questions it should be noted that no respondent felt that pursuing the certification would be too burdensome. Only three respondents didn't feel their office was supportive. It is unclear why no one felt that it would be too burdensome, despite previous questions revealing the perception of a personal challenge. The insights from these two questions in particular should be parsed and inform future surveys. They should also be reposed to larger survey audiences. 51 respondents were at least somewhat interested. 71 responded maybe, or probably not. No one answered definitely not. A larger *n* will increase the validity of these results in future surveys.

The final two key and probing questions explicitly asked respondents if they thought that pursuing the certification would benefit them personally, or if recognition for their office (but not themselves) would be a motivator. 40% said they didn't feel pursuing the office certification would benefit them personally at all, or just a little. The other 60% anticipated at least some benefits, with 15% anticipating "a lot."

In regards to office recognition, the survey takers were slightly more optimistic. As in the previous question 60% anticipated being motivated by office recognition, but almost 30% said maybe, with only about 10% feeling that office recognition would not motivate them to a significant degree. See figure 11 below.

Figure 11: Would Recognition of Your Office's Efforts Motivate You?



Exit Questions

The last two questions were simple exit polls to get some parting information about survey takers awareness of ASU's Sustainable Purchasing Guidelines (for office supplies for example). Here, 23% were aware, and 58% selected "don't know," which in the context of this question was probably "no." For respondents who were aware of the guidelines, they reported that 13% followed the guidelines as much as possible, and 5% not at all. Similarly to the previous question, two of three respondents were unaware to what extent their office followed the guidelines. These last questions again, hint towards a knowledge gap among ASU office staff.

Focus Group and Interview Findings

I conducted two focus groups for this project, one at Wrigley Hall, and the other in a conference room at the Polytechnic campus library. I conducted one individual interview with a manager at the West campus. All of the participants were eager to offer suggestions and insights based on what they have observed in their own workplaces. Many of their suggestions were incorporated directly into the recommendations. A few people were no shows, so there were three focus group volunteers at Tempe and three at Polytechnic. Volunteers were all female, mid level administrators, some were student facing and others were finance based. I was able to ask more open ended questions to these groups, such as "what is a pain in regards to thinking about sustainability, and do any of these efforts cause you aggravation or anxiety?" The general consensus was that personal efforts were not appreciated, sometimes subverted, or not coordinated. They were also asked what acting sustainably in the office meant to them. Personal responsibility was the clear understanding.

The other questions in these sessions were taken from the key question section of the survey. Staff were asked if their office had an official green office leader, or were aware of the sustainable purchasing guidelines for example. Overall, these were casual, semi-structured conversations, with volunteers telling stories, and chiming in with suggestions as they thought of them. Upon reviewing the audio recordings, it is clear that I was successful in making the volunteers feel comfortable, and the sessions were very successful and insightful. Future research in this area could take advantage of this format, as it seemed to create enthusiasm in the volunteers. This research should

attempt to conduct more focus groups of larger size, between 5-7 participants. Focus group questions can often be directly informed by survey results. Unclear responses in surveys where ended answers are impossible can be followed up on in a focus group or interview setting. Future focus group research should also probe human competitive dynamics, and the concept of individual agency and influence in the office. These human impulses can be effectively leveraged if they are correctly understood. The audio files will be provided to the client at their request.

Recommendations

The field research I conducted for my project, through the survey and interviews, revealed some expected results, as well as more surprising insights. These findings have informed a number of short and medium term recommendations that should be pursued by USP and other organizations at ASU tasked with increasing sustainability.

Recommendations 1 - Better Performing Surveys

- *Boost survey response rates* - This can be accomplished through a few simple adjustments. Surveys should continue to be clean and professional looking. This is done for the survey designer practically automatically through the use of software like Qualtrics. Other options like Survey Monkey or Google Forms can also help create great looking surveys. The survey should also not be too long, but should be long enough to capture the desired information. The number of questions is not directly the issue, instead it is the total time to complete the survey. I aimed for a completion time of ten minutes or less. Individuals who helped me workshop my survey reported an average completion time of 9 minutes. The quickest completion was seven minutes and the longest was 12. Qualtrics software estimated an average of 10.4 minutes to complete the survey. Future polling efforts should aim for less than ten minutes to mitigate fatigue and drop off before completion. Overall survey fatigue should also be addressed. Focus group volunteers pointed out that they must often take online training or polls, such as fire safety. USP should take efforts to habituate the ASU community to doing surveys in a way that mitigates survey fatigue. One of the ways USP could do this is to create some sense of fun around surveys. Focus group members reported that they will often have a lunch or fun event in conjunction with their fire safety training. This idea should be examined for sustainability surveys as well. Other ways USP can mitigate survey fatigue are to keep completion times under ten minutes, and make the survey easy to understand. If any potentially new terms are to be used, such as “pro-environmental behavior,” they should be explained and defined before the term is used in following questions. As mentioned above, targeting research when possible can ensure that survey questions are relevant to that respondent. Finally, future surveys can target high achieving offices, and solicit progress reports from certified offices.
- *Place the consent wording and describe the incentive upfront* - Past surveys by USP have offered incentives for taking the survey, but they have largely proven ineffective. The most recent annual sustainability survey done by USP offered one iPad Pro out of all potential respondents at the university. A logical

individual would recognize that at an institution as large as ASU, the odds of winning that iPad is low in the extreme. The response rate for that survey was around 3%. Instead, future surveys should be micro targeted when appropriate, and for large surveys, more than one potential prize should be offered in any raffle. The survey I distributed for this project offered three \$150 Amazon Gift Cards. The survey was distributed to about 500 people. The odds of winning should be described optimistically, if at all.

- *Recruitment emails* - The recruitment process played out in an interesting way. The wording was combined with preliminary consent language, and sent via email with a link to the survey. Recruitment emails should as short as possible, with a catchy yet professional subject line. The subject line for my recruitment emails was simply: "Graduate Student Survey - Entered in Amazon Raffle." This wording yielded a response rate of over 20%, a very good result for this type of survey. A response rate at least that high is needed to bolster the validity of the results. This wording may have incentivized the respondent with a potential reward. It also let them know that the survey was not intimidating, as it was being conducted by a student. The email should also tell the potential respondent why their participation is important. The wording should be very professional, but if possible, friendly, and encouraging. This is a fine line. I workshopped the wording of my survey recruitment questions for weeks before launching the survey. USP should experiment to find the most effective recruitment wording so that future surveys can exceed the 20% response rate consistently.
- *Continually revise and update the annual survey questions* - They should accurately capture materiality and gain insight into the psychology and behavioral motivations of ASU staff. Surveys can also make good use of branching and self-referencing questions to gain very detailed results. Survey takers should be asked how they would like to receive new information about sustainability and opportunities to participate in research. In my survey, a few questions that could have led respondents to criticize their immediate supervisors or university leadership were struck or reworded. For example, I didn't want to imply a less than ideal work environment, or unduly encourage respondents to engage in sniping. With the blessing of ASU leadership however, future research can approach more controversial subject areas.
- *Use statistical analysis* - Have this checked to account accurately for the uniqueness of any data set. Using multivariate or regression analysis on the data from my survey will allow USP to account for the fact that in my survey, most respondents were from the Tempe campus, and the fact that all focus group members were female. These types of analysis can account for this and give proper weighting to individual data points. USP can also examine the relationships between multiple variables this way. For example, researchers could investigate whether working in a medium sized office would make one more likely to support PEB, or if gender plays a role, or even if gender and office size together play a role.

Recommendations 2 -Address Specific Audiences

- *Future surveys should examine smaller segments of the ASU population* - My survey was able to identify types of workers more likely to pursue the certification, and future surveys should target these groups, to more effectively uncover patterns of behavior and common beliefs. When designing surveys, data can be brought in from other sources to determine the scope and audience. For example, future surveys could target departments that have a low uptake rate for the Seeds of Sustainability training.

Recommendations 3 - Enhance Certification Performance

- *USP should keep the certification questions as relevant, material and insightful as possible* - It is unclear currently if this is a blind spot for USP. A few questions may be outdated or not supported by research for example. At the same time, the certification should educate and motivate the user at every opportunity. Efforts surrounding the certification should be similarly oriented.
- *Create a formal definition of an office unit eligible to pursue certification* - This definition should be able to account for every ASU employee that works in an office setting. Further definitions should account for faculty and others with private offices, or those who may work in multiple office settings at once. Currently, the criteria for pursuing the certification do not appear to be defined. The Canvas page for the office certification alludes to the criteria in a linked pdf file, but that file appears to be a copy of the certification itself. It only asks an individual respondent their department and office size. To complement the formal definition, explicit inclusion criteria must be requested from the user to determine eligibility. One such criteria would be who would be allowed to pursue the certification on behalf of their office. Would multiple people need to be involved?
- *Redesign the current certification* - The way the certification is presented to the user is frankly not appealing. Many questions are crammed onto one page, and as the answer boxes are aligned on a vertical axis, swiftly clicking these boxes to rush through is a real temptation. Overall, the certification just appears crowded. Relevant definitions for terms are not provided, nor is the reasoning behind any questions provided. Simply creating more physical space between questions would be a great first improvement, and this space can eventually be augmented by supplemental material. Similar to the survey created for this project, USP should consider only including one or two questions per page. Creating a more spacious look will help USP to see the possibilities for future evolutions of the certification, and will reduce survey fatigue in the user.
- *Create a new certification for faculty and others in private offices* - These individuals have little oversight in their personal office management, and may consume inordinate energy from personal coffee makers, lamps, decorations, and other items. They can also generate inordinate waste if they have their own printer. Their relationship to other workers also needs to be examined. Often times, private offices comprise the perimeter of a building floor, with common areas in the center. Would these private offices be part of the common areas outside? Would people who work in a private office be eligible for both the office certification and a potential new one for private offices? Would workers in common areas be responsible for the triple bottom impacts of private offices in

regards to their certification performance? USP can begin to address what I believe is a regulatory gap (private offices) by thinking through these issues.

- *USP should keep an up to date official list of every office unit eligible to pursue certification* - This list will be based upon the new formal definition of an eligible office unit. If possible this list can also capture temporary offices, such as those for finite projects. USP staff should have a mechanism to keep up to date on new office units and old ones being disbanded. As USP is under the aegis of the CFO, this should be fairly straight forward. Having such a list will enable USP to conduct outreach to these offices *directly*, and maintain real time rankings for office performance on the certification. This could be displayed prominently on the appropriate ASU webpage. Some offices may not be aware they are eligible for certification, and this initiative would fix that problem.
- *USP should continue to ensure that questions on the certification itself perform effectively* - These efforts should be oriented to ascertaining compliance, material achievement on key impact indicators, and continued participation. The tiered certification structure that already exists and periodic recertification requirements are effective ways to do this. Knowledge from disparate fields like marketing, education, and statistics should inform the structure, presentation, and make up of the certification. Appropriate opportunities to educate and entertain the user while they take the certification should not be missed. Questions can evolve based upon continual learning about ASU office performance. Updates to the certification should be considered biannually. Related to this is the need to also keep the Sustainable Purchasing guidelines up to date, in coordination with relevant stakeholders at ASU. Working with the Sustainable Purchasing Research Initiative could be helpful here.

