

**Greener Golf:
Promoting a More Sustainable Game**

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Executive Summary

At a confluence of accelerating climate change, unprecedented technological advancement, and increasing corporate and government transparency, global systems are reaching a level of complexity never seen before. Much about how the future will play out is unknown. But what is clear is the need for a more sustainable structure to all organizations, and only those that are willing and able to adapt will survive. Few industries have a greater need for this change than golf, a sport that has shown significant decline in social and cultural relevance in recent decades due to controversial business practices and varying perspective on environmental impact. For this reason, Greener Golf was formed. Greener Golf seeks to help businesses prepare for this needed level of resiliency, and any organizations or individuals willing to partner with us will not only adapt but flourish in what many have dubbed the “next industrial revolution”.

Greener Golf aims to address one of the least sustainable industries in one of the least sustainable cities, Phoenix, Arizona. Golf was chosen as the specific focus due to its significant impact on both the landscape of the state and its water reserves. The proposal began by calling for several improvements to water irrigation infrastructure and landscaping at one golf course in the valley. In time, however, new opportunities were identified, and the project took on a different form; one that had the potential to get at the core needs of the golf industry while reaching a larger audience. It was at this point that Greener Golf was reestablished as a driving force for sustainability advocacy and education. The vehicle for this advocacy is now GreenerGolf.org, a platform where golf managers, workers, vendors, players, and entrepreneurs alike can come to learn about sustainability efforts and solutions in the golf world. It also serves to connect a network of like-minded individuals with the common goal of bringing sustainability to the sport they love. With the right vision and partnerships, a robust, adaptable, resilient, and inclusive business model can be achieved, elevating the game for future generations.

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This serves as a detailed report of strategies implemented to tackle one of the most significant environmental, economic, and social challenges in Arizona: sustainable water consumption in the golf industry. Keeping in mind the myriad of waste issues that challenge most golf courses, the project began with an ambitious approach to address them all. Initially favoring a holistic approach, the intention was to address not only water consumption, but also energy use, waste reduction, and to incorporate a large campaign for community education and sustainability advocacy. But as things progressed, the scope narrowed, instead focusing on the core issue of water combined with a robust community sustainability education and advocacy plan. This was due to two significant revelations.

First was the recognition that water was truly central to most sustainability challenges, and therefore required the most attention. Water dictates how land is used, what plants can grow, and what wildlife can inhabit it. These are of particular importance in Arizona where the natural desert landscape has been so drastically altered over the past millennia to suit the growing civilization. “Besides climate change, how we manage water for our collective use will be the largest challenge of this century” (Winston, 2014, p. 42). There is truth to this prediction that elevates the necessity of this focus. When analyzing water statistics, it is good to gain some perspective on the true size of demand. An average golf course in the U.S. consumes approximately 300,000 gallons of water per day for irrigation. However, a typical desert course like one in the Southwestern U.S. uses closer to 1 million gallons per day. If the average U.S. citizen uses around 100 to 200 gallons of water per day, the amount of water used by a single such course would be equivalent to the water use of all the individuals in a small town (Hiskey, 2010). As the global population increases, so too are the expected water demands. There is a correlation between the diminishing reserves of potable and farm irrigation water and the increased demands and privatization of water by non-essential and for-profit organizations. As such, the UN Environment Programme has recently stressed the need to decouple water use from economic growth in order to prevent nearly two billion people from experiencing water scarcity by 2030 (United Nations Environment Programme, 2015).

The second revelation was that developing a sustainable mindset is largely a practice in human psychology. McNall and Basile (2013) highlight the challenges with overcoming human

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nature stating that “we underestimate risk, we resist altering our beliefs, attitudes, and habits” and “we look for facts to confirm what we already know” (p. 299). At the core of any sustainability initiative is the need to change minds about many practices that have become normalized by society and to help people rethink what is possible. This takes time and hard work and must happen through education and advocacy. If individuals can overcome their own biases and habits in one area, like water conservation, it is much more likely they can also apply these same disciplines in important areas like energy and waste. This area between the problem of water scarcity and the need for education is where Greener Golf would find its opportunity. And this was the basis for Greener Golf’s web-based education and advocacy campaign which seeks to provide golf stakeholders the resources and support to make informed decisions about their impact on the environment and community. In order to provide adequate supports, it was important to first understand the golf sustainability landscape which involved discovering stakeholders’ pain and gain points and to gain knowledge on what efforts were already being done in the field.

Water sustainability is an important issue in golf. Despite the outward appearance of excessive and irresponsible land use combined with outdated business models lacking future mobility, much of the golf industry is trying to make greener strides. Efforts to bring these issues into check are still in their infancy, but organizations like the USGA (2012) are taking steps toward establishing sustainability standards while maintaining and growing the appeal for the sport. And groups like the GEO Foundation (2019), are working in the same vain as this project, searching for ways to bring sustainable practices to golf. However, the field of golf course sustainability is still niche and requires more attention and advocacy to achieve an ideal.