Recommendations 4 - Conduct Formal Outreach

- *This project identified CBSM (Community Based Social Marketing) as an effective framework for marketing the certification to ASU office workers* - One of the main positions of CBSM is that outreach should address the anticipated barriers to a desired behavior that a specific population perceives (McKenzie-Mohr, 2000). Marketing efforts should attempt to reach as specific user sub-groups as possible. For example, the survey revealed that the top two reasons respondents weren't interested in pursuing the certification were they didn't think they had time, or they stated they didn't care. Two separate marketing campaigns should be designed here, one to convince ASU staff why they should care, and another to show that pursuing the certification won't be a large time commitment. Outreach efforts can also make use of micro targeted multiple target marketing. An ad could be shown on an ASU staff member's page or sent to their email with messaging that accounts for their gender, department, and job role. Other users with different demographics would be shown a different ad. The best way to go about this without causing backlash will need to be considered carefully.
- *Use the wisdom of branding and storytelling* - One of the most useful subject matter expert conversations I had was with Park Howell, a Phoenix-based branding expert who believes that storytelling is key to changing behavior. I

revealed to Park that my focus group interviews and my recruitment efforts had put me in touch with a number of people that had some common traits. During my recruitment efforts, I spoke to a lot of people who held executive assistant type positions. There were some whose title was “assistant to the dean” for example. These individuals were often in charge of purchasing office supplies. The focus group volunteers brought up the fact that often, they wanted to drive greater change in their workplace, but they didn’t have the agency to do so. (Sometimes they weren’t sure what were they allowed to pursue on their own, and what needed approval from higher up). These workers often kept the office going, and sometimes closely worked with leadership. After relating this information to Park, we began to discuss the possibility that these individuals could make a big difference.

If properly leveraged and empowered, willing individuals could become “office champions.” This person would be enabled to coordinate efforts around the certification, and be the office leader in making the workplace more sustainable. Properly identifying office champions is key. They should be a motivated individual, whose job on paper doesn’t give them a great deal of agency in the workplace. If these people can be given some agency and official backing, they will be effective, and potentially more likely to maintain sustained efforts, as they will have a personal stake in maintaining their new influence in the workplace. They will be able to participate in a great story about creating a more sustainable office and university, and they will feel more appreciated in the office than they would otherwise. My research uncovered lots of motivated people, who expressed enthusiasm for the idea of a green office champion, who just need support from USP and leadership.

- *Benefit driven marketing* - The user should always know why it is worthwhile for them to give time and effort. Just one reason is that they can point to their engagement with the certification on their yearly self-evaluation, thereby increasing their value in the eyes of the university. When possible, the effort requested should match the incentive offered. ASU staff are sometimes overworked and busy, so marketing should not emphasize the negative.
- *Deploy outreach strategies in multiple forms* - A poster campaign can be effective. Perhaps a poster could be made of compostable or seedladen paper product, in a kind of neat demonstration of how the poster itself has a second life. The certification can also be marketed at fun events, at meetings, on myASU, and via email. Exclusive events for high performing offices can motivate sustained effort and create a desire to participate.
- *Competitions between offices and departments should also be encouraged* - Through the use of incentives (prizes, parties) and bragging rights. USP should attempt to create critical competitive mass among related departments, such as biology and zoology, or departments that share a building.
- *Consider designating high performing offices as flagships*- Clear examples can market the certification and inspire other offices. This could be related to a pilot program where offices that meet certain criteria could pioneer innovations.
- *Mount a multiyear marketing effort* - This could go on indefinitely. Marketing students can be brought in to assist on an ongoing basis.

- *Create a tool to evaluate the marketing efforts* - Knowing if outreach and marketing efforts are effective are critical to their ultimate success. An assessment tool should be developed to rate ongoing efforts.

Recommendations 5 - Educational Toolkit

- *Create an educational supplement* - This was an original goal of my project. The basic concept was that the toolkit could inform users why certain questions were being asked and why certain behaviors were effective and desirable. Although for this project, the toolkit did not materialize due to time and technology limitations, it should still be pursued. Informing users about the science underlying the certification will amplify efforts to market and create motivation around it. It will also create more validity for the certification in the mind of the user, and more sense of personal ownership.
- *Make the toolkit easily accessible from the certification webpage* - The toolkit should be clearly visible and inviting.
- *Create a one-page subsection* - that is designed to guide the user on how to achieve point scores on the certification. This is present on the events certification. This is useful and should be part of the toolkit for the office certification too.
- *Put educational links in the certification itself* - below the relevant questions. These links would educate the user on the background of the question. Other links could take the user to relevant on campus organizations related to sustainability.
- *Make the toolkit interactive and multimedia* - People may be more likely to watch a short video than read a short article. Mini games and animations within the toolkit can also reinforce its educational goals, and make the experience of interacting with the certification more enjoyable. If done in a compelling way, such a toolkit could be a game changing motivator, and could serve as a model for the other certifications and other institutions. Experts in video editing and simple animations should be consulted to ponder possibilities here.
- *A story and anecdote for every concept* - These stories should display successful efforts by ASU community members at being more sustainable. For example, a staff member could talk about the benefits their office saw from encouraging reusable mugs. They can almost be case studies around a particular issue, like indoor air quality. The anecdotes should be ASU centric, compelling, and ultimately designed to reduced the perceived barriers to participation that a user may feel.

Recommendations 6 - Pursue Top Down Efforts

- *ASU leadership can make a difference* - Encouraging results from the survey also point to leadership as the group most likely to support the sustainable office certification. In some cases leadership needs to approve and guide certain initiatives for them to be possible. These issues can be major or seemingly inconsequential. A few examples of areas where leadership can drive change follow.

- ASU leadership can communicate directly with the Staff Senate to discuss issues relevant to the certification. In some cases mutual approval will be needed. Liaisons between these two groups should be identified.
- Leadership has the power to make the ASU newsletter electronic, saving untold amounts of paper.
- Research subjects reported that cleaning crews regularly ignore proper recycling procedure. Leadership can address this.
- Leadership can also assist with major decisions, such as whether to distribute surveys and certification links via email or on myASU. They could consider whether certifications links could live on the myASU staff tab, as I suggest. Leadership would also need to weigh in on my recommendation to connect the annual sustainability evaluation to participation with an ASU Sustainability Certification. Going even further, participation could be mandated, as annual employee self-evaluations for sustainability already are.
- Department heads with the blessing of their superiors can also inform about sustainability efforts and distribute free sustainability starter kits to offices. Their content would be determined in the future.
- Students can also be leaders. Research subjects seemed to enjoy helping a student, and it may have helped put them at ease. Numerous student led organizations already drive change at ASU. These organizations are often closer to the ground in the sense of understanding the everyday operations of the university.

Recommendations 7 - Miscellaneous

These final recommendations are largely inspired by suggestions and insights from my research subjects

- *Target transfer and online students* - They constitute a gap that should be addressed.
- *Make Seeds of Sustainability less boring* - Multiple volunteers stated that it was boring.
- *Recognize turnover and understaffing as constant challenges.*
- *Note that staff are probably more invested in positive change than students.*
- *Address anxiety about global warming* - Numerous volunteers reported feeling anxiety about global warming and felt responsibility for the “planet dying.” I correctly anticipated this sentiment. Examining this psychology more explicitly was not within the scope of my project.. Future efforts should delve deeply into the personal fears and motivations of staff, to more effectively target CBSM efforts. If we can reduce this fear and replace it with the enjoyment of engagement, that will be invaluable.
- *Consider more solar power at the Polytechnic campus* - Respondents there stated that more solar power was needed. On a lighter note, they reported that the indoor temperature on their campus was always too cold.
- *Staff thought giveaways* - such as swag, like T-shirts, can also encourage people to engage with certification.

- *Address knowledge gaps* - Staff frequently returned to the perception of a knowledge gap, but did report that leadership seems to be supportive.
- *Use whiteboards in offices* - This would reduce waste, and could deserve point value on the certification.
- *Use the fire safety training as a model* - staff at Polytechnic recall the annual fire safety training with good humor and some mild affection, so perhaps in some way the marketing for the certification could use that as a model. Annual fire safety training was often accompanied by an event, such as BBQ in the parking lot.
- *Link annual cleaning to certification* - staff reported that offices often undergo spring cleaning efforts on an annual basis. These efforts should be linked and leveraged to certification efforts.
- *Include Polytechnic staff* - who report feeling “left out.” They felt that Tempe was the main focus of efforts, and other campuses were neglected. There is a lot of potential here to leverage campus pride and competitive spirit in driving performance. In any case, the other campuses absolutely need to feel deeply included. The Staff Council and USP can lead here.

Conclusions

This project used qualitative research to learn more about the barriers to PEB (pro-environmental behavior) perceived by full time ASU office workers. The goal of this project was to use the insights gained from my research to inform recommendations for my client that will greatly increase participation with the ASU Sustainability Certification for Offices. The recommendations also offered advice on how to increase performance with the certification, and how to enhance its content moving forward.

The results of my research were fascinating and informative. Some basic statistical analysis can effectively account for data skews, such as most respondents working at the Tempe campus, and more deeply examine the relationship between multiple variables. This analysis can also account for potential social desirability bias.

The results from the research directly inform the major questions related to this project: who are the people most and least interested in the certification and why? What barriers to PEB do ASU staff perceive; and how can ASU increase performance on its certification program? I learned that while most research subjects feel that environmentally responsible behavior is important, less than half of them are aware of the office certification. Subjects also reported a lack of knowledge and time as primary obstacles to their greater participation.

These results clearly indicate where future efforts should be directed. If ASU can inform all office workers about the existence of the certification, and effectively allay their concerns about time, effort, and other perceived barriers, then participation will assuredly skyrocket, and USP should enjoy a positive feedback loop of greater performance and participation, and continual learning.

There are many avenues for future students and staff to carry on this work. Notably, the development of a cutting edge educational toolkit supplement is not only overdue, but done with passion, could easily be its own MSUS CE. An ambitious student could work with video design students to create animations and compelling anecdotes from the ASU community. Links to games and other educational activities can be embedded within the certification itself. If various toolkit interfaces could be evaluated,

workshopped and implemented as a model for other certifications, that would be a sizable and worthwhile project.

Another standalone project could be the development of an intensive robust outreach campaign on all ASU campuses. My results have revealed where future marketing efforts should be directed. Use of modern advertising tools such as custom ads, as well as creating events, posters, and speaking to stakeholder groups. This could result in a very effective outreach effort. and could readily be adapted into a standalone MSUS CE.

This project uncovered various barriers to greater sustainability efforts among ASU office staff. It also revealed many opportunities for my client, USP, and the University moving forward. This project just scratched the surface of what is possible. ASU can achieve critical mass and a true culture of sustainability with a few directed initiatives. ASU staff have demonstrated that they have the potential to be leaders in sustainability. Proper support from USP and other stakeholders to eliminate barriers and empower individuals will guarantee that this project will have provided a critical roadmap in reaching the next level of sustainability performance at ASU.

Appendices and Acknowledgements

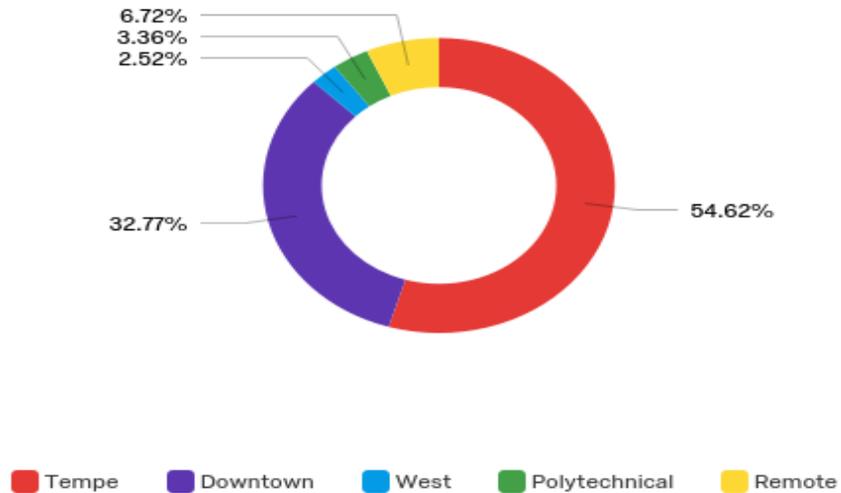
Acknowledgements

There are too many individuals to thank here, as it seemed as though everyone I interacted with, provided critical assistance for my project. ASU faculty demonstrated saintly patience with me and were inexhaustible in their encouragement. My family, and classmates provided appreciated moral support. The ASU Staff Council was particularly enthusiastic in their assistance. None of this would be possible without the good faith participation of my research subjects. The help I have received in this process will always leave me humble and grateful.

Appendix A: Survey Questions and Responses

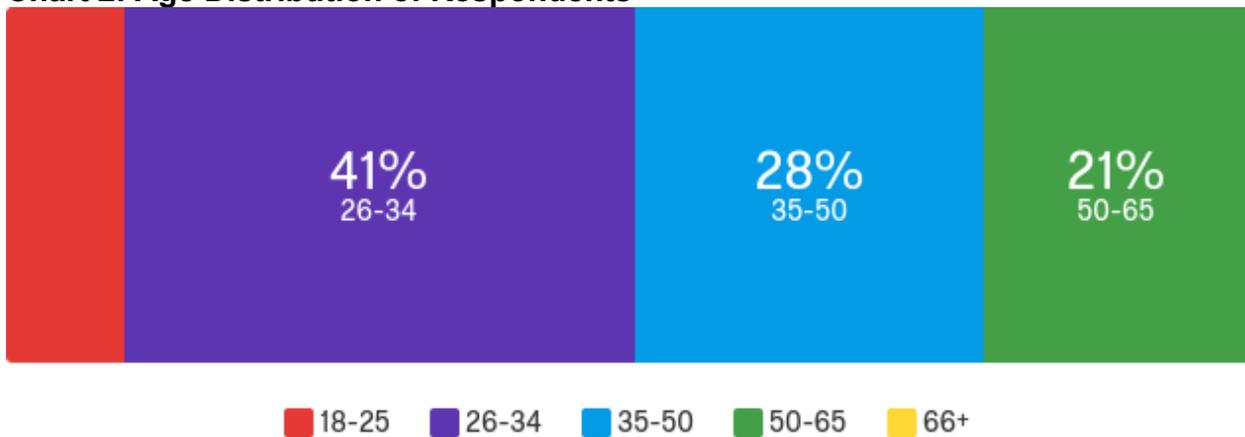
1. What campus do you primarily work at?

Chart 1: Where Respondents Work



2. What is your age range?

Chart 2: Age Distribution of Respondents



3. Which of the following best describes your job role at ASU?

Table 2: Respondent Job Roles by Campus; Chart 3: Overall Job Roles Reported

#	AWA.FIELD	Tempe	Downtown	West	Polytechnical	Remote	SIMPLETABLEWIDGET.TOTAL
1	Administrative Assistant	52.94% 9	35.29% 6	0.00% 0	5.88% 1	5.88% 1	17
2	Supervisor	70.83% 17	29.17% 7	0.00% 0	0.00% 0	0.00% 0	24
3	Entry Level	53.33% 8	26.67% 4	0.00% 0	6.67% 1	13.33% 2	15
4	Leadership	71.43% 10	14.29% 2	0.00% 0	7.14% 1	7.14% 1	14
5	Other	43.75% 21	41.67% 20	6.25% 3	2.08% 1	6.25% 3	48

SIMPLETABLEWIDGET.SHOWING_ROWS_OF



■ Administrative Assistant
 ■ Supervisor
 ■ Entry Level
 ■ Leadership
 ■ Other

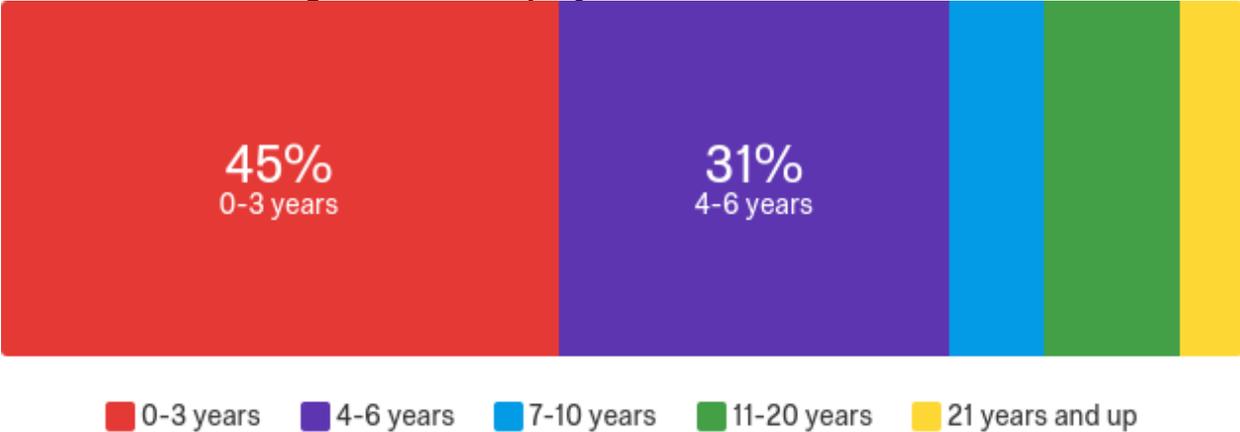
4. How long have you been working at ASU?

Table 3: Respondent Length of ASU Employment by Campus

#	AWA.FIELD	Tempe	Downtown	West	Polytechnical	Remote	SIMPLETABLEWIDGET.TOTAL
1	0-3 years	52.83% 28	37.74% 20	3.77% 2	1.89% 1	3.77% 2	53
2	4-6 years	62.16% 23	24.32% 9	2.70% 1	2.70% 1	8.11% 3	37
3	7-10 years	55.56% 5	33.33% 3	0.00% 0	0.00% 0	11.11% 1	9
4	11-20 years	46.15% 6	30.77% 4	0.00% 0	15.38% 2	7.69% 1	13
5	21 years and up	50.00% 3	50.00% 3	0.00% 0	0.00% 0	0.00% 0	6

SIMPLETABLEWIDGET.SHOWING_ROWS_OF

Chart 4: Overall Length of ASU Employment

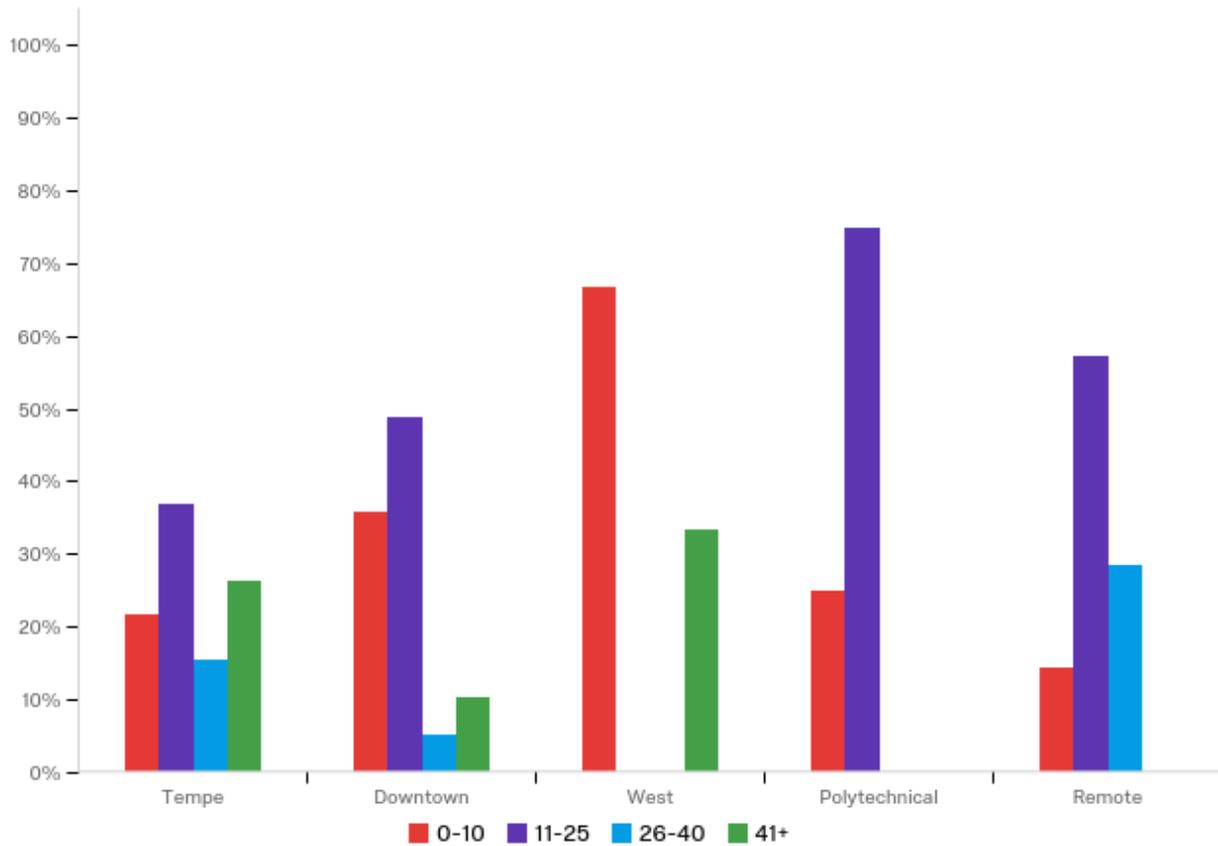


(7-10 years, 8%; 11-20 years 11%; 21 years and up, 5%. Majority of respondents with 6 or fewer years of employment were found mostly at Tempe and Downtown campuses. The other campuses had much more evenly distributed ages of respondents.

5. Please select the number range that best describes the number of people working in your office.

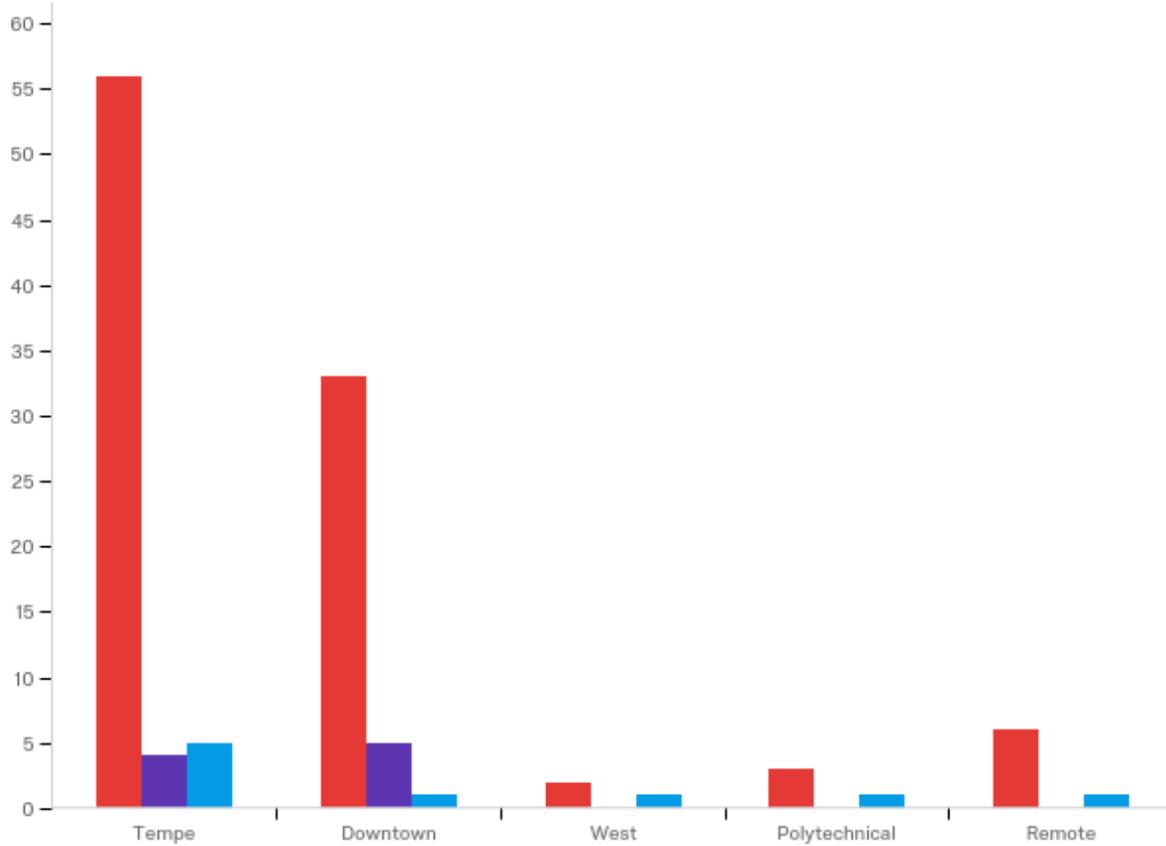
Chart 5: Office Size by Campus

Office Size by Campus



6 - Would you consider yourself knowledgeable about environmentally friendly behavior in the office?