This project began with a concern for the environmental wellbeing of the local Phoenix metro valley, deemed one of the most unsustainable cities in the world (Walters, 2018). Although Phoenix’s environmental problems are numerous, golf courses were an obvious choice as they are inherently wasteful of precious water resources. Golf has developed a bad reputation among many in the past few decades with the gradual societal shift toward environmental justice. Although opinions on the matter are strong, it is important to weigh all alternatives before demonizing the sport. Water demands from desert courses are high, but in an urbanized setting

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like Phoenix land, if not occupied by a golf course, would most likely be taken over by housing or commercial development. It could be argued that, from an environmental perspective, a golf course, however unnaturally greened and maintained, would be better than more housing, roads, parking lots, businesses, or factories. For such developments the environmental sustainability issues can be far more widespread, nebulous, and harder to control than a golf course where the primary impact is solely water use. Greener Golf aims to promote golf as, although not perfect, a much better alternative for land use in a city. Phoenix is home to over 200 golf courses. With the average golf course occupying roughly 150 acres of land, this translates to over 30,000 acres of once-desert land now being irrigated and greened with mostly non-renewable water sources. It was also quickly apparent that water conservation, although mainly an environmental impact, had social and economic implications as well which could be leveraged for change. This was enough to begin determining a scope and plan for action.

Before Greener Golf evolved its scope to focus on online outreach it began as a venture to reshape one golf course in the Phoenix valley. Despite this shift, much of the initial proposal, feasibility study, work breakdown structure, and Gantt chart were reworked and made available to a new and wider range of clientele (see Appendix A). At first a workable proposal was drafted that could be presented to influencers and decision-makers. The idea was to partner with a golf course in the valley that was in need of an energy and irrigation infrastructure overhaul and persuade leadership to undertake the initiative. The plan would prioritize reducing water use through strategic landscaping of native species of shrubs, trees, and cacti, and investment in irrigation upgrades including new sprinkler systems with moisture sensors, rain capture, and switching to Salt River Project (SRP)-provided effluent as the primary water source. The last method is of particular importance as it drastically reduces water use and can even create healthier grass. “Reclaimed water contains nutrients that can filter into the soil and benefit golf courses” (Tang, 2015). The proposal also included areas for improving energy efficiency including shade trees around buildings, solar panel installation, LED lighting replacements, and motion sensors. Once accepted, this proposal laid out a method of organizing four teams devoted to energy, water, landscaping, and education/community outreach. The plan also set a timetable for achieving certain benchmarks.

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A proposal like this needed to pay serious attention to stakeholders' pain points and motivations. Gathering as much data from the audience as possible allowed Greener Golf to craft a proposal that framed the challenge being addressed as an opportunity to further the goals the organization had already established. Stakeholders need to be shown how sustainability can be woven into their core values and support their mission. In the case of this golf project, since it addressed a traditional business model, the work was framed as an opportunity to generate revenue and grow customer base. This was depicted in the form of a causal diagram (see Appendix B). This would likely pique the interest of board members and managers whose primary goal was running a profitable business.

For this golf project, addressing the market was of paramount importance. First, golf's value as a massive tourism industry, and its economic impact on the Phoenix valley was put forth. This was contrasted by the problem of its dire environmental impact. 200 plus golf courses each utilizing 100-200 acres of land, sucking up 80 million gallons of water a day (more than anywhere else in the country) were the sticking points (Tang, 2015). The study then went on to highlight the sport's decline in popularity amongst young people and the fact that it is prohibitively expensive for a shrinking middle class in the U.S. (The Economist, 2015).

The study continued by discussing how the convergence of these economic, social, and environmental challenges creates a market opportunity for sustainable reform. Notable organizations such as the USGA, i-Tree, and the GEO Foundation have been working for years to design courses that can exist in harmony with the natural environment. They have found solutions in the form of genetically engineered or synthetic grass, moisture sensors, strategic planting, and the use of GPS to identify areas where turf can be reduced. The crux of this research was to show that not only could these environmentally friendly solutions be implemented, but they could be done in a way that would save the course millions of dollars over a relatively short time. This study also showed that a byproduct of these changes could be seen in the form of improved public image. This could then easily be leverage for higher customer turnout, creating a strong argument for a B2C structure.

The next part of the feasibility study considered the leadership structure of the organization. A preliminary plan for organizing workers and delegating tasks based on expertise

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was presented. It was determined that overall the infrastructure available at a golf course could be used to effectively complete this project as long as individuals were flexible. A great deal of time management and planning would be needed, and training would be provided where there were any gaps in knowledge.

The most valuable part of the feasibility study was the inclusion of data from Corica Park South Course in drought-stricken California. Through implementation of many of the proposed upgrades they were able to reduce their water use from an average \$1 million per year to only \$20,000, allowing them to lower their prices to only \$40 per round, resulting in many more customers (Latus, 2019). Direct evidence of success from an almost identical project was a significant indicator of the feasibility of this project, and a point that would speak directly to the needs of the stakeholders.

The final part of the feasibility study was an assessment of the strengths, weaknesses, opportunities, and threats (SWOT) inherent in this project. The strength of this initiative comes from its legitimacy within modern social sustainability trends. Sustainability is what the public wants, and more and more companies are adapting to preserve their public image. As Millington and Wilson state in their analysis of golf managers' recent efforts in environmental responsibility, "superintendents, course owners, and many others within the industry have an understandable interest in maintaining a positive impression among...the green fee-paying public" (2013). Becoming a sustainable organization means holding the business to a higher ethical standard and sends a message to the world that this is right. The weakness of the initiative comes from the traditional "old-guard" of the industry being quite risk-averse and unwilling to change. However, their love of the game and desire to preserve it for future generations could be leveraged, making this group the initiative's strongest advocates.