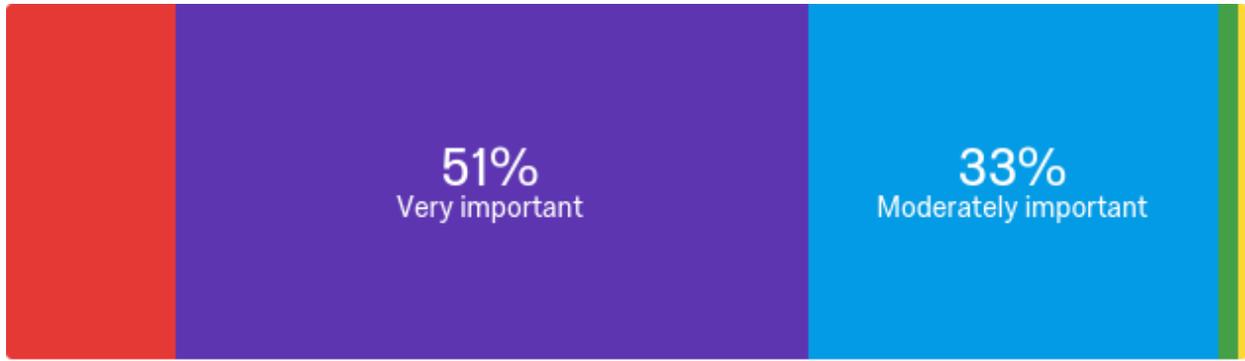
Chart 6: Respondents' Self-Reported Knowledge of Environmentally Friendly Behavior



Red = Yes; Purple = No; Blue = Unsure.

7. Q10 - How important to you is environmental responsibility in the office?

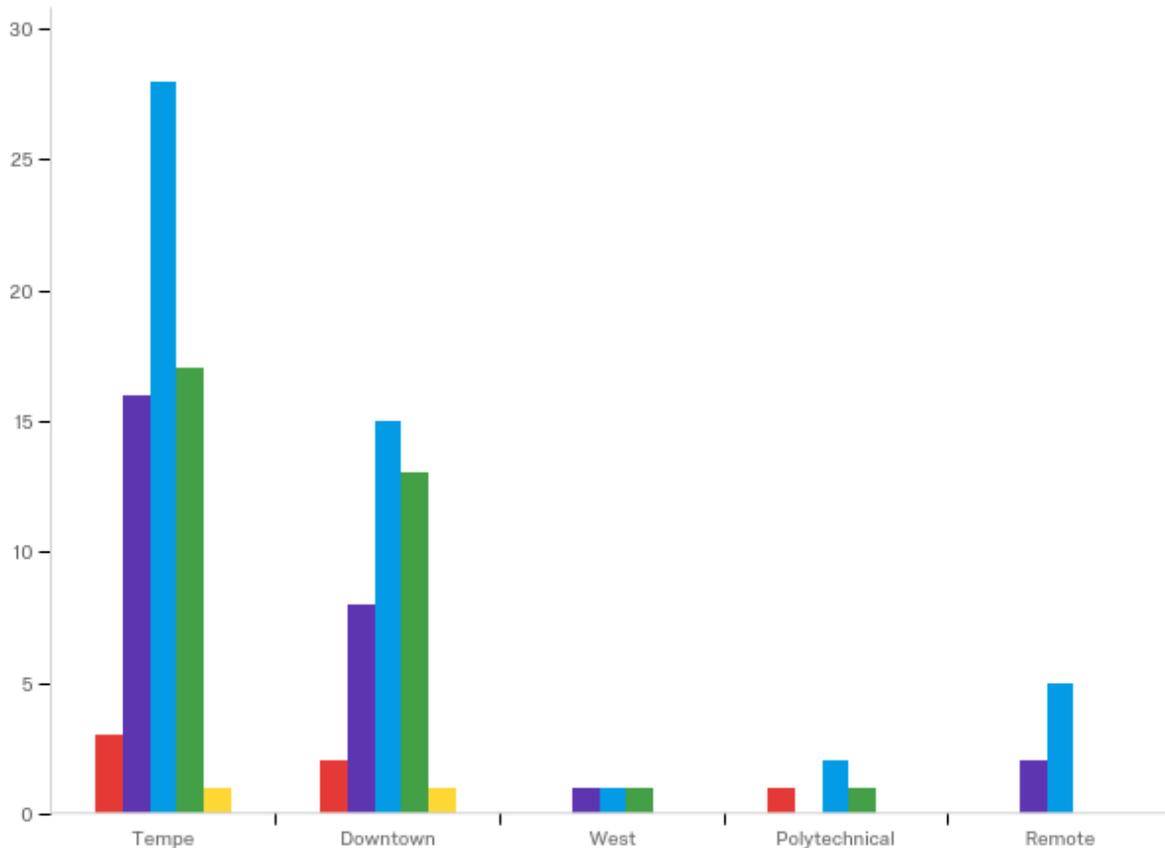
Chart 7: Respondent Perceptions of the Importance of Environmental Responsibility



■ Extremely important
 ■ Very important
 ■ Moderately important
 ■ Slightly important
■ Not at all important

(Extremely important = 14%; Slightly important = 2%; Not at all important = 1%).
 8. To what extent do you think it will be difficult to make your office more environmentally friendly?

Chart 8: Perceived Improvement Difficulty by Campus



(Red = Very difficult; purple = difficult; blue = neither easy nor difficult; green = easy; yellow = very easy).

9 - To what extent do you agree that being encouraged to engage in environmentally friendly behavior is challenging?

Chart 9: (next page) Is Being Encouraged Challenging?

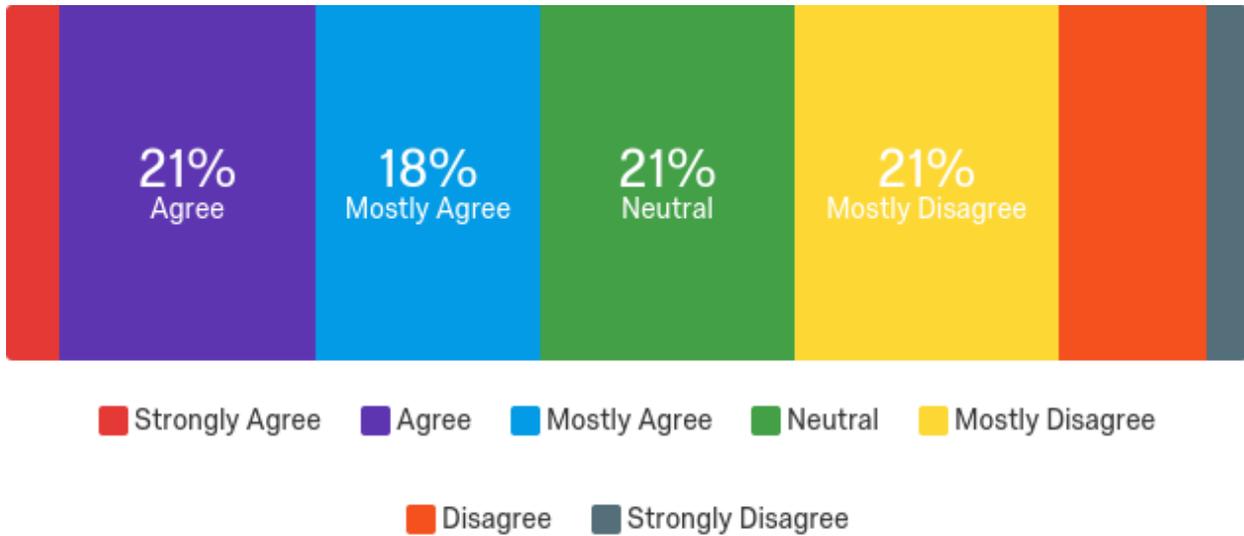


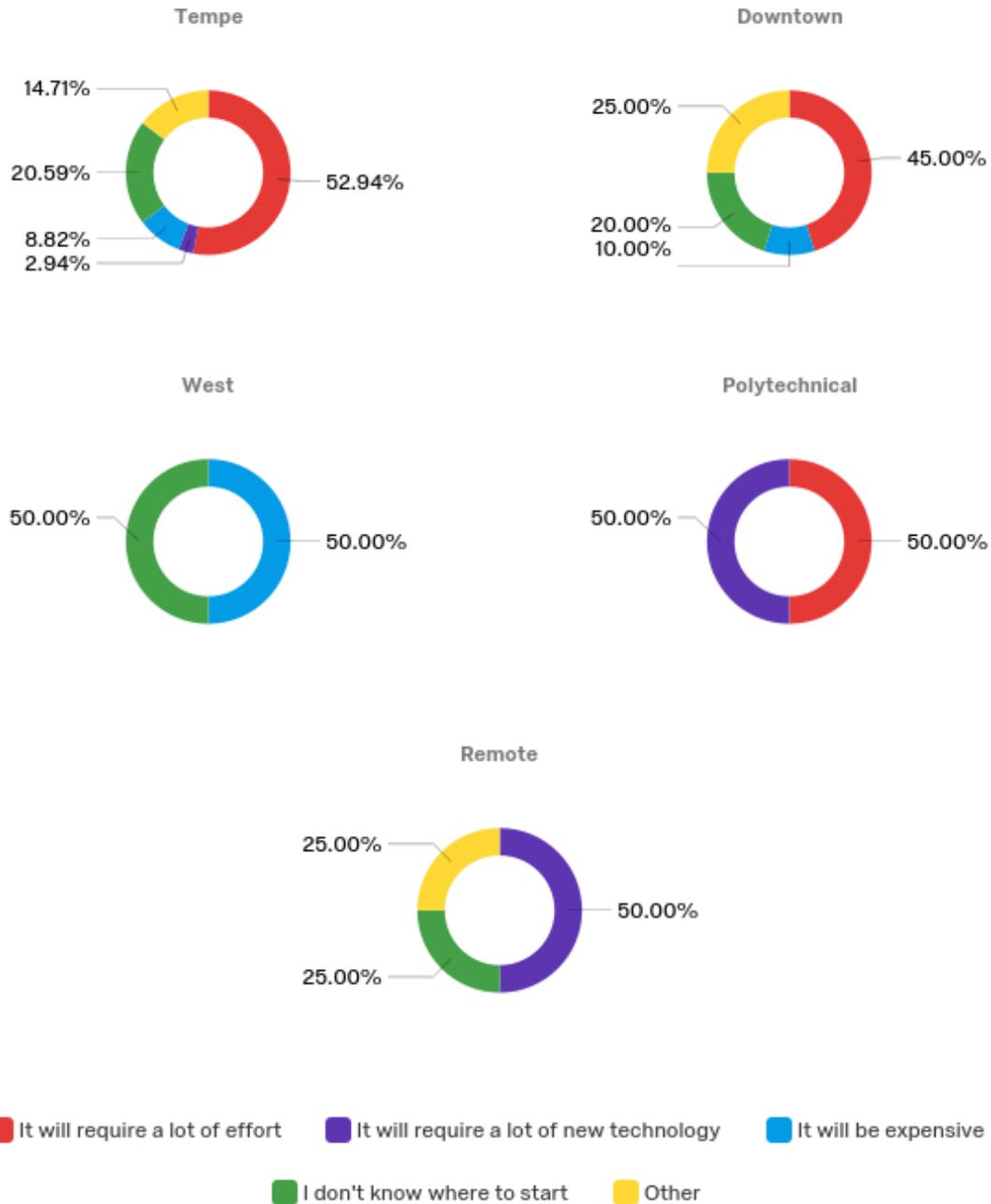
Table 4: Perceived Challenge by Campus

#	AWA.FIELD	Tempe	Downtown	West	Polytechnical	Remote	SIMPLETABLEWIDGET.TOTAL
1	Strongly Agree	20.00% 1	60.00% 3	0.00% 0	20.00% 1	0.00% 0	5
2	Agree	54.17% 13	29.17% 7	8.33% 2	4.17% 1	4.17% 1	24
3	Mostly Agree	61.90% 13	33.33% 7	0.00% 0	0.00% 0	4.76% 1	21
4	Neutral	50.00% 12	41.67% 10	0.00% 0	0.00% 0	8.33% 2	24
5	Mostly Disagree	56.00% 14	32.00% 8	0.00% 0	4.00% 1	8.00% 2	25
6	Disagree	64.29% 9	28.57% 4	7.14% 1	0.00% 0	0.00% 0	14
7	Strongly Disagree	50.00% 2	0.00% 0	0.00% 0	25.00% 1	25.00% 1	4