Despite these strides in developing a strong plan, Greener Golf was initially presented with significant obstacles which inhibited growth. Positive change is driven by several factors including regulation, competition, shifts in technology, and changing customer needs (Weiss, 2015). One or more of these must be present to instill urgency in an organization enough to propel a new initiative. After significant time preparing for this initiative through research, a strong proposal, and a feasibility study, creating this sense of urgency ended up being a

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seemingly insurmountable obstacle. The project itself was feasible, yet credibility and therefore interest was not established enough to convince golf course leadership to consider taking on the project. Countless phone calls, emails, and in-person discussions unfortunately yielded little interest. Typical responses ranged from “we are already doing all we can to conserve water” to “we are not interested in placing trust in an outsider with significant business decisions like these”. Some of these responses were to be expected, but an inability to get a foot in the door was not.

This led to the conclusion that, although the project could work, perhaps the ambition of it did not fit the current level of experience or credibility needed. Businesses are typically looking for well-known and reputable consultancies to take on their biggest projects and are often reluctant to invite outsiders to guide these endeavors. One solution may be to scale back the project to first focus on reworking the communication plan in order to simply get a seat at the table. As a result, it was decided to change the trajectory and scope of the project. It has now evolved to prioritize the education, advocacy, and outreach aspects first. The hope was that this new direction would allow golf courses exposed to these new ideas to draw their own conclusions about the benefits of sustainability. This outreach now took on the form of a website that facilitated several communication goals. GreenerGolf.org was designed to provide detailed information about options for businesses to expand their sustainability efforts, ways to save money, and generate new revenue by appealing to a wider demographic of customers. Although not yet implemented to scale, this proposal and feasibility study along with a sample work breakdown schedule became a powerful addition to the greenergolf.org website and was provided to interested golf industry specialists as a free and open source document to serve as a “starting place” for their own sustainable projects. Establishing a platform for learning and collaborating could open many more participants up to global opportunities.

The opportunities available to those who backed this initiative were innumerable. Sustainability has increasingly catalyzed exponential growth in businesses around the world. Dunphy et. al.’s (2007) model for corporate sustainability adoptions describes several phases that a corporation goes through in its adoption of sustainable initiatives. These start with “rejection” and “non-responsiveness” early in the introduction of the project. The next higher phases is

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“compliance” where the organization is simply trying to meet legal requirements. This phase is likely where most golf courses exist now. But being able to shift a course to the next phases of “efficiency” would mean coopting an initiative for the sake of financial benefit. Reaching this would be a major success, but only the start. Beyond that the goal would be to reach “strategic proactivity” (seeing sustainability as a competitive advantage) and the “sustaining corporation” phase which means the course has fully integrated sustainability into its core values (Taylor, 2012). The profitability angle was going to be the priority, as the potential for savings, customer turnout, and increased revenue were too good to refuse. The biggest threat is in the stability of the golf industry. With dwindling water resources and a declining market, the business practice is unsustainable and will fade away if not adapted.

To find the right pitch, audience mapping is a useful practice when crafting a message. This involves first getting to know stakeholders on a deep level through frequent and meaningful contact. People are unlikely to want to invest in the ideas of someone they do not know or trust, so this is a key step and cannot be done in a superficial way. Before crafting the message, it is good to segment the audience into people who are identified as decision-makers, influences, supporters, and adopters. These separate groups should have varying motivations based off their individual roles, beliefs, pain points, and gain points. Once an audience is fully understood, one can tailor their message to each group in order to guide them to achieve a unified goal. Greener Golf later found great success in connecting with stakeholders through careful attention to audience mapping and has provided supports and recommendations for this on their site. When communicating with individuals and groups, stakeholder identities were considered, and messages were crafted as below.

The first group, decision makers, was comprised of club board members, managers, SRP engineers and hydrologists, and team members. This group, since they possess high power and high interest in the project, need to be managed very closely. The message to them was framed as a sound business strategy. “Sustainability primarily will save us money and create a more resilient business model. It will also attract new customers and have a lower impact on the environment. Improvements will restore vitality to the sport and ensure continued business.”

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This message was followed by a call to action: “Let’s design, approve, and implement an irrigation and landscaping plan that saves the club money and attracts more customers.”

For the second group, supporters, an environmental and social message was best. Although they have low power, they likely have high interest and so it is essential to keep them informed about the progression of the project. This group consisted mainly of members of the local community and new customers. Their message was “the golf course is an environmentally friendly, inclusive, welcoming, and inexpensive place for recreation.” Their call to action was “come play golf at our course and discover ways that you can be an environmentally conscious citizen.”

The third group comprised of the superintendent and paying club members. These were the influencers because they had high power yet low interest in the project. Leveraging their help could mean a serious boon to extending the project. Their message was one that appealed to the preservation of the sport of golf for future generations and downplayed the disruption to gameplay the project would cause. “The changes coming to our course are necessary and will have little interference with your typical golf playing/managing experience. Improvements will restore vitality to the sport and ensure continued business.” The call to action was “become a supporter and advocate for the positive sustainable change we are undertaking.”

The final group was called the adopters, which include teaching professionals and service employees. They likely have low interest and low power, so it is essential to keep them in the loop and monitor them. They would mainly be motivated by reassurance that their jobs and duties would remain intact. Job security and advancement was the message crafted for them. “The changes to the course will ensure job security and possibly even wage increases in the future. Changes may alter work duties slightly at worst and alleviate some work duties at best.” Their call to action was “become a supporter and advocate for the positive sustainable change we are undertaking.”

The next step in the project was to establish several communication channels and determine the frequency with which they would be used. Sustainability is often an exercise in human psychology, and frequent, reliable, and consistent messaging become necessary to get people to adopt and retain new ideas. However, it is also important to make sure the

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communication channels used are appropriate for specific audiences. A suitable communication plan was drafted for Greener Golf that served as a useful guide when contacting stakeholders to disseminate information (see Appendix C). This guide was also made available to sustainability champions on the site to help them navigate their networks.

On a side note, throughout the process of using this communication plan to connect with individuals, the value of advocacy and education was made abundantly clear. Frequently, conversations lead to apparent gaps in knowledge which a connection to the myriad resources presented by Greener Golf filled. For example, one golfer had heard about massive reseeded efforts undertaken by his course every Spring to prep their greens and fairways. As a result, each year they were pristinely green and well maintained. However, after reading about the extreme amounts of water needed to maintain that growth, he decided that he was ok playing at other courses that did not reseed each season and that had less turf or even brown turf for parts of the year. Often, helping these individuals fill these knowledge gaps allowed them to draw their own conclusions about the merits of certain business practices and even how to proceed with their desired projects. This was the whole intention for Greener Golf's shift and helped validate this new direction.

Another essential aspect for building Greener Golf's legitimacy was the communication of a vision. This vision needed to be imaginable, desirable, feasible, focused, flexible, and communicable (Kotter, 1996). This step is important because having conflicting visions within an organization can be the biggest barrier to success (Weiss, 2015). The purpose of this vision was not just to paint an idealistic picture of the future for the organization, but to serve as a source of unification with sustainability integrated into their core values. This vision would serve as a springboard for all future project decisions and generate autonomy among team members, empowering them to seek opportunities to further the project. A guiding coalition to champion the cause would be created under this vision:

A golf course which combines natural flora and landscaping with the most efficient and sustainable use of resources to achieve harmony with the environment. This place will embrace modern values, preserve the traditions of a beloved game, and help people reconnect with nature.

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This vision communicates not only the overarching purpose of the project, but also seeks to appeal to what stakeholders love about the game. Now that the vision was established, a sense of urgency needed to be instilled. However, a frantic, chaotic, or fearful urgency was not needed, but rather a positive and motivating sense of urgency. This was achieved through an appeal to the ethics, logic, and emotion of the stakeholders.

The focus in achieving this urgency was in educating stakeholders about the challenges with water use in Arizona. Particularly, they needed to understand how irrigation of golf courses directly impacted the source of their water. A presentation was included depicting images of Lake Mead drying up along with farmers who were suffering from low crop yield due to lack of water. Special care was taken to paint a broad picture of the effects and to impart an idea of how golf in Arizona contributed to a much larger and complex system. This was the emotional appeal. The logical appeal was presented as a set of statistical data illustrating past and present water allocation, population trends, and future projections of water availability in the Southwest. The real-world example of drought contingencies being implemented in California were included to show that the risks were real. Last, an ethical appeal was made by highlighting the devastation to the natural environment water scarcity and disruption to native flora would have.

Before putting forth this presentation, it was useful to first get some feedback from a separate, unbiased group of people with no stake in the project. A good presentation should be accessible to the lay person, free of technical jargon, and engaging. As such, this presentation was given to two separate audiences of people with little to no familiarity with either sustainability or the golf industry. Most of the participants found the presentation to be highly informative and effective, but also managed to highlight many issues that were not initially obvious to the presenter. For instance, much of the data provided in the presentation was from cities similar to Phoenix without direct comparison to Phoenix. The participant requested that more comparisons of water use data be added to help support the argument. Also, certain images in the presentation were replaced with ones that were more relevant to the data and less distracting. The value in feedback was instrumental in achieving a much more streamlined and persuasive message.

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Success in generating momentum for an initiative comes from setting and achieving tangible milestones. For this project, the first determined milestone was to make a breakthrough in messaging. In other words, success would be in evidence that Greener Golf was getting at the core values of their stakeholders. This would help us to target specific needs in the community. A survey was designed and added to the website to gather data. Several criteria were rated on a scale from one to ten. The criteria included: stakeholder's engagement with sustainable issues social, economic, and environmental as well as an evaluation of their course's engagement with these issues. It also asked what kind of projects they would most like to see their golf course undertake. These included water conservation, strategic landscaping, free community recreation spaces like hiking trails and parks, lowered greens fees, energy conservation, community events, and charity events. Last, a question regarding where they had heard about greener golf was added to determine how well the site would spread. Eighteen individuals participated in the survey identifying as golfers, managers, owners, golf workers, and non-golfing community members. The early results showed significant favor for environmentally, socially, and financially responsible golf business practices. Most of the respondents indicated, as well, that they would prefer playing at golf courses that are sustainable. And when asked "do you believe your golf course is socially, financially, and environmentally sustainable?" half chose "I don't know". This illustrates a gap in knowledge that Greener Golf could help to fill with the right data and exposure (see Appendix D).