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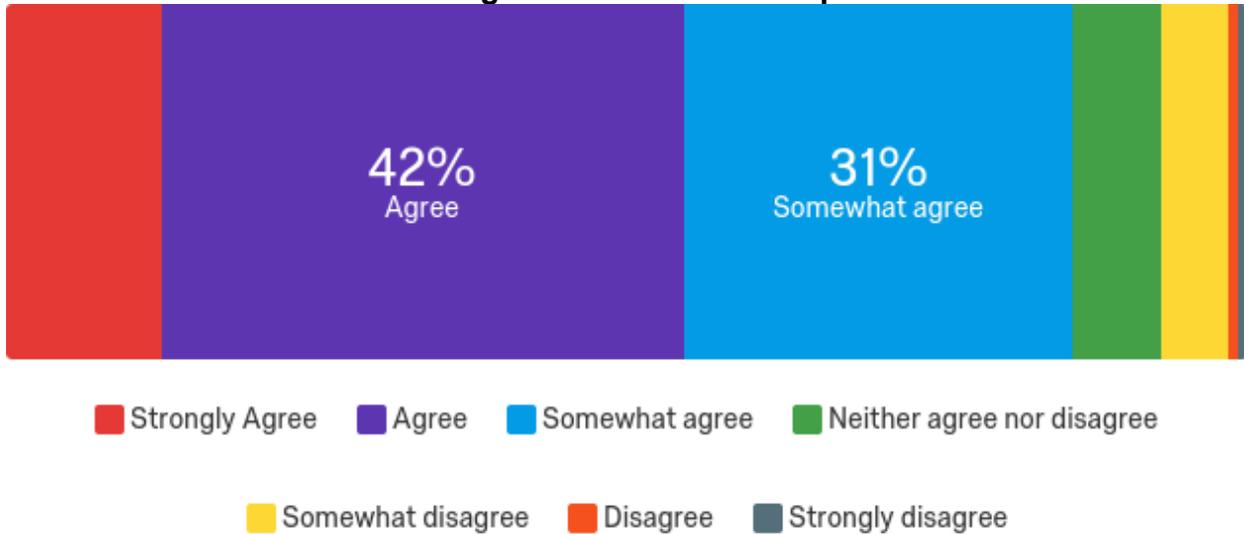
10 - If you feel that making your office more environmentally friendly would be challenging, can you tell us why?

Chart 10: Why Respondents Perceive a Challenge



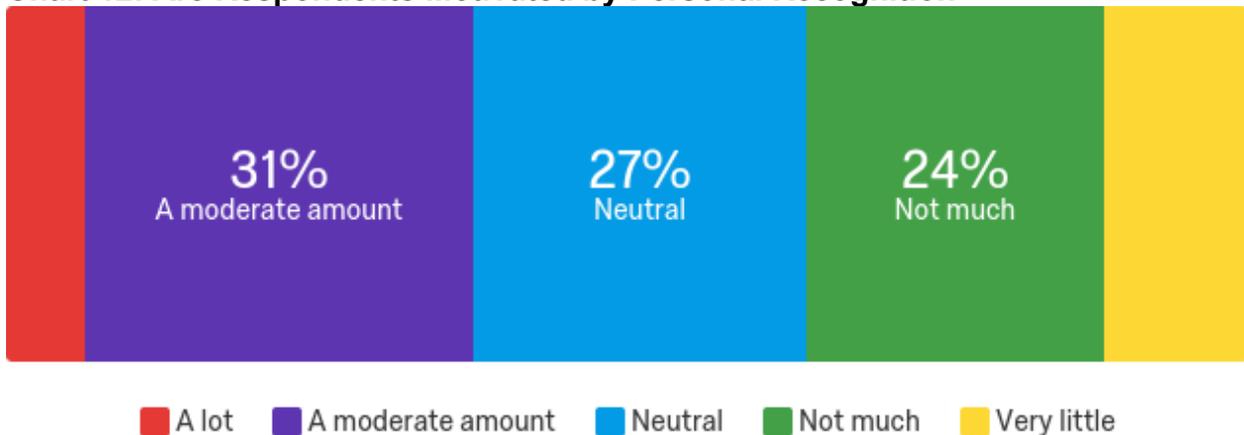
11- Would having a better understanding of how to engage in environmentally friendly behavior by itself be sufficient to encourage you to engage in environmentally friendly behavior?

Chart 11: Greater Understanding Alone Motivates Respondents



12 - To what extent would personal recognition for engaging in environmentally friendly behavior motivate you to engage in environmentally friendly behavior?

Chart 12: Are Respondents Motivated by Personal Recognition



13 - To what extent would negative incentives (penalties) motivate you to engage in environmentally friendly behavior?

Chart 13: (see next page) Do Penalties Motivate Respondents



14 - How would you rate the efforts of your office in creating a more environmentally friendly workplace? Slider bar question from scale of one to ten.

Chart 14: Respondents Perception of Efforts Towards Sustainability To Date

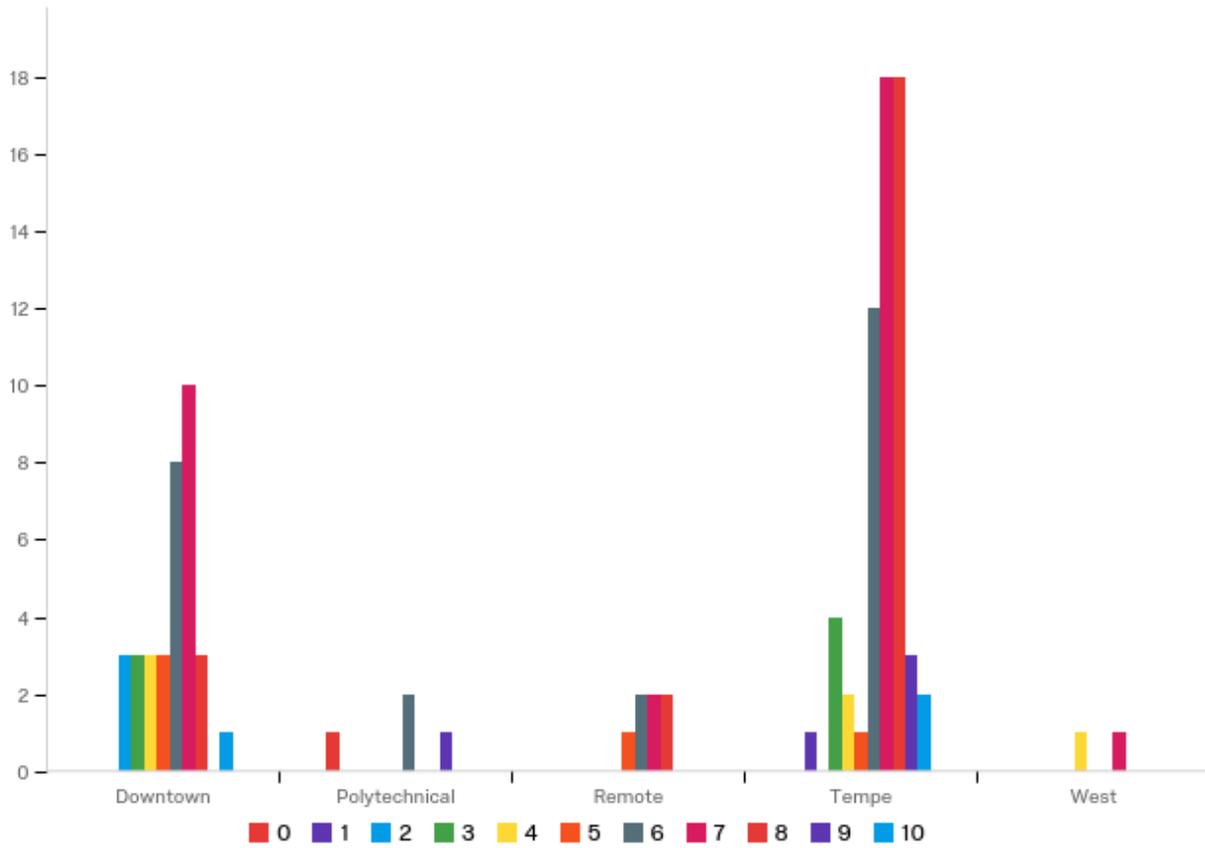
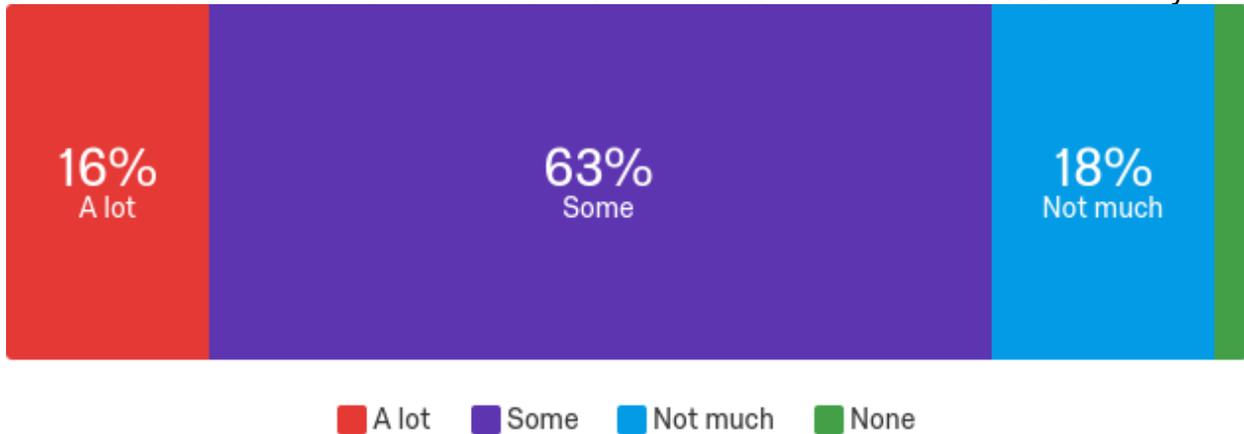


Chart 15: Average Respondent Rating by Campus



15 - To what extent have previous efforts resulted in making your office more environmentally friendly?