The next milestone was the establishment of communication networks and audience engagement. This is the stage where collaboration and sharing of ideas could take place. Promotion of a strong learning community would bring with it the added benefit of amplifying the message of Greener Golf as well as adding to and further disseminating key resources. One of the strongest connections formed during this stage was with Andy Staples of Staples Golf Design, a Scottsdale, Arizona-based golf sustainability firm. Mr. Staples had over 18 years of experience with golf sustainability since his founding of the company and shared some key ideas that helped explain Greener Golf's initial challenges with getting buy-in and some guidance for the future. He too had experienced these challenges early in his career, and he explained that despite contrary belief, golf course superintendents, because they are tasked with managing a course's resources, think about sustainability a lot. He said that "when an outsider like me comes

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in and starts telling them why they need to change their resource management practices, they can take it very personally. Highlighting these flaws can make them look bad, so their resistance is out of self-preservation” (Staples, personal interview, 2020). He went on to reinforce Greener Golf’s positive focus on profits with stakeholders by sayings that in order to catch their ear, one must immediately show the benefit of sustainable solutions with tangible results. Now that Staples Golf Design has a reputation working for hundreds of courses around the country, golf courses reach out to them seeking their services, rather than the other way around.

One final milestone was in finally providing the advocacy service to stakeholders. The creation of a website with links to social media platforms would extend the project far beyond the golf course and allow for people from around the community or even further to participate in the discussion. This milestone was realized when Greener Golf saw its first success with positively influencing a local stakeholder. After Greener Golf sent the link to the website to several clubs around Arizona a golf club manager reached out to share how some of the provided resources had benefitted him. He was not familiar with the GEO Foundation which provides one of the world’s most comprehensive sustainability certifications. He was searching for ways to build value at his course and promote sustainability and wanted to look more into what GEO had to offer. Currently, only three golf courses in Arizona have achieved the GEO certification, La Paloma Country Club, T.P.C. Scottsdale, and Wigwam Golf. In order to support this club, Greener Golf provided additional information about how to get certified. We also provided a link to OnCourse, an app provided by GEO to track data on energy, water, fertilizers, pesticides, biodiversity, and the supply chain. From this experience, Greener Golf learned of a potential disconnect between Arizona golf courses and knowledge of an industry standard sustainability certification. This small number of participating courses presented a new opportunity to encourage others to join GEO’s ranks. It is now the hope that Greener Golf can make helping courses achieve this certification a priority for the future. With this success a web-based networking platform for golf sustainability proved viable.

As the project further progressed another goal emerged and that was community inclusion. Due to outdated business practices, golf courses are often viewed as socially restrictive. A challenging fact in the golf world is that, due to a long history of inherent social

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divides, minorities, women, youth, and middle to lower class people are drastically underrepresented as golf patrons. Golf has had an unfortunate reputation in past decades and to many the game is seen as an “exclusive and elitist pastime, enjoyed primarily by affluent White males who possess the physical, social, and economic traits and attributes required to access golfing facilities” (Fjelstul, Jackson, & Tesone, 2011, p. 1). It is hoped that the platform can also be used to open dialogues with stakeholders to find progress in this area. An example of this comes from a country club in Martha’s Vineyard that had an initial club membership fee of \$350,000 with a \$12,000 annual fee. After receiving criticism from local community members who felt excluded, they opened their course to 125 new members with a reduced \$400 per year fee. Additionally, they allowed a local high school golf team to train on the premises and hosted a series of new charities to benefit the local community (Hiskes, 2010). This shows that honest social discourse can have a positive effect on swaying the behaviors of large organizations bound by the economic mores of a dated industry.

Greener Golf seeks to find solutions to cost-prohibitive business practices associated with golf and aims to make golf courses more accessible and inclusive venues for recreation. That is why Greener Golf has joined previously mentioned Staples Golf Design in putting forth the idea that golf courses hold great potential in bringing communities together. Staples Golf sees municipal golf courses as places that should be owned by the community and are both physically and financially accessible to all. They established the Community Links model with the understanding that golf needs to adapt to societal trends to survive.

Municipal golf has continued pressure to be profitable because 92% of the tax-paying community doesn’t play golf. Other municipal amenities such as libraries, public parks, museums, etc., are under far less scrutiny to perform because they’re perceived as beneficial to the entire community. Therein lies the opportunity for the golf facility; playing to innate advantages that would benefit 100% of the community. Fortunately, such advantages just so happen to reflect positive trends in today’s society (Staples, 2016, p. 4).

The idea that golf courses can be adapted in a way that invites full community participation beyond golf through shared recreational spaces like lakes and hiking trails is

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a powerful one. Greener Golf has made a point to promote Staples' by featuring them on the site.

In conclusion, After these initial successes, it was decided that this would likely be the best way of reaching the widest audience possible, as it allows for people who may support the initiative but are not able to adopt it to share it with their networks. A degree of viral marketing would help the message spread to those who need to hear it the most. This new approach would allow opportunities to create robust networks and to collaborate with organizations like Staples. Although still in its infancy, time and exposure will help build these networks for Greener Golf. Part of this project was intended to uncover specific characteristics and practices of effective leadership when faced with sustainability-focused initiatives. Although no specific style of leadership is considered the best for such projects, several key elements were identified. The first notable characteristic is what sets leaders apart from managers, and that is a willingness to question the status quo. The biggest changes in sustainability require often dramatic shifts in processes, ways of thinking, and beliefs in what is possible. From a psychological standpoint, change is very difficult for people as it requires taking risks and leaving their comfort zone. Questioning the status quo is especially difficult in the golf industry which is steeped in centuries of tradition both in game play and business practices. This resistance to change ended up being the biggest barrier to this golf sustainability project.

In order to overcome such a barrier requires another essential leadership quality, and that is good communication skills. When faced with challenging new ideas people want a leader who can communicate effectively. Such leaders take time to know their stakeholders and to differentiate their message to appeal to their needs. Not only do they need to be able to explain things simply and concisely, but they also need to be frequent and thorough in their communication so as to eliminate any gaps in understanding.