Chart 16: How Much Have Previous Office Efforts Resulted in Greater Sustainability



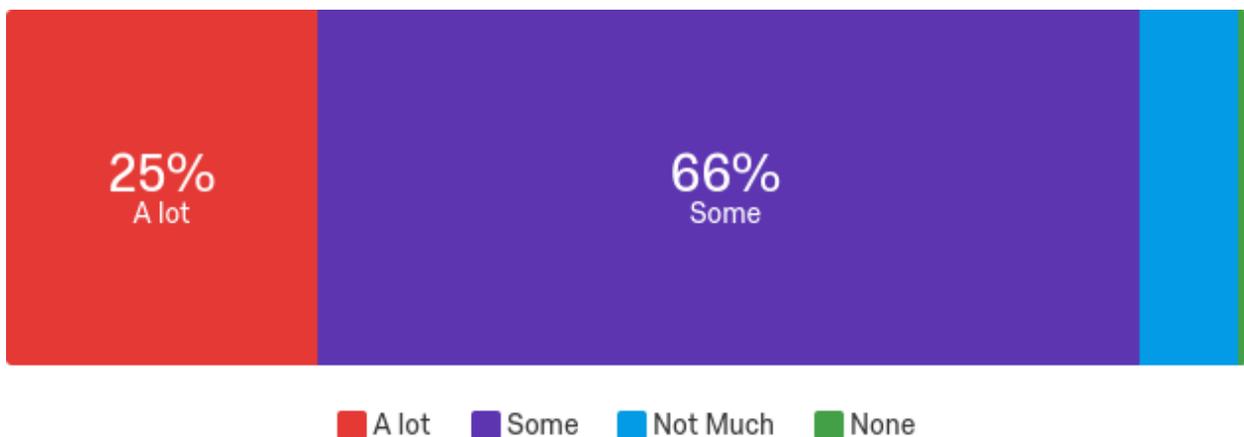
(Across all campuses)

16 - To what extent do you think engaging in environmentally friendly behavior could be improved in your office?

Table 5; Chart 16: Perceived Room for Improvement (by campus; overall)

#	AWA.FIELD	Tempe	Downtown	West	Polytechnical	Remote	SIMPLETABLEWIDGET.TOTAL
1	A lot	53.57% 15	28.57% 8	0.00% 0	7.14% 2	10.71% 3	28
2	Some	56.76% 42	33.78% 25	2.70% 2	1.35% 1	5.41% 4	74
3	Not Much	66.67% 6	33.33% 3	0.00% 0	0.00% 0	0.00% 0	9
4	None	0.00% 0	0.00% 0	0.00% 0	100.00% 1	0.00% 0	1

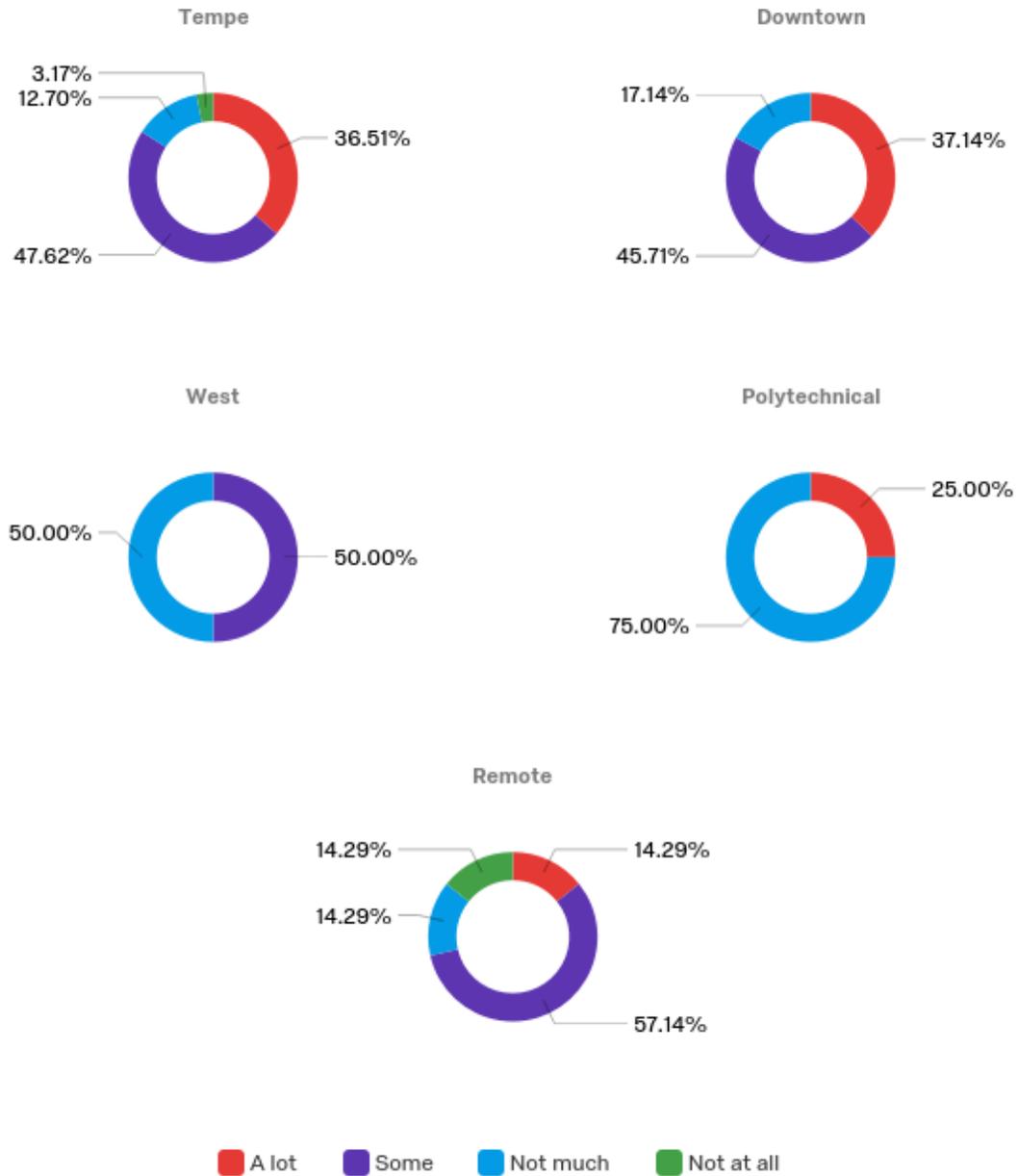
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(Across all campuses)

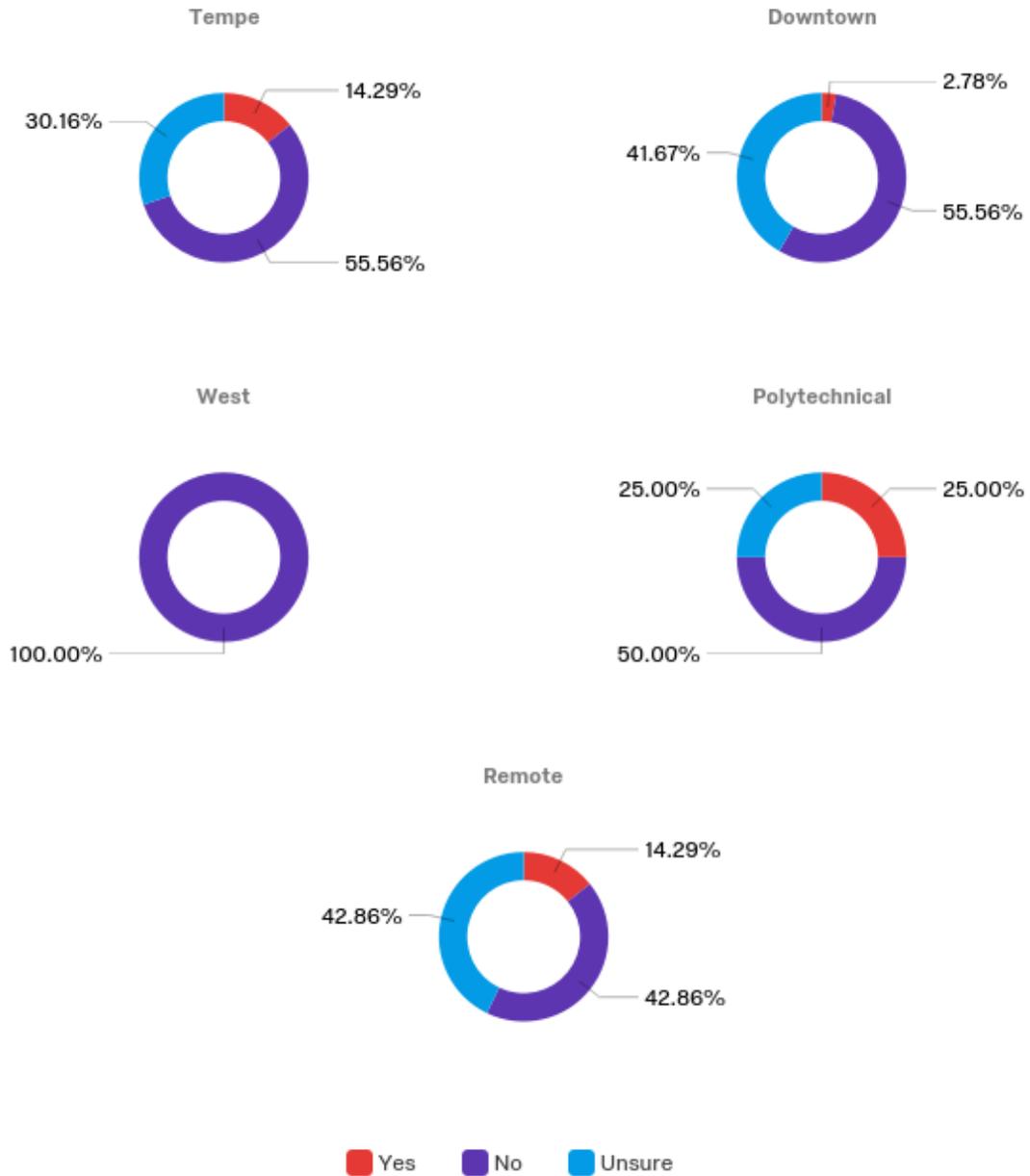
17 - To what extent does ASU support you about how to be more environmentally friendly in the office?

Chart 17: Perceptions of University Support



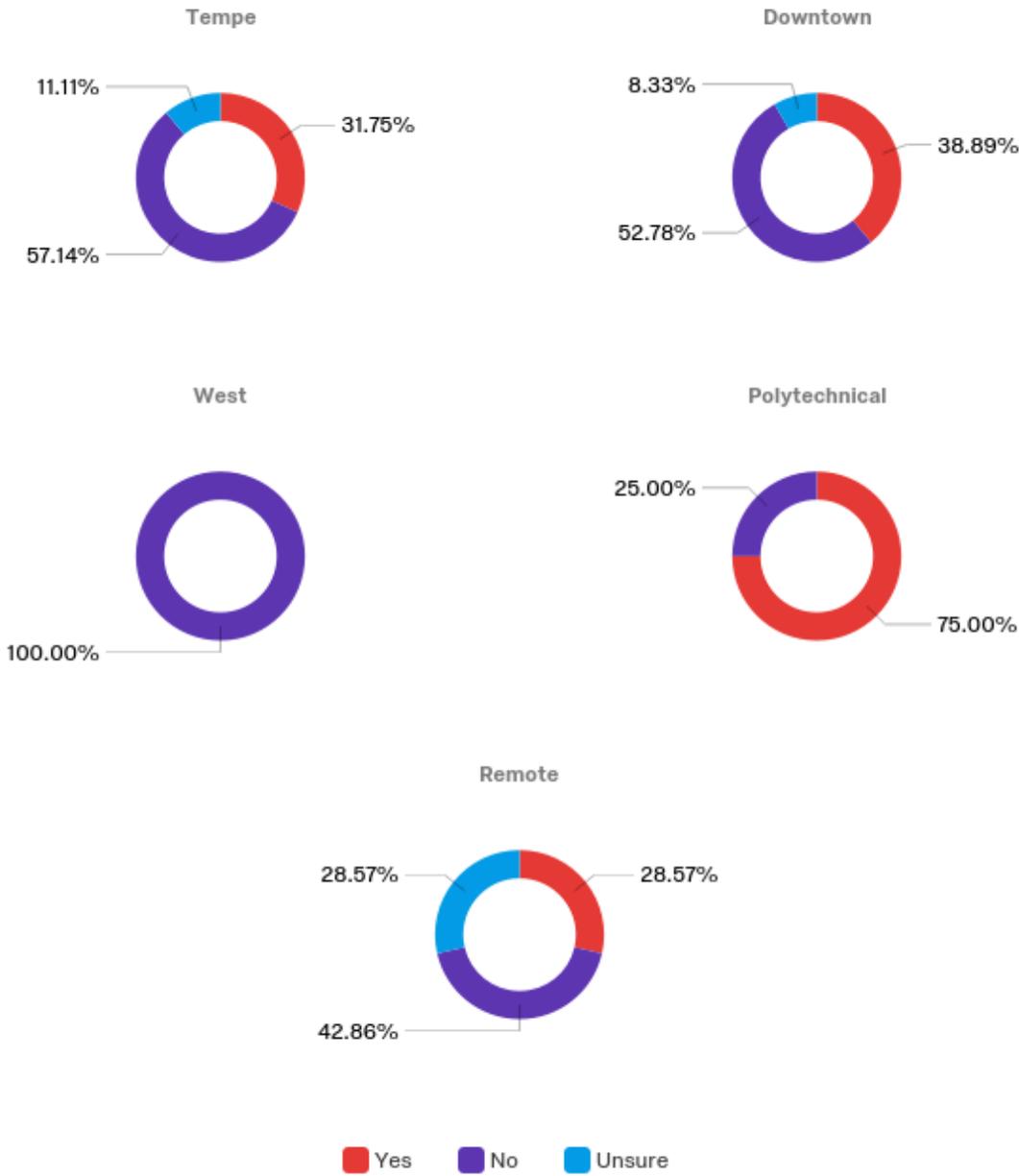
18 - Does your office have an official or unofficial leader for environmentally friendly behavior?

Chart 18: Presence of Green Office Leader by Campus



19 - Have you heard of the ASU Sustainability Certification for Offices?

Chart 19: Certification Awareness by Campus



20 - Are you interested in learning more about or pursuing the ASU Sustainability Certification for Offices?

Chart 20: Interest in Certification by Campus



Table 6-9: Breakdown of Interest by Job Role, Age, Length of Employment, Office Size and Campus

#	AWA.FIELD	Administrative Assistant	Supervisor	Entry Level	Leadership	Other	SIMPLETABLEWIDGET.TOTAL
1	Definitely yes	18.18% 4	9.09% 2	13.64% 3	31.82% 7	27.27% 6	22
2	Probably yes	17.24% 5	27.59% 8	13.79% 4	6.90% 2	34.48% 10	29
3	Maybe	15.38% 6	28.21% 11	5.13% 2	7.69% 3	43.59% 17	39
4	Probably not	9.09% 2	4.55% 1	27.27% 6	4.55% 1	54.55% 12	22
5	Definitely not	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0

SIMPLETABLEWIDGET.SHOWING_ROWS_OF

#	AWA.FIELD	18-25	26-34	35-50	50-65	66+	SIMPLETABLEWIDGET.TOTAL
1	Definitely yes	14.29% 3	23.81% 5	23.81% 5	38.10% 8	0.00% 0	21
2	Probably yes	13.79% 4	44.83% 13	34.48% 10	6.90% 2	0.00% 0	29
3	Maybe	2.56% 1	46.15% 18	30.77% 12	20.51% 8	0.00% 0	39
4	Probably not	9.09% 2	45.45% 10	18.18% 4	27.27% 6	0.00% 0	22
5	Definitely not	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0

SIMPLETABLEWIDGET.SHOWING_ROWS_OF

#	AWA.FIELD	0-3 years	4-6 years	7-10 years	11-20 years	21 years and up	SIMPLETABLEWIDGET.TOTAL
1	Definitely yes	31.82% 7	31.82% 7	9.09% 2	13.64% 3	13.64% 3	22
2	Probably yes	41.38% 12	27.59% 8	17.24% 5	13.79% 4	0.00% 0	29
3	Maybe	51.28% 20	35.90% 14	2.56% 1	7.69% 3	2.56% 1	39
4	Probably not	45.45% 10	36.36% 8	4.55% 1	9.09% 2	4.55% 1	22
5	Definitely not	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0

SIMPLETABLEWIDGET.SHOWING_ROWS_OF

#	AWA.FIELD	0-10	11-25	26-40	41+	SIMPLETABLEWIDGET.TOTAL
1	Definitely yes	22.73% 5	40.91% 9	9.09% 2	27.27% 6	22
2	Probably yes	24.14% 7	37.93% 11	24.14% 7	13.79% 4	29
3	Maybe	30.77% 12	48.72% 19	5.13% 2	15.38% 6	39
4	Probably not	27.27% 6	40.91% 9	13.64% 3	18.18% 4	22
5	Definitely not	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0

SIMPLETABLEWIDGET.SHOWING_ROWS_OF

#	AWA.FIELD	Tempe	Downtown	West	Polytechnical	Remote
1	Definitely yes	22.22% 14	16.67% 6	0.00% 0	25.00% 1	12.50% 1
2	Probably yes	30.16% 19	13.89% 5	0.00% 0	50.00% 2	37.50% 3
3	Maybe	31.75% 20	44.44% 16	50.00% 1	0.00% 0	25.00% 2
4	Probably not	15.87% 10	25.00% 9	50.00% 1	25.00% 1	12.50% 1
5	Definitely not	0.00% 0	0.00% 0	0.00% 0	0.00% 0	12.50% 1
		63	36	2	4	8

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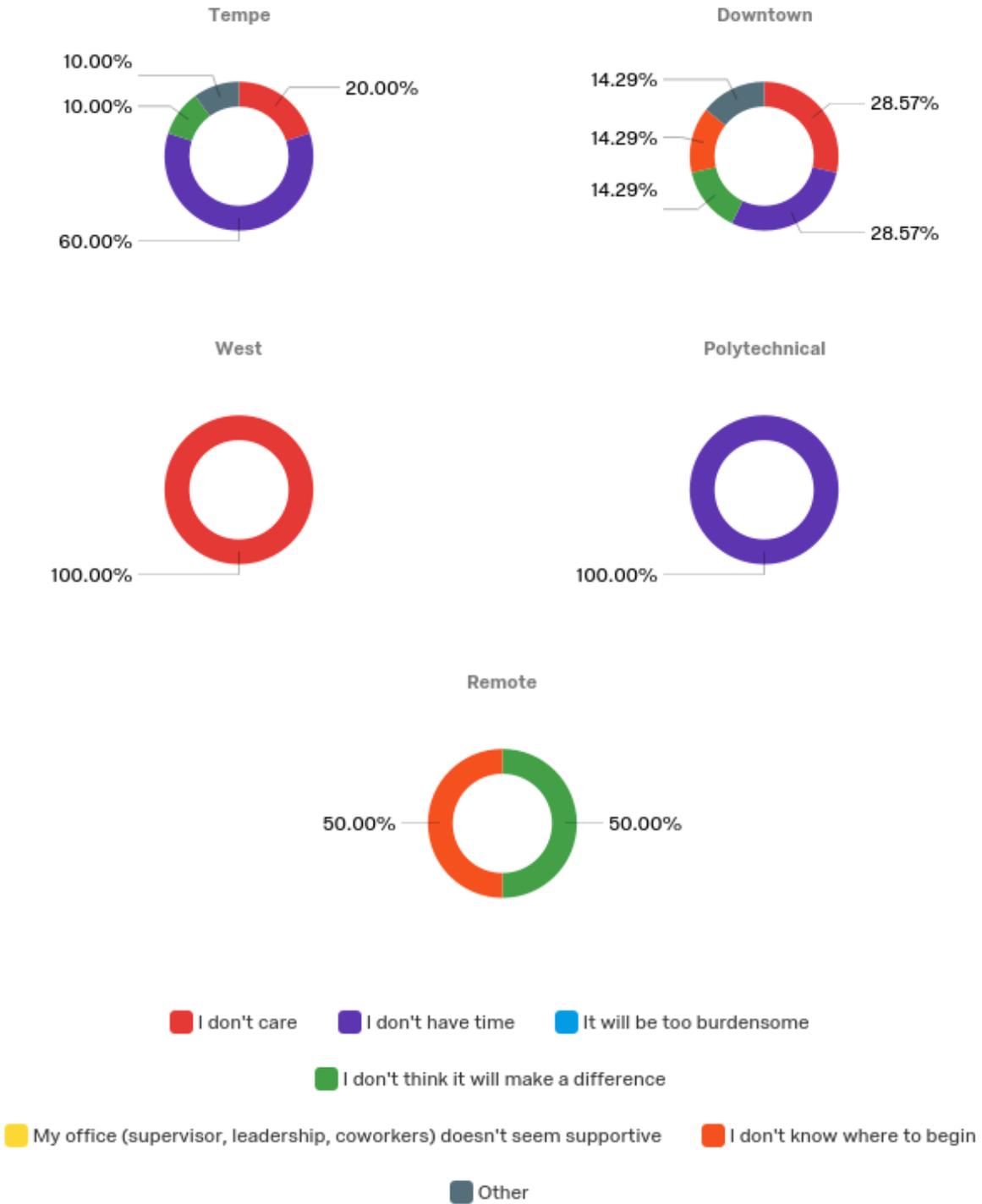
21 - If you are interested in the ASU Sustainability Certification for Offices, what has prevented you from learning more or pursuing the certification?

Chart 21: Why Certification Not Pursued



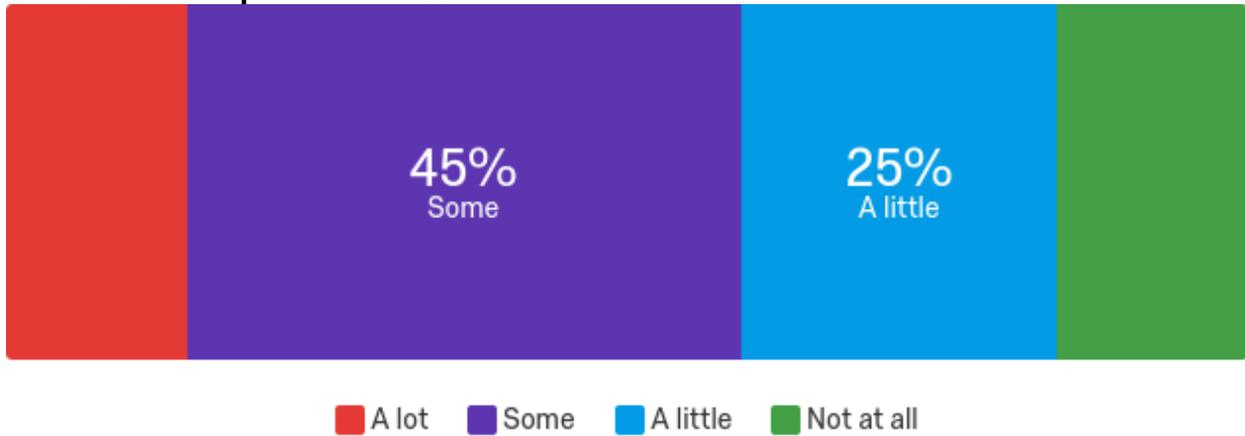
22 - If you are not interested in learning more or pursuing the ASU Sustainability Certification for Offices, can you tell us why?