And one last essential sustainability leadership quality (although many more exist) is the ability to inspire and empower others and to foster a community of continuous learning. A culture of learning and support enables people to think outside the box and strike upon the heretical ideas which bring much needed innovation to tackle the most challenging problems. In learning communities, people are rewarded for taking risks, even if they lead to less-than-ideal

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results. People are taught to look beyond rank in the organization and see all members as equally valuable. The more collaboration happens the more people take pride and ownership in their work resulting in higher quality of work.

Although the project needed room to adjust its scope, it ultimately found a path to success through Greener Golf and will continue to advocate for sustainability and support others in their progress. It was the recognition that, when faced with difficult sustainability decisions, one of the strongest tools we have is widespread knowledge of common practices and the resources available to us which made the difference. Like a golfer who just sliced the ball into the rough, the ball must be played where it lies. And with the right planning and approach, they will get the ball back in play and ever-closer to the hole. So too must sustainability leaders be persistent and flexible. When faced with the world's toughest sustainability challenges, it is always essential to push on and find new avenues for success.

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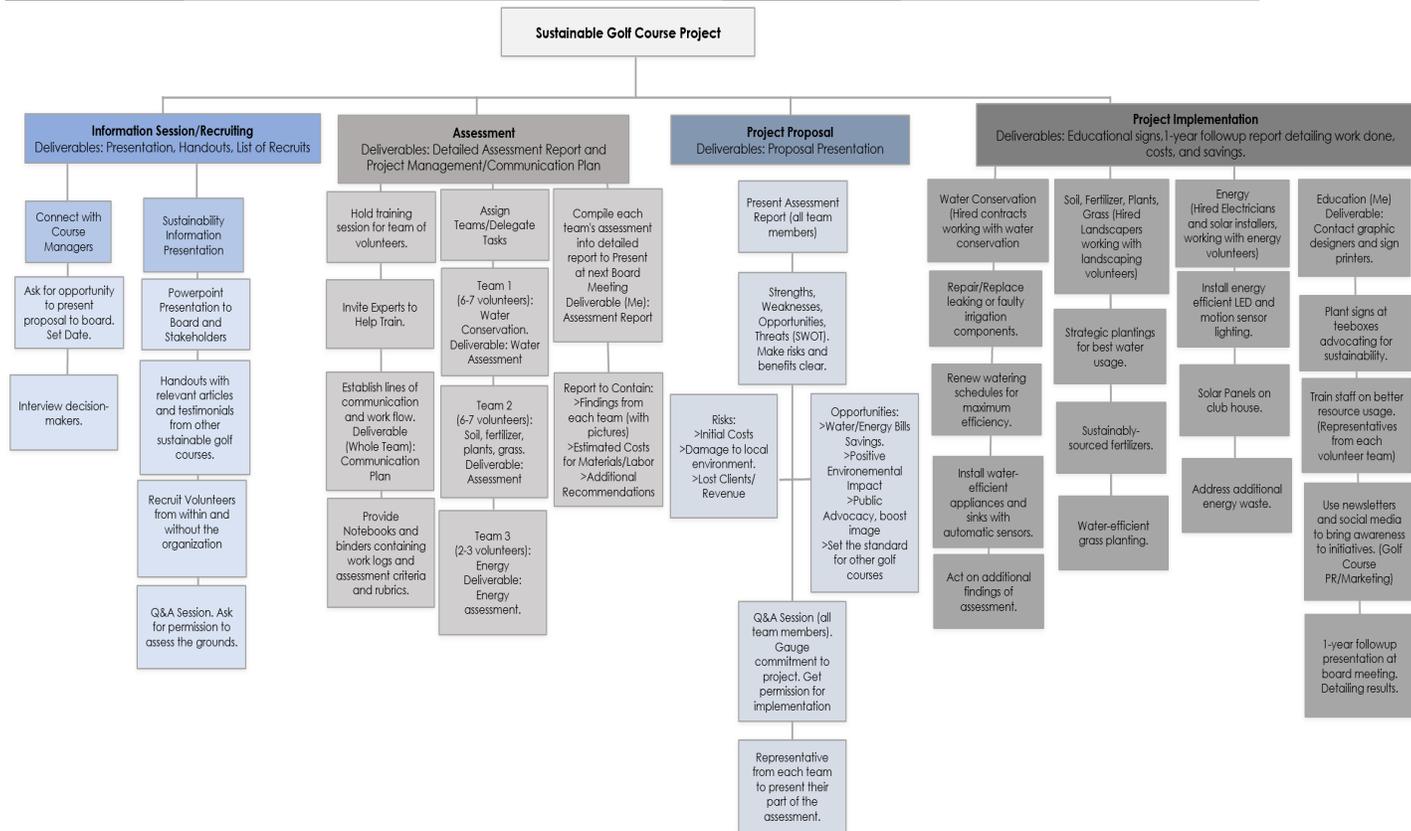
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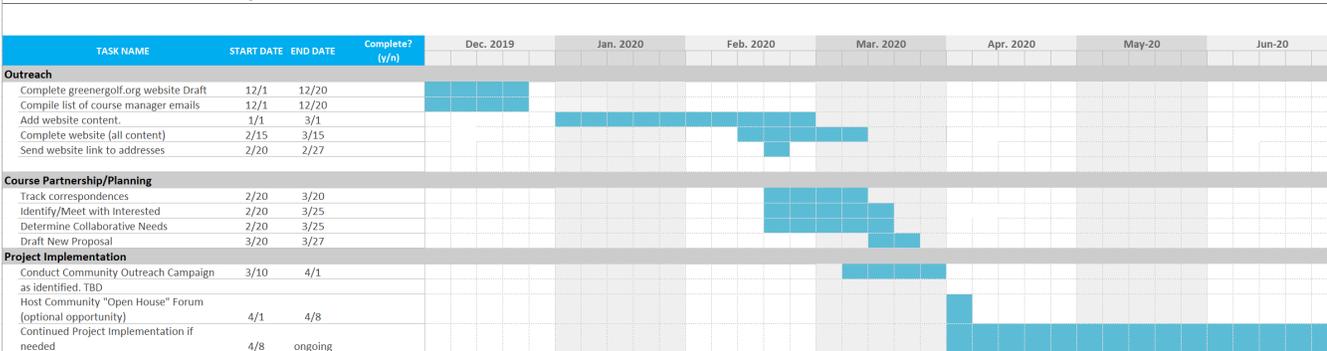
Appendix A