Chart 22: Reasons for Disinterest in Certification



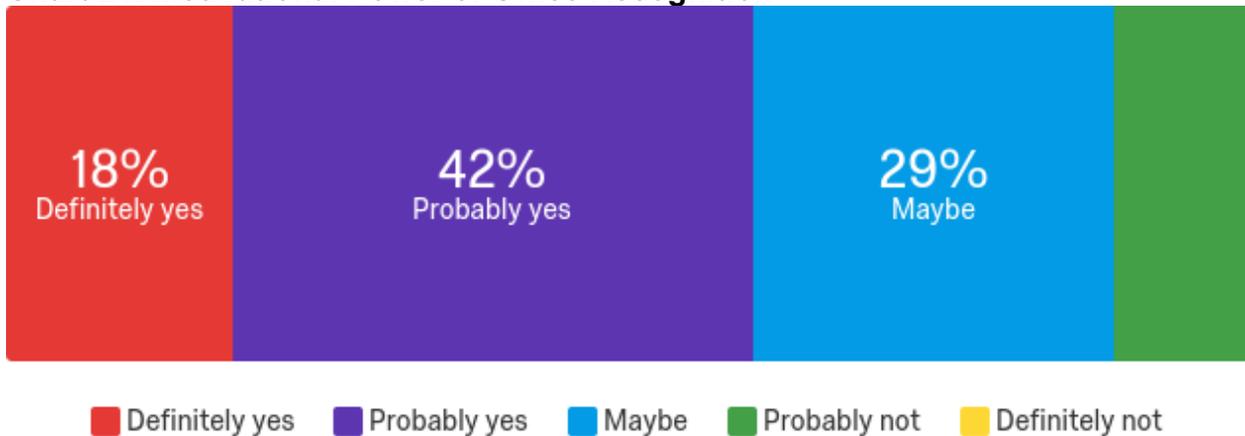
23 - To what extent do you think pursuing the ASU Sustainability Certification for Offices would benefit you personally?

Chart 23: Perception of Personal Benefit



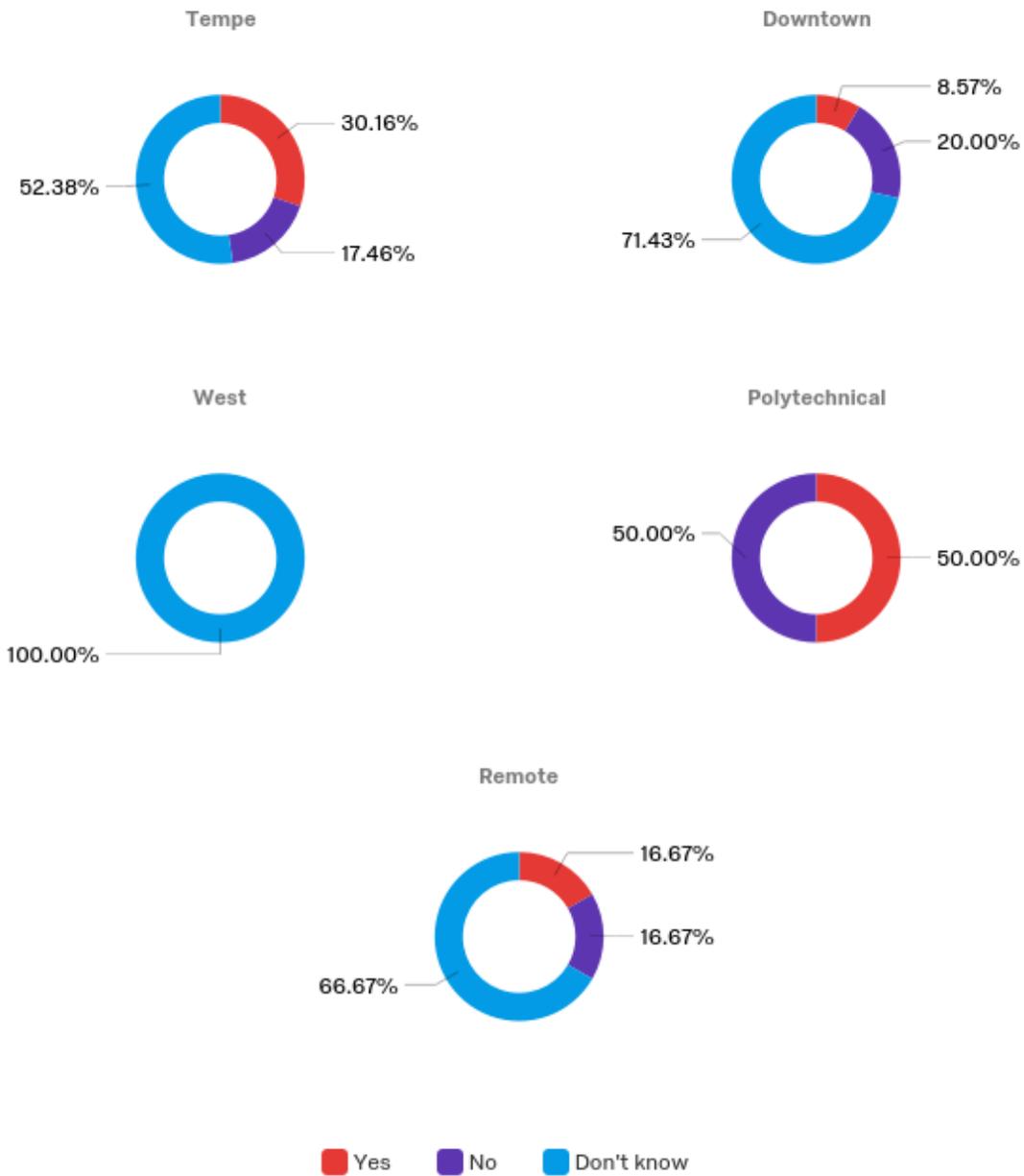
24 - If your office (but not you personally) was officially recognized as being environmentally friendly or sustainable, would you be more likely to engage in environmentally friendly behavior?

Chart 24: Motivational Power of Office Recognition



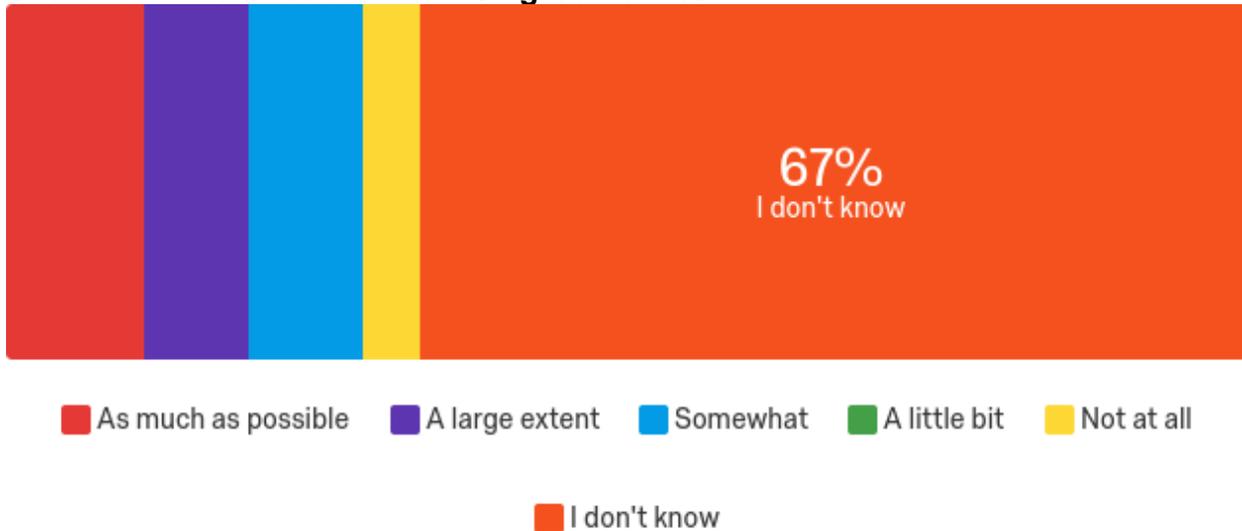
25 - Is your office aware of ASU's Sustainable Purchasing Guidelines?

Chart 25: Awareness of Guidelines by Campus



26 - If your office is aware of ASU's Sustainable Purchasing Guidelines, to what extent does your office follow them?

Chart 26: Adherence to Purchasing Guidelines



Focus Group and Interview Questions

Interview Questions

1. Can you tell me what your job at ASU is?
2. How were you first introduced to thinking about environmentally friendly behavior when you started working at ASU, and how did it resonate with you?
3. Does your office have a formal or informal leader in encouraging environmentally friendly behavior in your office? (yes/no okay here).
4. If you know about or are interested in the Office Sustainability Certification at ASU, what has prevented you from learning more or pursuing the certification? (possible prompt: ask them if leadership or supervisor support is a factor)
5. If you have participated in the Office Sustainability Certification, what is your opinion? What is the good and the bad?
6. How do you think USP could better market the Office Sustainability Certification moving forward?
7. What would motivate you or your office to participate in the Office Certification? Examples could include competition, awards, prizes, individual or office recognition, etc.
8. Is there anything you would like to add that you think would help the research team understand barriers and opportunities in relation to environmentally friendly behavior in the office?

Interview Notes - Shane H. (West Campus) - March 1st.

1. Manager of learning services. Fletcher. He supervisor of staff aids and middle management. Supervisor of 12.

2. April 2006. Nascent stages of sustainability practices. On fringe on West campus? On tempo at first (info specialist). Not invited to meetings. Not a part of decision
3. First started with document reformatting (to conserve paper) e-records (google docs) cut down on consumption of materials. Started at personal level.
4. Himself is informal leader. He is on sustainability staff council and green devil network (everyone can do something)
5. He does know about it, and working toward cert. Other units in bldg, no control over. (biggest challenge) Packet for green purchasing.....(ordering) do blue bag.
6. Gives good incentives. Something to point to saying (tangible reward. pride) BAD is have to avoid being too preachy
7. On provost level push at campus level (want live up to) (create competition between campuses! Don't call tempo main campus) makes it fun. (maybe an innovate)
8. ASU green purchasing guidelines followed
9. Anything else? (leverage personal fervor, help them encourage rest of office. (staff says I don't know sometimes about sustainability) (wants sorting area at West) less onus on zero waste to coordinate across all campuses. (all office use reusable cup). (finds a second in command) show baby steps.

Focus Group Questions (Across all groups not including follow up questions that arose naturally)

1. Can you tell us what your job at ASU is?
2. What does it mean to you to engage in environmentally friendly behavior in the office?
3. What is your opinion of efforts to date in making your office more environmentally responsible?
4. Does your office have a formal or informal leader in encouraging environmentally friendly behavior in your office? (yes/no okay here).
5. Can you tell us what you know about efforts to make ASU more environmentally friendly, including awareness of various programs like the Office Sustainability Certification?
6. If you know about or are interested in the Office Sustainability Certification at ASU, what has prevented you from learning more or pursuing the certification? (possible prompt: ask them if leadership or supervisor support is a factor)
7. If you are aware of and participate in the Office Certification currently, what is your opinion? What are your favorite and least favorite aspects of the program?
8. What would motivate you or your office to participate in the Office Certification? Examples could include competition, awards, prizes, individual or office recognition, etc.
9. Is there anything you would like to add that you think would help the research team understand barriers and opportunities in relation to environmentally friendly behavior in the office?

Focus Group Notes -Tempe (March 12)

3 Participants:

Karin - Business Ops (mid level purchasing responsibilities, office of about 100)

Lynn - Midlevel (2 staff under, work with 1000 students, engineering school)

Katie - Midlevel (engineering school)

The members at various times provided insights to my questions, including:

1. 2 of 3 were aware of blue bag program.
2. Katie - views sustainable efforts as “using your brain.” Be aware of hard to change habits, and have pride.
3. Karin - mentions a skill and knowledge deficit about sustainable behavior and support.
4. Lynn - little effort seen in office, suggests guilt trips as possible strategy.
5. Karin - office efforts informal to date. Also, for future efforts to be more effective, advanced planning is required.
6. None of the members reported a formal sustainability leader in their offices.

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