Work Breakdown Structure and Gantt Chart

PROJECT TITLE	Sustainable Golf Course WBS	SCHOOL NAME	ASU
PROJECT MANAGER	David Ginn	DATE	Sunday, February 10, 2019



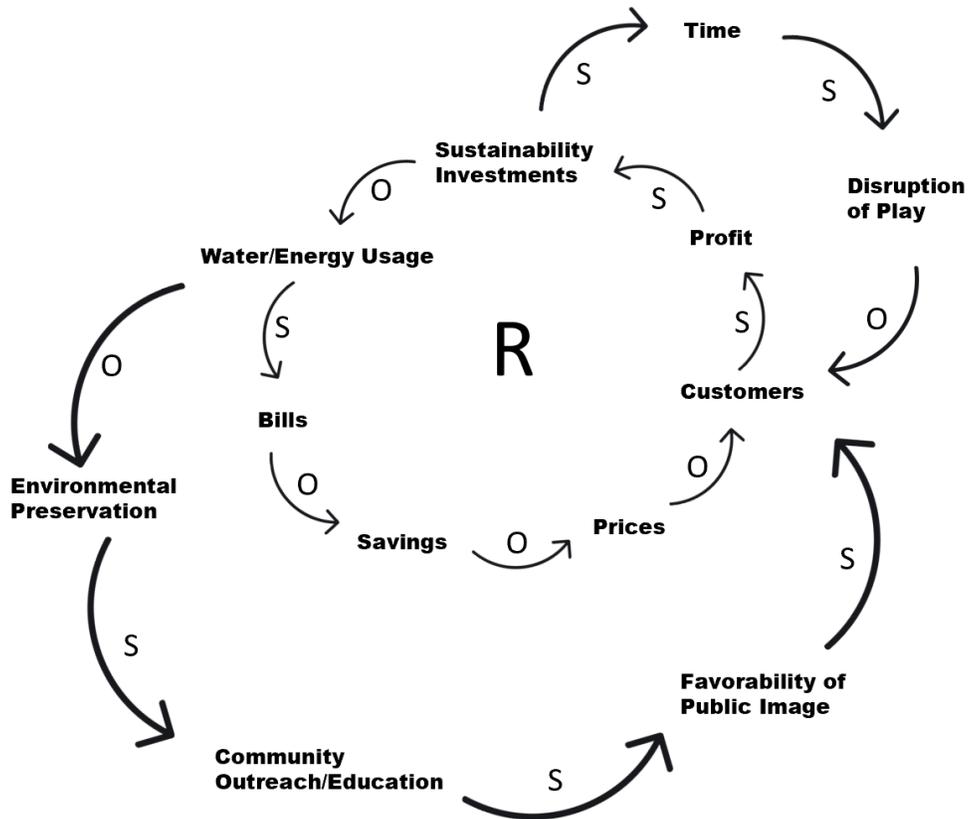
New Greener Golf Project Gantt Chart



Appendix B

Causal Loop Showing Profit Potential of Sustainable Initiatives

Golf Course Sustainability Causal Loop



Appendix C

Communication Plan for Various Stakeholders

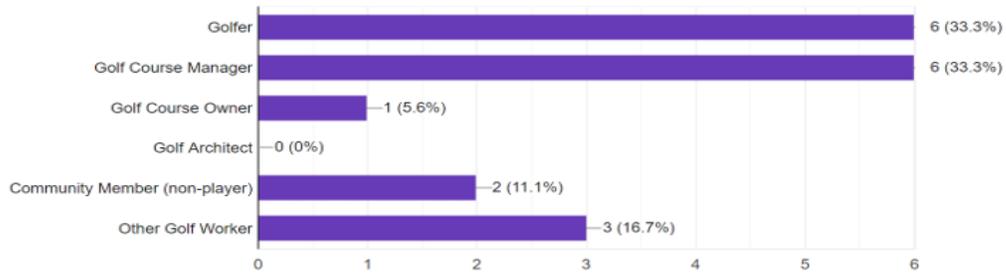
Communication Plan for Golf Course Sustainability				
Overall Communication Objective: Educate and empower internal and external stakeholders to become advocates for golf course sustainability and to generate support for water saving initiatives.				
Audience:	Audience 1- (High Interest/High Power) Decision Makers	Audience 2 (High Interest/Low Power) Supporters	Audience 3 (Low Interest/High Power) Influencers	Audience 4 (Low Interest/Low Power) Adopters
Audience Members:	<ul style="list-style-type: none"> • Club Board • Managers • SRP Engineers and Hydrologists • Team Members 	<ul style="list-style-type: none"> • Local Community • Groundskeepers • Irrigation Specialists • New Customers 	<ul style="list-style-type: none"> • Club Members • Superintendent 	<ul style="list-style-type: none"> • Teaching Professional • Service Employees
Differentiated Communication Objective:	<p>Communicate the message to these decision makers that improvements to the irrigation infrastructure will:</p> <ul style="list-style-type: none"> • Be a strong business investment. • Give us a competitive edge in the industry. • Attract customers from underrepresented demographics. • Be environmentally conscious. 	<p>Communicate the message to these supporters that our golf course has social, environmental, and economic relevance in our changing society and we are willing to adapt to provide a service to the community and the world.</p>	<p>Persuade these influencers to become champions for sustainability as a means to preserve the sport they love.</p>	<p>Reassure these adopters that this change will not have any adverse effects to their employment or job duties, and to encourage them to champion the cause in their interactions with customers.</p>
Message:	<p>Sustainability primarily will save us money and create a more resilient business model. It will also attract new customers and have a lower impact on the environment. Improvements will restore vitality to the sport and ensure continued business.</p>	<p>The golf course is an environmentally friendly, inclusive, welcoming, and inexpensive place for recreation.</p> <p>CTA: Come play golf at our course and discover ways that you can be an</p>	<p>The changes coming to our course are necessary and will have little interference with your typical golf playing/managing experience. Improvements will restore vitality to the sport and ensure continued business.</p>	<p>The changes to the course will ensure job security and possibly even wage increases in the future. Changes may alter work duties slightly at <u>worst, and</u> alleviate some work duties at best.</p>
	<p>CTA: Let's design, approve, and implement an irrigation and landscaping plan that saves the club money and attracts more customers.</p>	<p>environmentally conscious citizen.</p>	<p>CTA: Become a supporter and advocate for the positive sustainable change we are undertaking.</p>	<p>CTA: Become and supporter and advocate for the positive sustainable change we are undertaking.</p>
Channels/ Timing/Frequency:	<ul style="list-style-type: none"> • Website (Internal/External) – Continuously (passive) • Email (Internal) – Daily • Phone (Internal) – Weekly • Face-to-Face (Internal) – Daily • Meetings w/ Presentations (Internal) - Monthly 	<ul style="list-style-type: none"> • Website (Internal/External) – Continuously (passive) • Email (Internal) – Daily • Social Media (External) – Daily • Newsletters (External) – Significant Milestones 	<ul style="list-style-type: none"> • Website (Internal/External) – Continuously (passive) • Face-to Face (Internal) - Daily 	<ul style="list-style-type: none"> • Website (Internal/External) – Continuously (passive) • Email (Internal) - Weekly • Face-to-Face (Internal) - Daily
Measurement of Success:	<ul style="list-style-type: none"> • Consistent and Productive Communication (log in spreadsheet) • Approval of Plan • Clear Delegation and Assignment of Tasks 	<ul style="list-style-type: none"> • Page Views • Social Media Posts/Likes/Shares • Participation in Email Conversations • Data Collected from Customer Survey 	<ul style="list-style-type: none"> • Data Collected from Employee Survey • Contribution to Discussions About Sustainable Trajectory 	<ul style="list-style-type: none"> • Follow-through of New Duties • Contribution to Discussions About Sustainable Trajectory • Data Collected from Employee Survey
Reflection:	<p>Review:</p> <p>Revise:</p> <p>Repeat:</p>	<p>Review:</p> <p>Revise:</p> <p>Repeat:</p>	<p>Review:</p> <p>Revise:</p> <p>Repeat:</p>	<p>Review:</p> <p>Revise:</p> <p>Repeat:</p>

Appendix D

Sustainable Golf staples Data

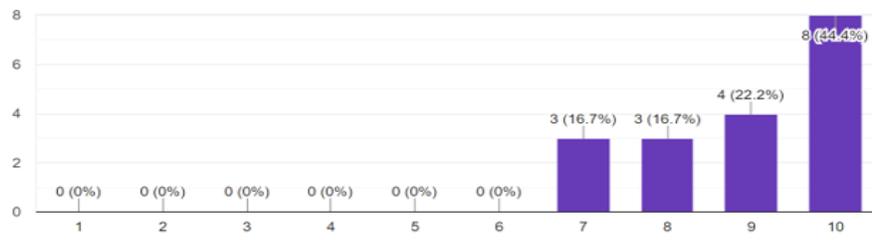
How are you involved with the sport of golf? (select all the apply)

18 responses



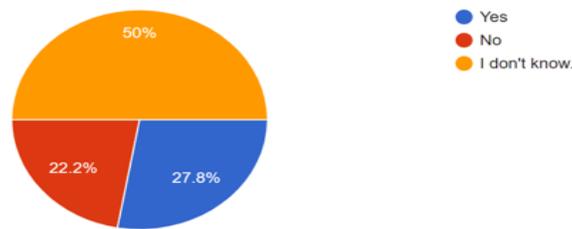
How important is it to you that your golf course is environmentally sustainable?

18 responses



Do you believe your golf course is socially, financially, and environmentally sustainable?

18 responses



Are you more likely to play at a golf course that is socially, financially, and environmentally responsible?

18 responses

